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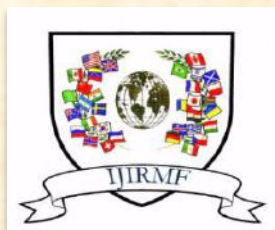
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(13 – 14 August, 2022)

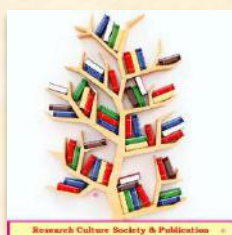
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&
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Date: 13 – 14 August, 2022

Bangkok, Thailand

Conference Special Issue - 36

The Managing Editor:

Dr. C. M. Patel

(Research Culture Society and Publication – IJIRMF)

Associate Editors:

Dr. Christine Phiri Mushibwe

Dr. Parin Somani

Dr. Marirajan Thiruppathi



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About the organizing Institutions:

Institute of Educational Technology : Education department trains specialists in Social Sciences, Humanities, Digital Studies, and Business Development Studies. The main educational and scientific areas are as per given Tracks mentioned here.

Eurasian University is one of the largest education institutions of the central region of EU, for qualified personnel training in metallurgical, mining, engineering and technological specializations. Scientific subjects performed by the university aimed to increasing the efficiency of production and control processes, power saving and environmental protection.

Unicaf University, through its partner universities, offers Bachelor, Master's and Doctoral degrees in partnership with UK, US and African universities. Current partnerships include Liverpool John Moores University (UK), the University of East London (UK), the University of Suffolk (UK), and Unicaf University which is a pan-African university with local and British accreditation. In addition to the fully online degrees, Unicaf through Unicaf University offers a range of academic programmes through its campus network. Besides online and on-campus studies, Unicaf provides a wide range of professional short courses.

'Research Culture Society' is a Government Registered Scientific Research organization. Society is working for research community at National and International level to impart quality and non-profitable services. Society has successfully organized 100+ conferences, seminars, symposiums and other educational programmes at national and international level in association with different educational institutions.

'Scientific Research Association' (Scientific Research Organization) is an esteemed research organization working on to promote scientific research studies, activities at international level, also coordinate with other research organizations for the educational research events.

Objective of the International Conference: is to bring together innovative academics, researchers and industrial experts in the field of Multidisciplinary Innovation Studies in Academic Research to a common platform. The primary goal of the conference is to promote research and developmental activities in Multidisciplinary Innovation Studies and Research. Another goal is to promote scientific research and information interchange between researchers, academicians, students and practitioners working in conference country and abroad. The conference will be held in regular interval to make it an ideal stage for people to share views as per themes and scope of conference.

About the Book:

The current advances in the research and Technology of Education, Technology Development & Social Sciences with the whole concept of this advanced technology is to process from past, analyse the present and implement for the future, the latest innovative evolving theories and technologies to surpass the hurdles and make modish frontiers.

International Conference is to bring together innovative academics, researchers and industrial experts in the field of Multidisciplinary Innovation Studies in Academic Research to a common platform. The primary goal of the conference is to promote research and developmental activities in Multidisciplinary Innovation Studies and Research. Another goal is to promote scientific information interchange between researchers, academicians, students and practitioners working in conference country and abroad. The conference will be held in regular interval to make it an ideal stage for people to share views as per themes and scope of conference.

The edited book is a collection of peer-reviewed scientific papers submitted by active researchers in International Multidisciplinary Scientific Research Conference' - 2022. This book can be important to understand the various concepts of Educational Technology, Media and Social Science stream researchers and academia.



Message

Colleagues, Ladies and Gentlemen,

The acquisition of knowledge is a process that all who seek it, ought to undertake. In my language we have an adage : **“an orphan acquired knowledge during a pounding activity.”**

In my village, a maize pounding activity is organized and planned by the women because, they have to help each other, in order to speed up the process. Should you stumble upon a group of women from my village pounding their maize, it will more often than not be in a group of 10 or more women. This ensures that the maize is processed in a short time because once one woman’s maize is done, they move on to the next and the next, until all women have processed maize.

It is during this time as well that the women bond and gel. There is more than just pounding maize that is happening. Simultaneously, the women share different stories and it is through this sharing of stories that the adage originated and can be explained as the orphan who made it a point to be found at such an activity, was able to acquire knowledge that would have been taught ordinarily through a mother. Hence she gained valuable knowledge.

The beauty of conferences lies in the knowledge and skills demonstrated, stories shared and learnt. Such knowledge cannot be taken away from one. While many will be showcasing results of their research, we will all be acquiring knowledge that should improve ourselves as individuals and our organizations. Knowledge that should not puff us up but make us better individuals. **“Translating knowledge into practice”**

Therefore, let’s have an open mind as well as readiness to learn from every presentation and ensure that we acquire the knowledge we would otherwise never have attained. Let us not end up under the spell of the Peter principle; resulting in incompetent individuals due to an overload of knowledge. I am optimistic that the intention of this conference will be achieved and a successful story penned down for many to read and contribute to and for a better environment for all.

I am proud to be the part of Organizing Committee of two days Conference entitled, “International Multidisciplinary Scientific Research Conference” jointly organized by ‘Scientific Research Association’, ‘Research Culture Society’, ‘Eurasian University’ and ‘Unicaf University, Zambia’ dated on 13 & 14 August, 2022 in Bangkok, Thailand.

Please accept my wishes of a successful conference!

A handwritten signature in black ink, appearing to be 'C. Phiri'.

Dr Christine Phiri Mushibwe BEd, MA, PhD
Vice-Chancellor, Unicaf University.

Dr.C. M. Patel

Director, RESEARCH CULTURE SOCIETY

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Message

Dear Professional Colleagues.

I am very glad that ‘Scientific Research Association’, Unicaf University, Zambia; Institute of Educational Technology, Eurasian University in collaboration with ‘Research Culture Society’ (Government Registered Scientific Research organization) are organizing - ‘International Multidisciplinary Scientific Research Conference’ at Bangkok during 13 – 14 August, 2022.

The aim of the conference is to provide an interaction stage to researchers, practitioners from academia and industries. The main objective is to promote scientific and educational activities towards the advancement of common citizen’s life by improving the theory and practice of various disciplines of science and engineering. Provide the delegates to share their new research ideas and the application experiences face to face.

I believe, this International Conference will help in redefining the strong connection between students and academicians from different institutions. An additional goal of this international conference is to combine interests and scientific research related to Social Science, Education, Journalism, Digitalization and Business Management and Development to interact with members within and outside their own disciplines and to bring people closer for the benefit of the scientific community worldwide.

My best wishes to the committee members, speakers and participants of this scientific conference.

A handwritten signature in blue ink, appearing to read 'Dr. C. M. Patel', is positioned above the printed name.

Dr.C. M. Patel

Director, Research Culture Society.

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Organizers – Conference Chair Members :

Dr. Christine Phiri Mushibwe, Vice-Chancellor, UNICAF University, Zambia

Dr. C. M. Patel, Director – Research Culture Society.

Prof. Svetlana N., Head, Institute of Educational Technology, E.U.

Keynote Speakers:

Dr. Christine Phiri Mushibwe, Vice-Chancellor, UNICAF University, Zambia

Dr. Prof. Markus Launer, President, Institute for Service Management (Institut für Dienstleistung), Germany.

Dr. Parin Somani Independent Academic Professional United Kingdom

Dr (hc) Rania Lampou STEM instructor and an ICT teacher trainer, Greek Ministry of Education, Greece.

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Dr. Marirajan Thiruppathi , Deputy Vice-Chancellor – Research and Innovation, UNICAF University, Zambia

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Dr. Lameck Mwewa, Deputy Vice-Chancellor – Academic. UNICAF University, Zambia

Dr. Tanushri Mukherjee, Dy Director Outcome & Associate Professor, Amity School of Communication , Amity University Rajasthan, India

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Dr. Attridge Mwelwa – DBA, MBA, Lecturer, School of Business, Management and Law, UNICAF University, Zambia.

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Conference Photo Gallery



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13 – 14 August, 2022 : Bangkok, Thailand**



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Facilitating Students to Re-engage in Education Post-Covid-19 Pandemic

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Abstract: *The fiasco caused by the Covid-19 pandemic due to social distancing and personal protection measures has impinged upon student learning globally. Students underwent a rapid transition from face-to-face traditional learning to seeking education from digital platforms. Consequently, a large proportion of students within higher educational institutions deferred a year or ceased educating themselves. As higher educational institutions re-open their doors to educating students face-to-face, re-engaging student learning has become a vital element of educational acquisition. This study aims to identify challenges students face attaining education in life post-pandemic. A systematic literature review is carried out via a thorough literature search. Results have identified finances, technological competencies and motivation as key challenges. Recommendations are made to facilitate student re-engagement in higher education institutions in the new normal world. The need to re-skill and upskill has been a dominant factor for students to adapt to a life post-pandemic ensuring a sustainable future and improve the quality of life for societies globally.*

Key Words: *Higher education, Students, Covid-19, Skills, Re-engage.*

INTRODUCTION:

Education is a vital element of societal development that has been evolving for decades. Traditional face-to-face teaching and learning has been the dominant method through which students undergo knowledge acquisition (Somani, 2021). Within a world where technological advancements are at the peak and rapid globalisation there has never been so much information available. This can include good, bad and information that is simply of no use resulting in an information overload (Grech, 2022). Through the internet, individuals have access to rapid 'sharing' of information from one end of the world to the other. This was advantageous during the coronavirus (covid-19) pandemic where the use of technological platforms became a dominant medium through which communication globally could occur (Somani, EFFECT OF THE COVID-19 PANDEMIC ON COMMUNICATION, 2020). The deadly virus that is still present within global societies has caused a fiasco, and a global upheaval that was managed by governing bodies through the implementation of social distancing and personal protection measures, the like the use of masks and gloves. As a result, non-essential businesses experienced physical closures and that included higher education institutions (Somani, PAVING A PATHWAY TO A 'NEW NORMAL' THROUGH EDUCATION, 2021). It is through education that societies are able to flourish in times of adversity. Hence, the importance of ensuring continuing education for students globally became an important part of managing the covid-19 catastrophe. Although societies have been affected socially, economically and politically and we are facing a global recession due to the actions taken during the pandemic, student learning globally has been affected (Edu, 2021). Students underwent a rapid transition from face-to-face traditional learning to seeking education from digital platforms. Consequently, a large proportion of students within higher educational institutions deferred a year or ceased educating themselves. As higher educational



institutions re-open their doors to educating students face-to-face, re-engaging student learning has become a vital element of educational acquisition.

Objectives: This study aims to identify challenges students face attaining education in life post-pandemic. There is an endeavour to facilitate students towards re-engaging in higher education post-pandemic.

METHODOLOGY:

An extensive literature search is carried out through a systematic literature review, using published and grey literature sources. A well-planned method has been implemented to search, identify, extract and evaluate literature found from manual and electronic databases. The following electronic databases are searched: Google Scholar PubMed, JSTOR, Scopus, books, and magazines. The following keywords have been utilised within the initial search: 'Higher Education' 'Students' 'Engagement' 'post-pandemic'. A number of literature sources are identified therefore the following exclusion criteria is devised:

- Literature irrelevant to education during covid-19 are excluded
- Literature focusing entirely on student educational engagement pre-pandemic are not included
- Literature using languages other than English are ignored
- Literature with information duplicated in newer literature sources are not used
- Literature with insufficient technical information to their approach are excluded

A total of twenty-one papers are shortlisted to aid focus to this study. Upon closely examining the papers, two were duplicated therefore not used and after reading the abstracts and introductions one was eliminated. This has equated to eighteen studies. Another literature source was eliminated due to implementation details. Thus, seventeen literature sources have reached the overall criteria and have been included within this study.

RESULTS AND DISCUSSION:

Results have identified finances, technological competencies, and motivation as key challenges. Recommendations are made to facilitate student re-engagement in higher education institutions in the new normal world.

Finances:

The covid-19 pandemic has initiated a global recession, particularly as the cost-of-living increases (Lancet, 2022). Students from lower socio-economic backgrounds are fighting for sustenance to keep themselves away from undernourishment. In addition, all students and their families are learning to live a prudent life (TOL, 2022). This has impacted the number of students re-joining higher educational institutions to continue their academic courses that they ceased pre-pandemic. Many students nationally and internationally ceased higher education due to cost of the fees, due to the fact primary earners within families were subject to job losses, redundancies and working from home culture (Somani, PAVING A PATHWAY TO A 'NEW NORMAL' THROUGH EDUCATION, 2021). Paying for tuition fees was a burden for numerous families belonging to lower socio-economic backgrounds in India. The cost of acquiring appropriate hardware and software to continue education due to the transition to remote learning has created a major challenge for students (Somani, Can We Really Attain Gender Equality in Education?. , 2022). These facilities are still required for students to re-engage in education within contemporary life.

Technological competencies:

The transition from face-to-face physical learning to technological platforms and back again to traditional teaching pedagogies has led many students to learn adaptation mechanisms. There is an important relationship between the student and knowledge that is to be learnt. Three dominant dimensions have been identified including behavioural engagement, affective engagement and cognitive engagement (Greener, 2022). Students have had to learn to cope with changing environments. However the students that continued their pursuit of education despite of challenges encountered during



the covid-19 pandemic, have become accustomed to utilising technological platforms (Somani, Information Technology Challenges Faced during the Covid-19 Pandemic in Higher Education, 2021). For students that have a lack of digital competencies, continuing higher education can be perceived as challenging. Most assignments are submitted through technological mediums and access to online learning materials which are made accessible by educators taking a course, or additional reading and research materials that can only be accessed via online libraries (Somani, FROM FACE-TO-FACE TO REMOTE LEARNING: EFFECT ON STUDENTS. , 2021). In addition, many examinations and learning consolidation of learning outcomes are presented via short and long answer questions on higher education institutional platforms. This enables a collation of data for the higher education institution to understand progression, simultaneously the use of artificial intelligence can be used to generate learning material for students individually to facilitate learning. However, for success to be attained, students and educators require the adequate technological competencies to navigate through software. If they find software navigation challenging this can impinge upon their success rates and create injustices for their future employment prospects (Somani, E-learning in Tomorrow's Age, 2021).

Motivation

As the transition from full-time education to not studying during the pandemic has gradually become habitual, particularly if a student has ceased educating themselves, or taken a sabbatical, re-engaging in education can be challenging (Schnitzler, Holzberger, & Seidel, 2021). Hence, some students lack motivation to recommence their higher education journey. Instead, they may prefer to generate income and decide that there is no need to continue education, hence fast financial gain has become their motivation (Somani, UNDERSTANDING THE CONCEPT OF MOTIVATION AND LIFE SKILLS THROUGH LITERATURE, 2021). In comparison, the cost of living is rising and there is a need for students to provide financial assistance to their families particularly those living in extreme poverty situations. They are unable to support their educational endeavours financially, therefore families find alternative options for former students to live their futures. This may include learning skills passed between generations like crafts or creating handmade objects to sell, immersing themselves in manual labour so that they can provide sustenance for themselves and their families. Some families that have a choice between educating the male or female in financially deprived families may invest in the male to attain educational qualifications while the female is persuaded to get married (Somani, Can We Really Attain Gender Equality in Education?, 2022). Motivation to continue studying is a key element in continuing higher education and seeking to re-engage. Student motivation is vital towards their personal success, amalgamated with appropriate teaching pedagogies provided by educators, access to learning materials and conducive learning environments.

CONCLUSION:

The need to re-skill and upskill has been a dominant factor for students to adapt to a life post-pandemic ensuring a sustainable future and improve the quality of life for societies globally (Li, 2022). To facilitate student re-engagement, it is necessary for both students and educational institutions to work together to participate within the process of re-engagement. Student motivation towards personal development and attaining educational goals through achieving their learning outcomes. Simultaneously, higher educational institutions aim to improve their performance rates and reputation to attract more students to re-engage in education.

RECOMMENDATIONS:

Educators can incorporate the use of technology within their teaching pedagogies so that artificial intelligence and various learning analytics can be utilised for re-engagement purposes. Through this, students will be captivated by the array of available courses and the combination of various learning tools, learning platforms and different devices. Provisions must be made for students belonging to lower socio-economic backgrounds. If remote learning or blended learning is a medium through which a student desires to continue education due to flexible working hours. Appropriate technology should be provided, and adequate provisions made for students requiring financial assistance to obtain technology for higher education. For complete student re-engagement to learning



in the new normal it is vital that collaborate between students, educators and educational institutions occurs. It is also important for governmental and non-governmental organisations to help with financial assistance because well-educated individuals constitute towards a learned society through which solutions to challenges can be met in the new normal world.

REFERENCES

1. Edu, H. (2021). *Best Practices: Online Pedagogy*. Massachusetts: Harvard College.
2. Grech, V. (2022). Publish or perish, information overload, and journal impact factors - A conflicting tripod of forces. *Saudi journal of anaesthesia*, 204–207.
3. Greener, S. (2022). The tensions of student engagement with technology. *Interactive Learning Environments*, 397-399.
4. Greener, S. (2022). The tensions of student engagement with technology. *Interactive Learning Environments*, 397-399.
5. Lancet. (2022). The cost of living: an avoidable public health crisis. *The Lancet Public Health*.
6. Li, L. (2022). Reskilling and Upskilling the Future-ready Workforce for Industry 4.0 and Beyond. *Information Systems Frontiers*.
7. Schnitzler, K., Holzberger, D., & Seidel, T. (2021). All better than being disengaged: Student engagement patterns and their relations to academic self-concept and achievement. *European Journal of Psychology of Education*, 627–652.
8. Somani, P. (2020). EFFECT OF THE COVID-19 PANDEMIC ON COMMUNICATION. *LangLit*, 1-14.
9. Somani, P. (2021). E-learning in Tomorrow's Age. *ARICBEST* (pp. 3-10). Oxford: London Institute of Skills Development.
10. Somani, P. (2021). FROM FACE-TO-FACE TO REMOTE LEARNING: EFFECT ON STUDENTS. . *International Conference of Education, Research and Innovation* (pp. 10491-10498). Seville (Spain): ICERI 2021.
11. Somani, P. (2021). Information Technology Challenges Faced during the Covid-19 Pandemic in Higher Education. *International Journal of Latest Research in Engineering and Technology*, 106.
12. Somani, P. (2021). PAVING A PATHWAY TO A 'NEW NORMAL' THROUGH EDUCATION. *International Conference on Research in Education and Science*. Antalya: ICRES 2021.
13. Somani, P. (2021). The Role of Education During and After COVID-19. . . *The Journal of Social Sciences Studies and Research*, 34-40.
14. Somani, P. (2021). UNDERSTANDING THE CONCEPT OF MOTIVATION AND LIFE SKILLS THROUGH LITERATURE. In M. R. Rajwade, D. M. Nerkar, S. R. Kosambi, & S. S. Waghmare, *The Reflections of Pandemics on Literature, Culture and Society* (pp. 10-20). Mauritius: LAP.
15. Somani, P. (2022). Can We Really Attain Gender Equality in Education? *Journal of Humanities And Social Science*, 15-22.
16. Somani, P. (2022). Can We Really Attain Gender Equality in Education?. . *Journal of Humanities And Social Science*, 15-22.
17. TOL. (2022). *Cost-of-living and lasting effects of COVID-19 are deteriorating Londoners' living standards, new report shows*. London: Trust of London.



Learning style Strategies: A concept to increase learning effectiveness, achievement and success

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Abstract: *This review identifies and classifies different modes and strategies of learning style for effective pedagogy. Many reviews argued about the gap between the current teaching -learning strategies and the educational goals introduced by the policymakers, practitioner, and educationist whereas some are discussed about several types of learning styles. Effective strategies vary with educational experiences, it increases with new and relevant pedagogical concepts and size of the classroom and its diversity. Awareness about the learning style can measure the potential of the learners and can help in teaching to maximize this learning potential in the right direction. Learning habit develops with the experiences (cumulative learning) and promotes deep thinking. It starts with the contact of individuals with their surrounding (environment). In the first stage, a child is dependent on us and feels excited when he gets new knowledge but gradually his emotions and cognitive ability work. There are two kind of emotions: one is positive leaning, which is full of potential for the production of knowledge and desire and the other is negative learning, which is stolid that offer resistance. In one review descriptors classify a model of three inputs and outcomes i.e. skill, will and thrill as well as three phases of learning – surface, deep and transfer. Transfer of learning can be classified in many ways eg- low and high transfer, successful transfer etc. Learning is a very complicated variable which is being effected by multiple factors. It is a characteristics of cognitive, affective and psychological factor. This review tried to explain many strata regarding learning.*

Key Words: *learning style, cognitive ability, surface, skills, potential.*

INTRODUCTION:

The term learning styles often refers to the view that diverse people learn information in different ways (Pashler H. et al 2009; Sternberg 1994; Reid 1995). With the technology taking over and globalization, learning style is also changing rapidly, a significant change that is rapid increase of skill based and job guaranteed education, short duration courses, credit based and flexible education. Now it is important to discuss about the role of education. Education role is to incorporate application of the knowledge to enhance personality i.e. Organize themselves, best performance in critical situations, enlightenment and get success in life. Present situation of teaching learning environment need to improve their administrative and leadership quality for implementing effective and quality education.

It has been a large debate that how youth can be a demography dividend. The educational policies made by the country primarily based on the learner needs. It is a big challenge that how the diverse student's gets maximum benefits in the classroom environment. Diverse society give pressure to the schools to prepare students to live pragmatically and give emphasis the role of schools to promote education in application of the knowledge to enhance personality (John AC H.& Gregory M D 2016; Romanelli F.et al 2009). Learning style refers to the unique ways to gather knowledge and skills. In recent decades, the concept of learning styles has progressively gained influence (Cuevas, 2016) and from the last few decades many western system of education give emphasis on improvement of academic achievement (John AC H.& Gregory M D 2016). There is no doubt that there is a relationship between learning style and the academic achievement. National science foundation (NSF) introduced



STEM acronym in 2001 which full form is science, technology, engineering and mathematics. The concept STEM is to integrate disciplines in the curriculum to increase employability and understanding in education system. Implications of STEM to enhance technology and scientific literacy. Educators lacked in-depth knowledge of STEM careers, and, as a consequence, they were not prepared to guide students to those fields. Now the question is – is it possible to achieve success in STEM without knowing learning style strategies? It is important to know the learning flexibility of the students with different subjects and time rather follow the tradition teaching - learning system. With the time the education system continuously busy to know the way about learning and try to get the answer how to blend learning more interestingly, effectively, and efficiently.

PROCESS OF LEARNING:

John AC H.& Gregory M D 2016, in “Learning strategies: a synthesis and conceptual model” reviewed the literature and investigated three inputs and outputs during learning. Three phases of learning process i.e. **surface, deep and transfer**. The surface and deep learning refers to acquisition and consolidation phase. Acquisition means starting stage of learning whereas consolidation is related with competitive environment. Transfer is a dynamic process. There are many peculiarity relating to transfers- Successful transfer, near and far transfer (Barnett, S. M. & Ceci, S. J.2002), low and high transfer (Salomon, G. & Perkins, D. N., 1989), positive and negative transfer (Osgood, C. E. 1949), problem solving transfer (Mayer, R. E.,2008), transfer to new situation. Again they focuses three inputs sources – skill, will and thrill. Skill means what the learner already know and this is a single influencing factor that influence learning (Asubel D.P. 1968). Will is a frame or temperament of mind that reflects on new situations. Claxton (2013) defined four disposition i.e. emotional strength, cognitive capabilities, reflection and social sophistication. Thrill is Strategies that motivate the learner. There is a great segregation between mastery and performance. Mastery is high order cognitive strategies and learning outcomes whereas performance focus on outperforming others (Anderman, E. M. & Patrick, H.2012, Elliot, A. J. & Harackiewicz, J. M., 1996, Middleton, M. J. & Midgley, C.1997). The above concept is similar to piaget’s three fundamental processes of intellectual growth. In this theory intellectual growth involves assimilation, accommodation and equilibration. Accommodation refers to the existing structures or schemas change to accommodate to the new information. Assimilation refers to the part of the adaptation process (Millar P.H., 2011). When we go through new situations, our previous experiences guide us to incorporate new ideas. The third element is equilibration which is a balance between assimilation and accommodation. Indirectly personality influence learning through attitude and self-motivation that create learning strategies. Individual differences in learning is a prime topic in learning. In a wide range personality influence human behaviour (Heinström J. 2012). Bandura self-efficacy model give a concept that how student attitude facilitate or inhibit acquisition skills (Denise M. Montcalm 1999).

CONCEPTUALISATION:

The complexity of the academic performance starts from conceptualization (Lamas, H. 2015) and is a synonymous of the teaching and learning strategies. A narrow concept is academic performance mainly utilize at the time of admission in schools, colleges and in universities but in the broad concept academic performance referred to as a measure of the indicative of responsibilities (Pizarro, 1985), performance, mastery in concepts and expressive abilities, motivation, skills that organize the student personality etc. Sometimes academic performance is related to teaching methodology (Marti 2003) that increase learning effectiveness. Internationally highly qualified teachers are often considered that they play an effective role in good learning outcomes but little researches done in this field of relationship. IEA’s Trends in International mathematics and Science Study (TIMSS) collect datas about teachers potential in influencing learning outcomes (N. Burroughs et al.2019). PISA (acronym for Program for International Student Assessment) testes 15 year’s old competencies in mathematics, reading and science. They investigated in Peru 2012 that the competencies of the students are very low in all three categories. Many researcher were not supported PISA report and said the complexity of human learning cannot be measured by PISA test. School failure cannot be improved by frequent exam pattern.



Socio-culture factor that effect on learning:

Many theories worked on impact of socio-culture status and learning. It is also investigated that there is a difference between learning style of Indian and Non- Indian students but the difference is not consistent which support learning style is not unique but it is enough to take attraction to the psychologists (More, A. J. 1989). The technological changes influenced learning style and advancement is improving day by day, it is important to acquire change of style as per need by the teachers for effective teaching. In one article, McLeod, S. A. (2007) explained Socio-cultural theory of Lev Vygotsky comprised of concept of culture specific learning, private speech and Zone of proximal development (ZPD). This theory suggests that social interaction leads to continuous step-by-step changes in children's thought and behavior that can vary greatly from culture to culture (Woolfolk, 1998). He strongly put emphasis on community role that play an important part in making meaning. Language is also important in shaping thought and it is important to provide opportunity to children to learn with the skilled teacher and peer groups. This theory give emphasis on environmental role during learning, memorizing pattern is a biological factor that determine with the culture. Zone of proximal development is a concept that explain about learning will be independent or with guidance and permitting the children to develop their own higher mental functions or skills (Vygotsky 1978). A reciprocal teaching improve learning, here both teacher and students collaborate in learning situation and practicing four skills- summarizing, questioning, clarifying and predicting. In collaborative learning more advanced peer helps less advanced groups (ZPD). Vygotsky cognitive development theory which is widely accepted by the psychologist stated that cognitive capabilities guided and constructed by the society. Learning is a social process and childhood and society deals with the relationship between them. He stress the fundamental role of society and their contribution in the cognitive development of the child in "making meaning" ie. socio culture approach to cognitive development (Vygotsky 1978). In this theory ZPD (zone of proximal development) is explained in three stages which is denoted in series of overlapping circle.

- Task the student do without support- In this category those learner are included which can completed the task without any help by the skilled person.
- Task the learner do with support- In this category those learner are included which can completed the task through the help.
- Task the learner cannot do with assistance- Very challenging task that cannot be performed because of beyond their skill level by the learner even with the instructor's help.

Instructional scaffolding is a methodology that help a student to learn new things. It involves student are guided by more knowledgeable others (MKO) to improve learner abilities.

Valid source of knowledge:

Indian philosophy do not support the concept of knowledge as an intellectual exercise but to cultivate love for knowledge. One of the branches of Indian philosophy i.e. Nyaya Darshan of Gautama (550 B.C.) deals valid source of knowledge (Pramana). There are four independent pramanas- perception (pratyaksha), inference (anumana), comparison (upmana) and verbal testimony (shabda). Knowledge is of subjective and objective. Subjective knowledge means different people have different opinion on a particular fact and if mass will accept the particular views then the knowledge will be treated as objective.

TYPES OF LEARNING STYLE:

Kolb (1985) proposed a model to measure learning style in 4 stage cyclic structure that start with concrete experience and reached to the level of active experimentation (Table-1). Knowledge is based on Experiences (*Experiential learning*) and explained six proposition

- Learning is considered as a process, not in terms of consequences.
- All learning is re-learning
- Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world.
- Learning is a universal process of adaptation to the world



- Learning results from synergetic transactions between the person and the environment
- Learning is the process of creating knowledge

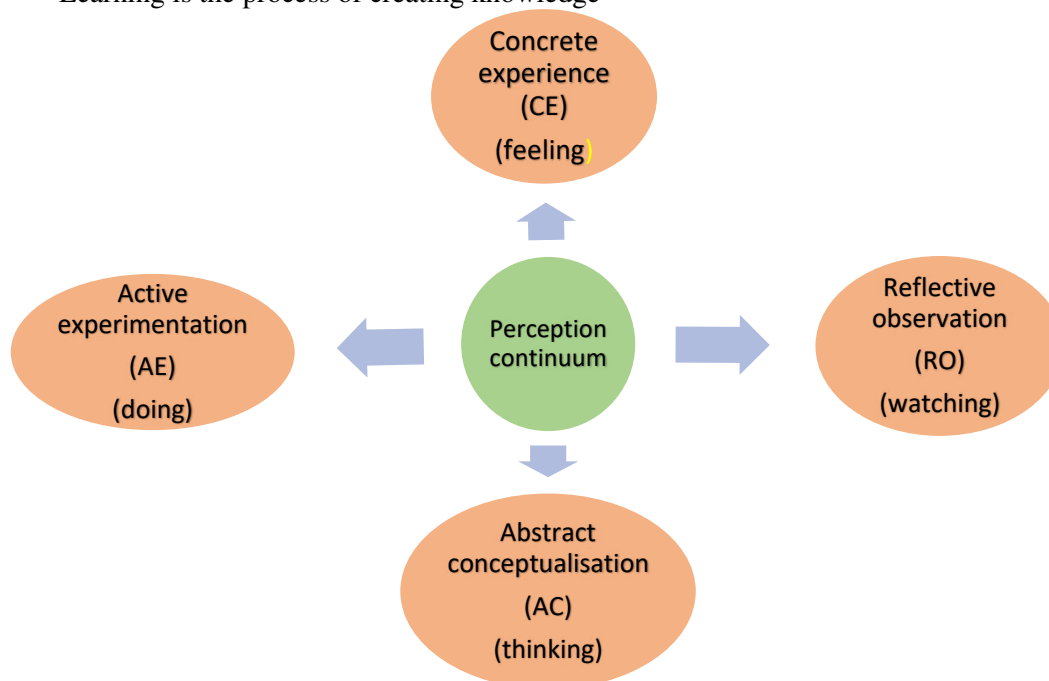


Chart -1 The Experiential Learning Cycle (Kolb)

Learning arises from creating the tension among four learning modes- CE (experiencing), RO (reflecting), AC (thinking) and AE (acting). James Zull a biologist and founding director of CWRU's University Center for Innovation in Teaching and Education (UCITE) sees a link between ELT and neuroscience research, suggesting that this process of experiential learning is related to the process of brain functioning (Zull 2002). Learning style is a dynamic trait that depends on person and their environment. Problem solving learning skills refers to become more efficient and effective when new problem comes and person might be learn them. Problems can be categorized in general and specific form and we should examine the students either they are general problem solver or specific problem solver (Leonard L.B.1983). Reitman (1965) stated that one of the important characteristics of goal and solution is how it is defined ie. clarity of the statement, is the given statement is well defined or ill defined? Geeno in 1978 has proposed a typology of problem- 1. problem of inducing structure 2. Transformation and 3. Problem of structure and transformation.

Dr. John Warner (2002) designed a self-scoring Problem-Solving and Decision-Making assessment instrument to help individuals understand more about their skills and abilities in this critical area. The seven competencies that contribute to good problem-solving and decision making are looked at separately in order to more accurately gauge the individual's overall profile. seven competencies are identified by him are : Critical Thinking, Data Gathering and Processing, Selecting Tools, Lateral Conceptualization, Weighing Alternatives, Risk Assessment and Perception and Judgment.

J.F.M. Koppenjan and E.H. Klijn (2004), society usually faces the challenges in daily life in the form of tasks and problems and their responsibility is to deal these challenges perfectly and systematically. Government and civil society increasingly faced long standing controversies and increase confusions due to knowledge conflicts. The complexity of these issues needs arena of interaction because they were not able to tackle these problems themselves. It means for the best performance to identification of the problem and its solution prefer co-operative and collaborative learning (Marin and Mayntz, 1991; Rhodes and Marsch, 1992; Thompson et al., 1991; Kickert et al., 1997).

McLeod S. 2017 in his article developmental psychology explained developmental psychology is a scientific approach and focus how behavior and thinking changes during lifespan. Changes are of



two types – normative development (typical development) and idiographic development (various individual pattern of development). Development affected by -continuity and discontinuity & nature and nurture.

Freund, Lisa S. 1990, “Maternal Regulations of Children’s Problem Solving Behaviour and Its Impact On Children’s Performance”, *Child development 1990*, focus on social interaction theory of cognitive development and self -regulating. In this study he put the effectiveness of mother interaction with the child and the ability of child in problem solving performance activity. Child performance was related to: 1) variation in maternal regulation of the child and 2) degree of specificity of maternal verbal content. This theory explain cognitive self - regulation are affected by social interaction between the young child and their parents and more competent people (Vygotsky 1978; Wertsch, Minick and Arns1984;Wertsch and Rogoff1984; Wood 1980).

RESULTS:

Factors that influence learning (Table- 2)

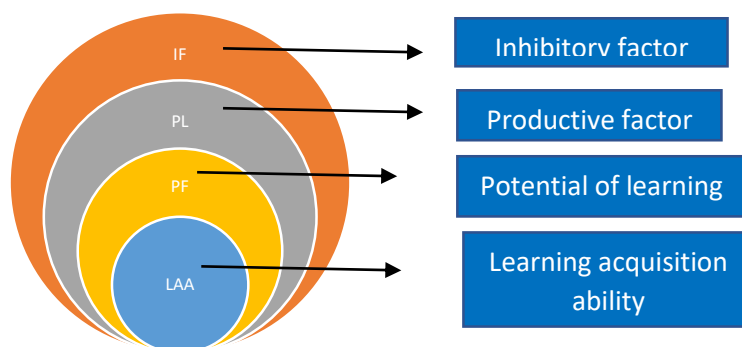


Chart-2: Factors that influence learning

LAA (Learning acquisition ability) : Learning ability is already present in a child which help humans to learn. Ability of acquisition amount will be different and affected by their genetic and environmental condition.

PL (Potential of learning) : Potential of learning depends on integration of specific skills.

PF (Productive factor) : In the productive factor learning become dynamic. Here learner complete the task with zeal.

IF (Inhibitory factor) : Here a negative force apply to the students that stop learning of that particular situation. It may be due to unfavorable environment in the learning situation, malnutrition, socio economic background etc.

In both cases (PF & IF) forces apply in respective side (productive and inhibitory) and exercises incorporated this in our behavior for many situations.

DL (dependent learning) and IL (Independent learning): people learning has two forms either they learn in dependent form or in independent form. Dependent learning can be seen in an initial stage but gradually they apply their own cognition and become independent.



Level of Learning (Table-3)

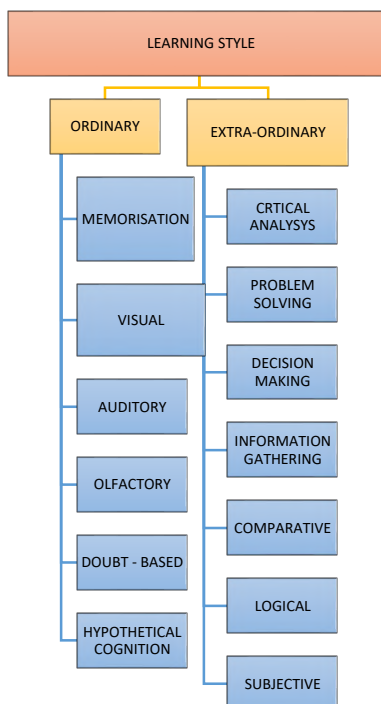


Table- 3 Distinction of Learning style

- Ordinary Learning – In this section learning is through sense organ only like-reading, writing, listening, smelling, memorization, low order transformation, weak reasoning, rote learning of scientific knowledge.
- Extra ordinary learning- In this level through experiences integration of skills work like- critical analysis, assemble relevant data’s, categories information, systematic thinking about problems, recognize pattern of the problem, high order transformation, take initiative in major decisions, case study etc.

Again it can be categorized into following level- Vygotsky also support dependent and independent learning. ZPD and scaffolding are two concepts that help learner to improve their abilities. On the basis of social learning habit learning can be classified into- Dependent learning, partial dependent and partial independent learning and independent learning (Table-4).

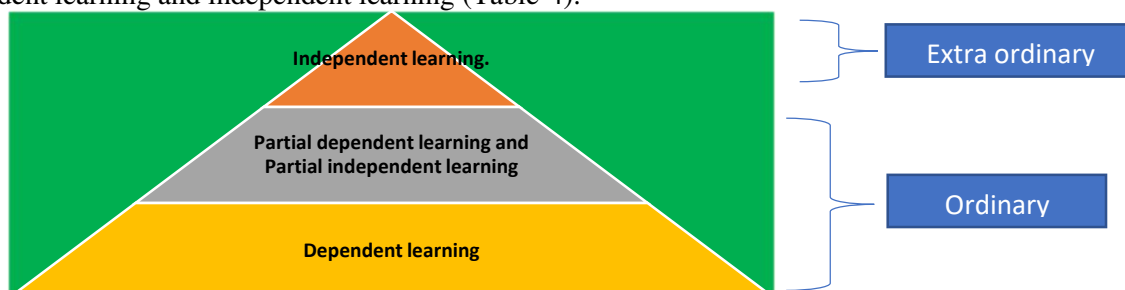


Table-4 Level of Learning through the impact of society based learning

At primary level child learning is completely dependent they accept all the information which is given by their near one and cannot take any decisions independently. But gradually a child learning changed into next level of learning. Here learning can be influenced with environmental condition it means if they are in contact with high learning personality then they carry some proportion of such



character means social, physical, Psychological and pedagogical context reflects learning. Vygotsky theory explain the fundamental role of social instruction in the development of cognition (Vygotsky 1978). In the second step child are partial dependent and partial independent. With the social contact they improve their learning style and become independent but two kind of emotions work- one which is full of potential for the production of knowledge and desire and the other which is stolid that offer resistance. The stolid emotions can be reducing with the motivation. Learning is continuous and cumulative process and biological changes play a major role in behavioral changes (Cognitive , affective, psychomotor and emotional). In learning process there is degree of learning with the experiences and it is related to their cognitive, affective and psychomotor style of learning. Learning always work with environment. School should improve the learning pattern which is mentioned in the above results. For primary section students we need to improve low learning, moderate learning improve student's performance with steps and it should start from secondary education and after that high learning should start. Low learning cannot be stop when we reach to new step and should include into the next step with new pattern. Again pattern will introduce in next level means all level are not independent whereas those are interconnected.

CONCLUSION:

Learning cannot be measured by academic outcomes but by the process that is used by the students. There is no boundary for learning strategy it may be change with the new situation and need. In this technological era students are engaged in collecting the information from different sources but without authenticity it is dangerous to incorporate in their mind. So, in learning strategies to check the authenticity of the information with critical analysis and to check the relevancy with the topic should have connectivity.

REFERENCES:

1. Anderman E M & Patrick H, 2012; in Handbook of Research on Student Engagement, 173–191 (Springer, USA,).
2. Ausubel, D. P., Novak, J. D., & Hanesian, H. 1968; Educational psychology: A cognitive view, Vol. 6. New York: holt, rinehart and Winston.
3. Barnett, S M & Ceci, S J, 2002; When and where do we apply what we learn? A taxonomy for far transfer. Psychol. Bull. 128, 612–637.
4. Claxton, G., 2013; What's the Point of School? Rediscovering the Heart of Education, One world Publications, <https://www.perlego.com/book/950149/whats-the-point-of-school-pdf>
5. Cuevas, J, 2016; An analysis of current evidence supporting two alternate learning models: Learning styles and dual coding. Journal of Education Sciences & Technology, 6(68), 1-13.
6. Denise M. Montcalm PhD, MSW (1999) Applying Bandura's Theory of Self-Efficacy to the Teaching of Research, Journal of Teaching in Social Work, 19:1-2, 93-107, DOI: [10.1300/J067v19n01_08](https://doi.org/10.1300/J067v19n01_08)
7. Elliot, A J & Harackiewicz, J M, 1996; Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. J. Personal. Soc. Psychol. 70, 461–475.
8. Freund, Lisa S, 1990; “Maternal Regulations Of Children’s Problem Solving Behaviour and Its Impact On Children’s Performance”, *Child development*, vol.61(1), pg 113-126
9. Heinström J. (2012) Personality Effects on Learning. In: Seel N.M. (eds) Encyclopedia of the Sciences of Learning. Springer, Boston, MA. https://doi.org/10.1007/978-1-4419-1428-6_735
10. John A C H.& Gregory M D, 2016; Learning strategies: A synthesis and conceptual model, npj Science of Learning 1, 16013; doi:10.1038/npjscilearn.2016.13
11. John Warner 2002; Problem solving and decision making profile, HRD Press, Inc., ISBN: 0-87425-684-4
12. Lamas H, 2015; School Performance. Propósitos y Representaciones, ERIC, 3(1), 313-386. doi: <http://dx.doi.org/10.20511/pyr2015.v3n1.74>
13. Leonard L.B.1983; Review of problem solving skills, Educational Service Testing, Princeton, New Jersey.



14. Martí E, 2003; Representar el mundo externamente. La construcción infantil de los sistemas externos de representación. Madrid: Antonio Machado.
15. Mayer, R E, 2008; Applying the science of learning: Evidence-based principles for the design of multimedia instruction. *Am. Psychol.* 63, 760–769.
16. Mcleod S, 2017; Developmental psychology, Simply Psychology. www.simplypsychology.org/developmental-psychology.html
17. McLeod, S. A. 2007; Lev Vygotsky. <http://www.simplypsychology.org/vygotsky.html>
18. Middleton, M J & Midgley C. 1997; Avoiding the demonstration of lack of ability: An underexplored aspect of goal theory. *J. Educ. Psychol.* 89, 710.
19. Miller, PH. Piaget's Theory: Past, Present, and Future. In: Goswami U, ed. *The Wiley-Blackwell Handbook of Childhood Cognitive Development*. John Wiley & Sons; 2011.
20. More, A. J. (1989). Native Indian Learning Styles: A Review for Researchers and Teachers. *Journal of American Indian Education*, 15–28. <http://www.jstor.org/stable/44466404>
21. N. Burroughs, Gardner J., Lee Y., Guo S., Touitou I., Jansen K., Schimdt W.(2019). Teachers for excellence and equity, IEA Research for Education, A Series of In-depth Analyses Based on Data of the International Association for the Evaluation of Educational Achievement (IEA), Vol 6, <http://www.springer.com/series/14293>
22. Osgood, C E, 1949; The similarity paradox in Hum. Learn.: A resolution. *Psychol. Rev.* 56, 132–143.
23. Pashler, H., McDaniel, M., Rohrer, D., & Bjork, R.,2008; Learning Styles: Concepts and Evidence. *Psychological Science in the Public Interest*, 9(3), 105–119. <https://doi.org/10.1111/j.1539-6053.2009.01038.x>
24. Pizarro R, 1985; Rasgos y actitudes del profesor efectivo (Tesis de Maestría). Pontificia Universidad Católica de Chile.
25. Reid J.M. (1995), Learning style in the ESL/EFL classroom, Florence, KY, ERIC, Heinle & Heinle publisher, ISBN: ISBN-0-8384-6158-1
26. Reitman, W R, 1965; Cognition and thought: An information processing approach. New York: Wiley.
27. Romanelli, F., Bird, E., & Ryan, M. 2009; Learning styles: a review of theory, application, and best practices. *American journal of pharmaceutical education*, 73(1), 9. <https://doi.org/10.5688/aj730109>
28. Salomon G & Perkins D N, 1989; Rocky roads to transfer: rethinking mechanism of a neglected phenomenon. *Educ. Psychol.* 24, 113–142.
29. Sternberg R. J, 1994; Allowing for thinking styles, *Educational Leadership* 52(3):36-40. [Google Scholar](https://scholar.google.com/citations?user=...)
30. Vygotsky, L S, 1978; *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
31. Wertsch, J, Minick, N, & Ams, F. 1984; The creation of context in joint problem solving. In B. Rogoff & J. Lave (Eds.), *Everyday cognition: Its development in social context* (pp. 151- 171). Cambridge, MA; Harvard University Press.
32. Wertsch, J., 8E Rogoff, B. (1984). Editor's notes. In B. Rogoff & J. Wertsch (Eds.), *Children's learning in the "zone of proximal development": New directions for child development research* (pp. 1-6). San Francisco: Jossey-Bass.
33. Wood, D. (1980). Teaching the young child—some relationships between social interaction, language, and thought. In D. Olson (Ed.), *Social foundation of language and cognition* (pp. 94-112). New York: Norton
34. Zull J, 2002; The art of changing the brain. Sterling VA: Stylus.



Role of Entrepreneurship in Global Environment

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Abstract : *In the competitive era, role of entrepreneur as become crucial not only in making enterprises innovative but also in development of the country. His importance prioritised in the economic growth as well in global level too. The present study focusses on the importance of entrepreneurship in this competitive environment and on crucial role as an entrepreneur in the development of the country. It also stresses to explain about the support extended by the government towards the development of the entrepreneurs in India. In the present world, its highly risk oriented to become as a successful entrepreneur, the study shows the successful entrepreneurial journey, challenges met and their role played in the growth of the country. It also showcases the comparison about their role in national level to that of global level.*

Key Words: *Entrepreneur, Innovative, competitive, challenges, Economic growth.*

INTRODUCTION:

The Entrepreneur is a person one who always looks for creative ideas to put them into effect to foster economic growth and development. His role is crucial in generating income for the country. He plays a vital role in economic development. Entrepreneurs serve as the catalysts in the process of industrialization and economic growth. Technical progress alone cannot lead to economic development, unless technological breakthroughs are put to economic use by entrepreneurs. Entrepreneurs locate and exploit opportunities. They convert the latent and idle resources like land, labour and capital into national income and wealth in the form of goods and services. They help increase Net National Product and Per Capita Income in the country.

ENTREPRENEUR AND HIS ROLE:

A change in the connotation of an entrepreneur from captain of Industry to an elusive character, where the entrepreneur is characterised as one who garners profits at the expense of others had distorted the concept of entrepreneurship. The concept of entrepreneurship has been revised by an economist, **Joseph Schumpeter**.

Schumpeter described entrepreneurship as a force in creative destruction, whereby established ways of doing things are distraught by the creation of new and better ways to get things done..

He further states the entrepreneur's function is to "reform or revolutionise the pattern of production by exploiting an invention or more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way, by opening up a new source of supply of materials or a new outlet for products Entrepreneurship, as defined, essentially consists in doing things that are not generally done in the ordinary course of business routine".

Peter Drucker describes entrepreneurial role as one of gathering and using resources. But Drucker's view of entrepreneurship occurs when resources are redirected to progressive opportunities, not used to ensure administrative efficiency. This redirection of resources distinguishes the entrepreneurial role from that of the traditional management role. Some other definitions of entrepreneurs are given by the following authors.



Frank Young describes entrepreneur as a change agent. Noah Webster thinks entrepreneur is one who assumes the responsibility of the risk and management of business. Francis A. Walter observes that the true entrepreneur is one who is endowed with more than average capacities in the risk of organising and coordinating the various other factors of production. The concept of entrepreneurship is crucial in the economic development of the country. In entrepreneurship, the role of entrepreneur is pivotal in strengthening the growth of the country. Hence the roles are described as:

1. **Promotes Capital Formation:** By mobilizing the idle savings from the public, entrepreneur promote capital formation. In setting up the enterprise, they use own as well other sources.
2. **Creates Large-Scale Employment Opportunities:** With the setting up of enterprises, the Entrepreneur can create both small and large scale numerous job opportunities. In other way, the entrepreneur reduces the problem of unemployment.
3. **Promotes Balanced Regional Development:** To promote Regional developments in less developments and backward areas, the establishment of enterprises will support a lot.
4. **Wealth Creation and Distribution:** It stimulates equitable redistribution of wealth and income in the interest of the country to more people and geographic areas, thus giving benefit to larger sections of the society. Entrepreneurial activities also generate more activities and give a multiplier effect in the economy.
5. **Increasing Gross National Product and Per Capita Income:** In exploiting the employment opportunities, the development of innovative products will increase the GNP and Per-capita income of the country.
6. **Improvement in the Standard of Living:** Improvement in the innovations in turn will improve the growth of the country, thereby there is a better scope of improvising the standard of living
7. **Promotes Country's Export Trade:** as a part of entrepreneurial activities, it facilitates to increase the trade activities country wide.
8. **Facilitates Overall Development:** Entrepreneurs act as catalytic agent for change which results in chain reaction..

A good example of how this kind of community development can be promoted is Azim Hashim Premji, Chairman of Wipro Limited, who donated Rs. 27,514 crores for promoting education through the Azim Premji Foundation. This foundation works with more than 350,000 schools in eight states across India.

KEY FUNCTIONS AS AN ENTREPRENEUR:

The four functions of an entrepreneur are –

- **Innovation & creativity**
- **Risk taking**
- **Achievement**
- **organization & management and other functions.**

Role of Entrepreneurs in Economic Development:

Economic development essentially means a process of upward change whereby the real per capita income of a country increases over a period of time. Entrepreneur plays a vital role in economic development. Entrepreneurs serve as the catalysts in the process of industrialization and economic growth. Technical progress alone cannot lead to economic development, unless technological breakthroughs are put to economic use by entrepreneurs. It is the entrepreneur who organizes and puts to use capital, labour and technology. Accordingly, “development does not occur spontaneously as a natural consequence when economic conditions in some sense are right. A catalyst is needed and this requires entrepreneurial activity to a considerable extent, the diversity of activities that characterizes rich countries can be attributed to the supply of entrepreneurs. The entrepreneur is the key to the creation of new enterprises that energize the economy and rejuvenate the established enterprises that make up the economic structure.



Barriers:

- Lack of technical skills
- Lack of market knowledge
- Lack of business knowledge
- Time pressure and distractions
- Legal and bureaucratic constraints
- Patent inhibitions
- Political instability
- Non-cooperate attitude of banks and other institutes

TO FAVOUR THE ENTREPRENEURIAL ESTABLISHMENT, FEWER FACILITATING FACTORS PLAY A CRUCIAL ROLE. THE FACTORS LISTED ARE :

Economic Conditions:

Economic environment exercises the most direct and immediate influence on entrepreneurship. Capital, labour, raw materials and markets are the main economic factors.

- Capital:
- Labour:
- Raw Materials:
- Market:

Social Factors: Social environment in a country exercises a significant impact on the emergence of entrepreneurship.

The various sub factors are:

- Legitimacy of Entrepreneurship:
- Social Mobility:
- Marginality:

Psychological Factors:

(a) *Need Achievement:*

(b) *Withdrawal of Status Respect.*

Others:

Govt. Actions: The government by its actions or failure to act also does influence both the economic and non-economic factors for entrepreneurship. By creating basic facilities, utilities and services and by providing incentives and concessions, the government can provide the prospective entrepreneurs a facilitative socio-economic setting. Such conducive setting minimizes the risks which the entrepreneurs have to encounter. Various factors stated above for emergence of entrepreneurship are interlocking, mutually dependent and mutually reinforcing.

GOVERNMENT INITIATIVES IN THE DEVELOPMENT OF ENTREPRENEURSHIP:

A start-up is a firm established by one or more entrepreneurs with the purpose of creating a unique product/service, with early money pooled in by the founders/family/friends. Various start-ups in finance, education, pharma, e-commerce and related fields have sprung up in recent years and contributed tremendously to the Indian economy by providing millions of jobs to educated youth across the country. Recognising the crucial importance of these start-ups in boosting the economy of the country, the Government of India has come up with various initiatives to support start-ups in India. Let us have a look at the top 10 best Government start-up support schemes.



Top 10 Government Schemes that provide Financial Support to Start-ups in India

Start-up India:

Launched by Prime Minister Narendra Modi in 2016, the scheme falls under the purview of the Department of Industrial Policy and Promotion. Aims to support Indian entrepreneurs in creating 10 lakh mobile app start-ups. The flagship programme under Start-up India is the **MUDRA loan** scheme (Pradhan Mantri Mudra Yojana). This programme offers microfinance loans at low interest to emerging entrepreneurs from low socioeconomic strata. Funding of Rs. 20,000 crores have been allotted for this scheme.

ATAL Innovation Mission:

The government scheme, set up by Niti Aayog, was created to promote an innovative culture and the development of the spirit of entrepreneurship across India. The scheme aims to create cooperation between state, central, and local innovation schemes and implement entrepreneurship spirit from schools to corporates by developing world-class Atal Incubators (AICs). This would help to address commercial and social entrepreneurship ventures in India.

e-Biz Portal:

Founded in 2013, this is the first online platform that allows government-to-business (G2B) communication. e-Biz's portal primary purpose was to create an entrepreneurship friendly atmosphere in the country. The platform has been developed by Infosys and has launched 29 services across 5 states in India. It is a single communication online forum for Indian businesspeople and investors for conducting transactions, clearances, and activities related to both of them.

Support for International Patent Protection in Electronics & Information Technology (SIP-EIT)

The SIP-EIT scheme was launched by the Ministry of Electronics and Information Technology to provide financial funding for MSMEs and Technology Startups to encourage innovation, acknowledge international patent rights and optimise the growth of the sector in the country. Businesses that want to go global need to apply for intellectual property rights as innovations are at risk of being stolen or misappropriated. Hence, the government has executed various protection measures through the SIP-EIT scheme.

Multiplier Grants Scheme (MGS):

MGS was launched under the Department of Electronics and Information Technology (DeitY) for promoting integrated research and development (R&D) between industry and educational institutions for developing products and packages. Under this scheme, the government provides financial assistance at 2x times the amount contributed by the industry, provided the industry supports R&D of products that get marketed at the institutional level.

MGS encourages and hastens the development of indigenous products/services. Government grants are available up to Rs. 2 crores per project with project tenure limited to around 2 years. For industrial collaborations, the cost is limited to Rs. 4 crores with a maximum tenure of 3 years.

Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE):

The government established CGTMSE for providing collateral-free business loans to MSME and startups. The scheme allows business units to get collateral-free loans at a low rate of interest up to a maximum of Rs. 100 lakhs under a tie-up with SIDBI (Small Industries Development Bank of India) for promoting new businesses and relaunching existing ones. The loan is provided mainly for manufacturing companies, either as working capital or term loan.

Software Technology Park (STP):

STP scheme has been established as a 100% export-oriented programme for promoting and exporting computer software and professional services through communication networks or physical media. The scheme focuses solely on computer software. 100% Export Oriented Units (EOU) and Export Processing Zones (EPZ) concepts for forming Science Parks/Technology Parks are covered under this scheme.

Loan For Rooftop Solar Pv Power Projects:

The scheme is committed to the development of 40,000 MWp of Grid-Interactive Rooftop Solar PV Plants over the next five years for increasing reliance on non-conventional energy sources. Such



rooftop solar PV plants, with capacities between 1 kW - 500 kW are expected to be installed in various sectors like residential, commercial, and the like across India. Under the scheme, a subsidy of 15% is provided to organisations or individual enterprises for such plants.

NewGen Innovation and Entrepreneurship Development Centre (NewGen IEDC):

The NewGen IEDC scheme has been launched by the National Science and Technology Entrepreneurship Development Board. The scheme aims to instil a spirit of creativity and entrepreneurship among the youth in India through various methods like counselling, coaching, and assistance. There is also provision for supporting and encouraging entrepreneurship.

Dairy Processing and Infrastructure Development Fund (DIDF):

DIDF is a fund constituted under NABARD in 2017, wherein milk unions, multi-state milk cooperatives, state dairy federations, milk-producing enterprises, and NDDDB subsidiaries project's eligibility criteria can avail a loan. The loan component consists of 80% with the borrower to pay the remaining 20% payment. Interest is charged at 6.5 % p.a. and loan tenure is decided based on the amount of money borrowed. The loan repayment is guaranteed by the respective state government, and in case of borrower default, the state government steps in to contribute the defaulted portion. Thus, these key initiatives by the government are aimed at increasing the number of individuals participating in entrepreneurship in India and help boost the growth of the Indian start-up ecosystem. If you're planning to establish a start-up, keep in mind that the government of India provides various schemes to aid and help in the growth of your establishment. Being aware of the various schemes helps you choose the right ones at the right time and make your entrepreneurship dreams come true.

Successful Entrepreneurial journey of An Entrepreneur:

A CHEESE PRODUCER PURSUES A NEW MARKET THROUGH E-COMMERCE



Mohamed Bakkar, an entrepreneur running a business called Besma (“joyful” in Arabic), fled to Turkey in 2016. Bakkar had been an electrical engineer in Syria, but he was unable to find a job in his field upon arrival in Turkey due to the Arabic-Turkish language barrier. He decided to pursue a cheese business instead, making the cheese the same way his mother did when he was a child. He produced the cheese in bulk and prepared it for distribution to local Syrian-owned dairy stores. After about five years, Bakkar had built a customer base of 10 Syrian-owned stores in Istanbul, but the Syrian-style cheese market had become increasingly crowded. He needed a strategic plan for growth, and was considering selling directly to individual customers and creating an e-commerce website to expand his reach to include Turks. In working with this case study, entrepreneurs will build an understanding of the role of e-commerce and social media marketing in expanding a business' customer base and reaching a new target market.



CONCLUSION:

Thus, from the above explanation, we can understand the role of entrepreneur in the development of country. In every entrepreneurial successful journey government is also keeping its helping hand to build the innovation and thereby supporting for the growth of the country too. So with entrepreneurial innovation it not only supports for the growth of the country but also with trading activities, we can see his role in global level.

REFERENCES:

1. <https://www.economicdiscussion.net/entrepreneurs/role-of-entrepreneurs-in-economic-development/31496>
2. <https://www.mbaknol.com/general-business-articles/role-of-entrepreneurship-in-economic-development/>
3. <https://ibusinessmotivation.com/roles-of-entrepreneurship-in-economic-development/>
4. https://www.researchgate.net/publication/337143850_ROLE_OF_ENTREPRENUERSHIP_IN_INDIAN_ECONOMIC_DEVELOPMENT
5. <https://www.mbaknol.com/general-business-articles/role-of-entrepreneurship-in-economic-development/>
6. <https://www.managementnote.com/role-of-entrepreneurship-in-economic-development/>
7. https://serialsjournals.com/abstract/70398_ch_41_-_tontowi_gigih_2global_21_okt_16_ijaber.pdf
8. <https://www.igi-global.com/chapter/the-importance-of-entrepreneurship-in-global-business/179744>
9. https://www.researchgate.net/publication/344554753_Entrepreneurship_in_the_New_Global_Economy_The_Role_of_Innovation_in_Economic_Development
10. <https://shodhganga.inflibnet.ac.in/>



Photographing Power: An Analysis of Raghu Rai's “Indira Gandhi, 1969”

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Abstract: *We live in a world that has become increasingly visual. Anything and everything today, find representation in the form of a photograph and despite the increase in visuality, humankind is still in the want of visual literacy. Politics and politicians, just as other aspects of life and living, find themselves represented pictorially. This paper studies a photograph of Indira Gandhi's, in her cabinet, taken by Raghu Rai in 1969, when she was the Prime Minister of India. The photograph furnishes a narrative of the past, a narrative of power and becomes a testimony to the experience of the same power by its subjects. The paper gives a brief biography of the leader and shows how her rise to power and her ability to control things is visible in the photograph under study. The paper analyses the photograph and engages with it in a way as to understand the deeper meanings and connotations.*

Key Words: *Photojournalism, Indira Gandhi, Visual Culture, Raghu Rai, Politics.*

INTRODUCTION:

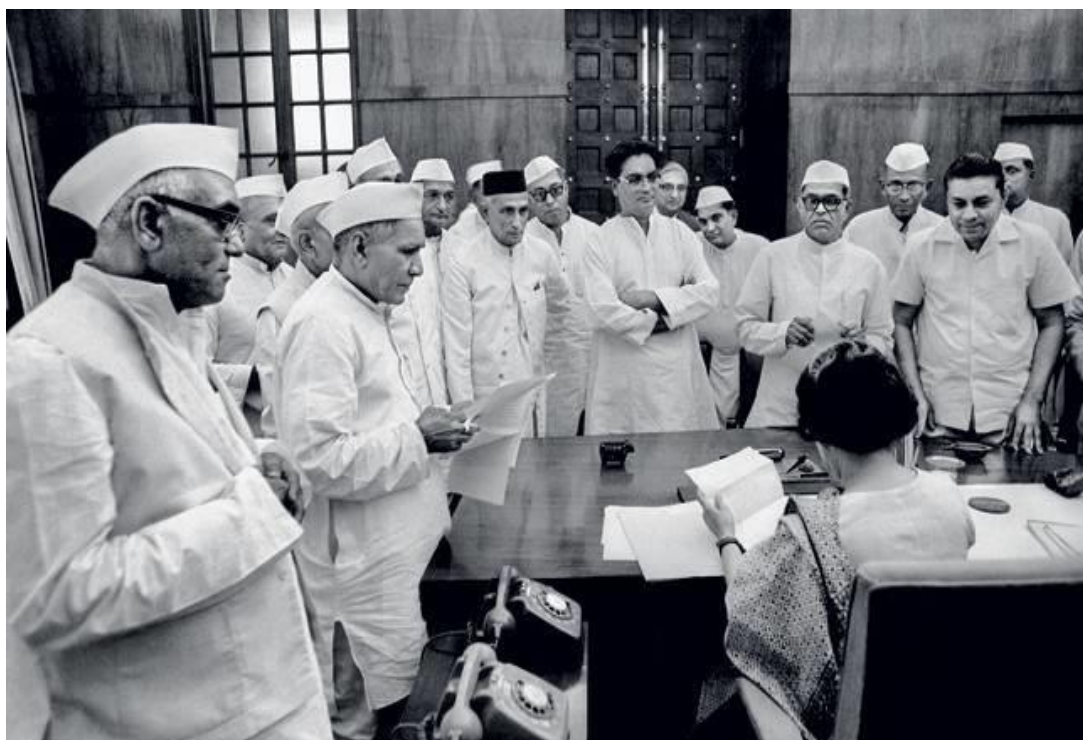
One of India's foremost photojournalists, Raghu Rai, has chronicled the history of entire country through photographs. Rai has worked with *The Statesman* (as the chief photographer), with *India Today* (as the director of photography) and *Magnum Photos* (as a photojournalist). “For the past 50 years, Raghu Rai has captured the entire gamut of life in India: from politics to industrial tragedies, from spiritual leaders to renowned musicians, artists and filmmakers, etc. The Magnum photographer shows no signs of slowing down” (Lakhani 1-2). His works have been published in almost all the privileged newspapers, journals and magazines of the world such as *GEO*, *New Yorker*, *The New York Times*, *Sunday Times*, *Newsweek*, *The Independent*, etc. He has exhibited his work in numerous exhibitions around the world and has published more than thirty photobooks. He has been awarded the *Padmashree* in 1972, *Officier des Arts et des Lettres* by French government and the *Lifetime Achievement Award* by Information and Broadcasting Ministry, India.

Rai has closely chronicled, along with other aspects of Indian culture and events, the terms of some of India's greatest prime ministers, especially of Indira Gandhi. He captured Indira Gandhi at multiple occasions in myriad forms and has published three books with the former prime minister's photographs namely *A Day in the life of Indira Gandhi* (1974), *Indira Gandhi* (published in collaboration with Pupul Jayakar) (1985) and *Indira Gandhi: A Living Legacy* (2004). Till date, the only female Prime Minister India has ever had, Indira Gandhi was the daughter of India's first Prime Minister Pandit Jawaharlal Nehru and his wife Kamala Nehru. She got married to Feroze Gandhi and the two had two children named Rajiv Gandhi and Sanjay Gandhi. As a strong leader of Congress, she succeeded Lal Bahadur Shastri and became India's third Prime Minister in 1966 and remained one till 1977. During these years, the woman who was criticized for not speaking in public without being nervous by her opponents and male colleagues, who called her “goongi gudiya, the dumb doll” (dubbed



so by Ram Manohar Lohia, a socialist leader) (Hellmann-Rajanayagam 32; Dutta 2) went on to become one of the most powerful leaders of the country. Sagarika Ghosh writes in an article, “She was imperious, she was shy; she was called a goongi gudiya but she became Ma Durga; she was the frail teenager who became India’s first political bahubali . . . She was the first personality cult of post-Independence Indian politics, India’s original High Command leader” (1-2).

During her tenure, she started many programs for the development of the nation such as anti-poverty (Garibi Hatao) programs, “campaigned against Privy Purse enjoyed by the erstwhile princely state rulers”, “nationalised 14 big banks in 1969” and took bold decisions such military confrontation of Pakistan in the Bangladesh Liberation War in 1971 (Dutta 4). After the tremendous victory of India over Pakistan in the war, she was hailed as “Durga of India” by A.B. Vajpayee and was portrayed as “Empress of India” by *The Economist* (Hellmann-Rajanayagam 40). As substantiated by Derfler, also, “a 1971 U.S. Gallup poll found her ‘the most admired person in the world’” (161). Prabhash K. Dutta writes in an article, “The success of 1971 war led to Indira Gandhi being referred to as the ‘only man in Cabinet’. The western press hailed Indira Gandhi as the Iron Lady of India” (4). In 1975 the Allahabad High Court on an electoral petition filed before it by Raj Narain on grounds of electoral misconduct and malpractices committed by Indira Gandhi in the 1971 Lok Sabha elections held her guilty and removed her from her seat in the lower house of Parliament. As a consequence of these developments, Indira Gandhi led government, through the President of India went on to declare a state of emergency in India based on Article 352 (1) of the Constitution, considered to be “her greatest blunder” (Hellmann-Rajanayagam 44). The state of emergency continued till 1977 when elections were held in March and Indira Gandhi lost her seat and Morarji Desai from the Janata Party became the Prime Minister. However, when 7th Lok Sabha Elections were held in 1980, Congress again came into power and Indira Gandhi again became the Prime Minister of India. During this tenure, her decision to order Indian army to enter the Golden Temple in order to oust Jarnail Singh Bhindranwale’s armed followers under the operation named *Operation Blue Star* cost her, her life. On 31st October, 1984, as she was walking towards the lawn of her residence, two of her own Sikh bodyguards assassinated her. The assassins Beant Singh and Satwant Singh together had fired thirty-bullets into her body in the space of twenty seconds (D’sa). Hellmann-Rajanayagam writes, “Her assassination made her into an instant martyr, to which the hounding after the Emergency has already contributed” (53). Raghu Rai recorded many important events of Indira Gandhi’s life and her tenures as Prime Minister. In the article titled “Making Portraits” published in *Hindustan Times*, Rai wrote that though he prefers taking photographs of ordinary people, he also enjoyed taking pictures of Indira Gandhi. Here is one of his most prominent photographs of the leader:



Rai, Raghu. "Indira Gandhi, 1969." *India Today*, 28 Oct. 2015, www.indiatoday.in/magazine/photo-feature/story/20151109-raghu-rais-people-820719-2015-10-28

Taken in 1969, the caption provided by Rai in his book reads "Indira in a Congress meeting" and the details given with the photograph read, "It was said of Indira Gandhi that she was 'the only man in her cabinet'. Here she is in a meeting, surrounded by MLAs from Gujarat who had come to her with a proposal" ("Picturing Time" 24). He further adds that R.K. Dhawan, Mrs. Gandhi's personal secretary is also waiting along with all the Congressmen "for the Big Boss to sanction papers" (24). The photograph reveals truth about Indian politics and about the strong personality that Indira Gandhi wielded. "Indira Gandhi was a formidable, complicated woman, an ambitious alpha-female" who was courageous and had the nerve to stand her opponents in the eye. This photograph, very eloquently displays the authority that she held and the strength with which she implemented her decisions. Rai narrates to Bawa the story of this picture:

There was nobody else in the Congress as strong-minded and as powerful as her. I was spending a day with Indira Gandhi. A delegation of Congressmen was visiting her in the Parliament House. All these senior Congressmen were standing and waiting for her while she signed some papers. I took a picture from over her shoulder. It showed the power of a woman prime minister. (4)

The time when this photograph was taken, Indira Gandhi was emerging as "a confident and assertive leader enjoying mass support" and "the economy, too, was beginning to prosper" as the agrarian reforms initiated by her government were paying off (Derfler 157). Citing Shashi Tharoor from *The Elephant, The Tiger, and the Cellphone: India, the Emerging 21st-Century Power* as her source, Derfler quotes one of the statements given by Indira Gandhi, "My father was a saint who strayed into politics. I am a tough politician". This was indeed true for Tharoor writes in his book, that some former ministers told him how Indira would hardly respect her colleagues and would grant appointments with



difficulty. “But they all yielded to her centralization of authority: she controlled the agenda; would change it at will; postpone meetings with the cabinet or bypass it; and when it met, steamroll a consensus. Actual meetings were often a formality” (Derfler 163). This photograph captures the very essence of who and how she was as a leader. One can observe that she is the only one privileged to sit while all other stand in front of her. Also, as she is perusing the document presented to her by MLAs from Gujarat, everyone is consciously glaring at her, perhaps to note her response. Much of what is known about her style of leadership comes across through this photograph quite lucidly.

One can observe in the composition, the elements, which make it an extraordinary specimen of historical account of Indian politics. The picture is monochromatic and hence there are no colours to distract the viewer from the expressions on the faces of congressmen and the intensity of the situation. Dressed in a sari as was her routine, Indira Gandhi's presence marks itself very strongly in the room even if it's only her hair and her back that we see from behind. Most of the space in the frame has been occupied and high contrasts in the photograph amplify the 'power distance' that this picture seems to mark. It is interesting to note how few men in the photograph have their hands either folded or joined together as if in appeal and the eagerness with which some others stand in front of the Prime Minister. Right in the center of the frame, on both sides behind the congressman with crossed arms, congressmen try to look at Indira Gandhi while she is reading the document, in anticipation of her response. The photograph evokes the “Interest-Excitement” affect (as espoused by Tomkins), as is evident by congressmen's eyes tracking and looking at Indira Gandhi. It almost seems that these leaders in their own rights, in the presence of Prime Minister, appear nervous. In the words of Derfler, “In both domestic and foreign affairs, Indira dominated, bypassing institutional mechanisms and according to one observer, ‘using men of ability almost as errand boys’¹” (165). She further cited the journalist Kuldip Nayar to assert the point, “there were no rules, no regulations, no precedents, no principles . . . all in the government waited at the end of the telephone line” (163).

Rai's photograph not only depicts a person's character at a deeper symbolic level but also attempts at revealing a person's inner self to the outer world. He writes in his book *People*, “The truth that lies beneath the public face is what makes a person interesting to me, and consequently makes for a compelling portrait”. Reflecting on photographing Indira Gandhi, he writes, “I liked taking pictures of Indira Gandhi early on in her career; later, as a result of growing security concerns and changes in her own personality, she became a bit distant and photographing her wasn't as much fun” (“Making Portraits” 6). He confesses to Kevin Wy Lee that he neither agreed with nor admired many things that Indira Gandhi was doing but nevertheless, he didn't let his personal judgment get in the way of recording the truth of the situation he was capturing. In telling words, Sagrika Ghose tries to define who Indira Gandhi was and her relationship with India:

Controversial, tempestuous, stylish and emotionally rich, with an abiding interest in India's arts, civilizational heritage, environment and wildlife, (she was the only Indian PM to be member of a bird watching society), Indira Gandhi is hardwired into the Indian DNA. Marked by extraordinary courage, she was a woman who called the only man in her government, the queen of the poor; she was the memsahib who died like a grimy soldier in battle, in politics she was India's James Bond in a khadi sari. (2).

Rai's photographs of Indira Gandhi are not only representative of the political milieu and the times but of the very personality that the leader carried. Some of his other powerful pictures of her include “Indira

¹ Derfler further cites Vinod Mehta's *The Sanjay Story: From Ancient Bhava to Amethi* (1978), Inder Malhotra's *Indira Gandhi: A Personal and Political Biography* (1991) and Katherine Frank's *Indira: The Life of Indira Gandhi* (2002) as her sources.



Gandhi in a huddle of Congressmen, 1967”, “Indira Gandhi in her office late at night, 1968”, “Indira Gandhi at a Congree session, 1966” and “Indira Gandhi, 1972”. The photograph that this paper particularly studied speaks volumes of her style of work and as such highlights the very essence of her tenure as the Prime Minister. Without featuring her face, or any of her frontal features or facial expressions, the photograph exudes the power that the lady commanded. Norman Hall, former Picture Editor, *The Time*, London praises Rai’s work thus, “It is my personal opinion that [Raghu Rai] has an individual way of seeing things and reproducing them as images ... which is unsurpassed by any photojournalist in the whole wide world. I appraise his work with the same respect that I reserve for that of Brannndt, Boubat or Cartier-Bresson, to name but a few of the masters.”

REFERENCES:

1. Defler, Leslie. *The Fall and Rise of Political Leaders: Olof Palme, Olusegun Obasanjo, and Indira Gandhi*. Palgrave Macmillan, 2011.
2. D’sa, Reynold. “Indira Gandhi’s assassination: Shocking story behind why Iron Lady’s trusted bodyguards turned assailants”. *The Free Press Journal*, 30 May 2019, <https://www.freepressjournal.in/cmcm/indira-gandhis-assassination-shocking-story-behind-why-iron-ladys-trusted-bodyguards-turned-assailants>.
3. Dutta, Prabhaskar K. “Indira Gandhi, a goongi gudiya who went on to become Iron Lady.” *India Today*, 19 Nov. 2017, www.indiatoday.in/india/story/indira-gandhi-a-goongi-gudiya-who-went-on-to-become-iron-lady-1089668-2017-11-19.
4. Ghose, Sagarika. “19th November 2017: 100 years of Indira Gandhi. She was the mother of every Indian supremo.” *The Times of India*, 18 Nov. 2017, timesofindia.indiatimes.com/blogs/bloody-mary/19th-november-2017-100-years-of-indira-gandhi-she-was-the-mother-of-every-indian-supremo/
5. Hall, Norman. Cover endorsement. *Picturing Time: The Greatest Photographs of Raghu Rai* by Raghu Rai, Aleph Book Company, 2015.
6. Hellman-Rajanayagam, Dagmar. “The Pioneer: Durga Amma, The Only Man in the Cabinet.” *Dynasties and Female Political Leaders in Asia: Gender, Power and Pedigree*, edited by Claudia Derichs, Mark R. Thompson, LIT Verlag, 2013, pp. 27-61.
7. Lakhani, Somya. “Sometimes, with a vengeance, I convert my pictures into black and white: Raghu Rai.” *The Indian Express*, 01 Nov. 2015, indianexpress.com/article/lifestyle/art-and-culture/sometimes-with-a-vengeance-i-convert-my-pictures-into-black-and-white-raghu-rai/
8. Lee, Kevin Wy. “Invisible Interview: Raghu Rai, India – Part 2.” *Invisible Photographer Asia*, 14 Nov. 2012, invisiblephotographer.asia/2012/11/14/invisibleinterview-raghurai-part2/
9. Rai, Raghu. “Making Portraits: A preview of photographer Raghu Rai’s upcoming book.” *Hindustan Times*, 02 July 2016, www.hindustantimes.com/books/making-portraits-a-preview-of-photographer-raghu-rai-s-upcoming-book/story-YHqZSnW11zN9e5pGAXx7TK.html
10. ---. *Picturing Time: The Greatest Photographs of Raghu Rai*, Aleph Book Company, 2015.
11. ---. *People: His Finest Portraits*. Aleph Book Company, 2016.
12. Tomkins, Silvan. “Affect Theory.” *Approaches to Emotion*, edited by Klaus R. Scherer and Paul Ekman, Psychology Press, 2009, pp. 163-96.



The COVID-19 Anxiety, Depression and Stress Levels of AIMS Students and its Impact on Their Well-Being: Inputs for Mental Resiliency Program

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Abstract: The COVID-19 pandemic introduced uncertainties and complications to the national and global society including the education sector. During the first period of the lockdown, closure of schools and universities has impacted the achievement of students at Asian Institute of Maritime Students (AIMS). More so, the rapid conversion of classroom instructions to online platform increased the impact towards their achievement. These situations took a toll on the students' mental health. Hence, the study determined the COVID-19 anxiety, depression, and stress levels of AIMS students and their impact on their overall well-being. Results were used as inputs in the overall development of a mental resiliency program. Employing descriptive-correlation research design, data on anxiety, depression, and stress levels of AIMS students were initially gathered including their well-being. Relationship between anxiety and well-being; between depression and well-being; and, between stress and well-being were also tested to determine the extent to which the paired variables are related. Data were taken from a sample of 369 AIMS students selected through stratified random sampling. The study adapted the 21-item "Depression, Anxiety and Stress Scale" (DASS-21) of Lovibond and Lovibond (1995) to measure the mental health of the students while the "Well-Being Checklist" of Loomans (2018) was used to measure their present well-being. Results revealed that the AIMS students have mild levels of stress ($M= 17.31$) and moderate levels of depression ($M= 16.78$). Significantly, the participants have severe levels of anxiety ($M= 15.67$). Furthermore, results also showed that their well-being is from moderate to high level with the following mean indications: physical ($M= 6.11$); emotional ($M= 7.33$); mental ($M= 7.09$); and spiritual ($M= 7.29$). Their overall well-being is 6.95 (moderate). When taken separately, the overall well-being is inversely correlated when regressed from depression, anxiety and stress. Hence, significant relationship exists between the paired variables. When all the variables are taken into account, only depression was found to have a significant correlation to the overall well-being. Considering that depression may have later a negative and significant relationship with the students' overall well-being, programs related to this factor were recommended to be developed to improve the mental resiliency of the students.

Key Words: Covid-19, Depression, Anxiety, Stress, Well-Being, Asian Institute of Maritime Studies (AIMS) Enlightenment and Modernity through online Education In the evolutionary phase, alongside critical realism.

INTRODUCTION:

The COVID-19 Pandemic has introduced uncertainty and complications into major aspects of national and global society including schools and universities (Kuhfeld et al., 2020). It is indubitable that the education sector's closure during the first period of the lockdown impacted the achievement of



students along with the rapid conversion of classroom instruction to online platform that continue to affect their achievement.

Higher education Institutions in the country have implemented proactive policies for the continuance of education despite the global crisis. These policies include modified form of online learning that aim to facilitate student learning activities. Online learning might be in terms of synchronous, real-time lectures and time-based outcomes assessments, or asynchronous, delayed-time activities, like pre-recorded video lectures and time-independent assessments (Joaquin, Biana et al., 2020). To respond to the need of the learners, the Asian Institute of Maritime Studies had modified its curriculum and adhered to the policies mandated by the Commission on Higher Education (CHED). However, these radical changes not only reform the way students will learn but also influenced the way students will feel and act.

According to Singh et al. (2020), young people such as college students are particularly vulnerable to the adverse mental and psychological health consequences of the stay-at-home orders or lockdown measures, as they pose a potential threat to their physical, mental and emotional health as well as their educational and developmental progress. Students' mental wellness and well-being had been the center of the AIMS Student Welfare Services program. During the start of the academic year, SWS personnel has been dedicated to looking into students' current condition and determining the best assistance the school can provide to them. Through feedback and observation, it is beyond doubt that the problems brought by the global crisis are starting to manifest. However, no formal study has been conducted yet to determine the effects and extent of the pandemic on AIMS students' physical and mental well-being. Thus, the researcher aims to determine the COVID-19 anxiety, depression, and stress levels of AIMS students and the impact on their well-being. The results of this study will provide valuable inputs that can contribute to the development of a mental resiliency program that intends to respond to the emerging needs of AIMS students.

LITERATURE REVIEW:

COVID-19 Pandemic. The COVID-19 pandemic is a global health issue that has significant health and economic implications. Since its emergence in China in November 2019, the disease has infected over 34.8 million people worldwide, claimed at least 1 million lives, and been reported in 215 countries or territories (World Health Organization [WHO], 2020).

Countries across the globe have imposed strict measures and public health protocols to slow down the transmission of the virus. The Philippine government imposed a nationwide lockdown or community quarantine in March 2020. Thus, the government restricted all physical and social activities outside the home, except for all frontline workers. Among the sectors greatly affected are educational institutions, which closed down in March 2020. Face-to-face classes were not allowed, giving way to online teaching and learning modalities.

Anxiety, Depression and Stress Level. :- Anxiety is one of a range of emotions that serves the positive function of alerting us to things we might need to worry about: things that are potentially harmful. More importantly, these emotions help us to evaluate potential threats and respond to them in an appropriate way, perhaps by quickening our reflexes or focusing our attention. (Mental Health Foundation, 2014)

According to Hrabowy (2018), our body is capable of dealing with short bursts of this physical response as it is preparing us to face a stressful situation. However, after a prolonged period of time, anxiety can have significant negative effects on our overall physical, mental health and wellbeing as well as one's ability to function at work.

Mental illness is the third most common disability in the Philippines. (Martinez, A.B., Co, M., Lau, J. et al., 2020). Around 6 million Filipinos are estimated to live with depression and/or anxiety, making the Philippines the country with the third highest rate of mental health problems in the Western Pacific Region. According to the Mental Health Foundation (2014) it was also evident that in United Kingdom, about 2.6% of the population experience depression and 4.7% have anxiety problems, as



many as 9.7% suffer mixed depression and anxiety, making it the most prevalent mental health problem in the population as a whole.

COVID Anxiety, Depression and Stress Level.:- The COVID-19 pandemic has brought into focus the mental health of various affected populations. It is known that the prevalence of epidemics accentuates or creates new stressors including fear and worry for oneself or loved ones, constraints on physical movement and social activities due to quarantine, and sudden and radical lifestyle changes. (Son, et al., 2020)

Although the lockdown has slowed down the transmission of the virus, it has greatly affected the people's way of life. The rapid enforcement of lockdown had negative psychological effects, such as increased stress and anxiety in the public. (Volkan & Volkan, 2020) According to the Australian Psychological Society (2020), prolonged lockdown may cause fatigue or exhaustion in an individual as a result of the overwhelming disruptions on their routines and activities, social isolation, lack of security, imminent threat to health and unpredictability of what is ahead, and may manifest as a mix of physical, mental and/or emotional signs.

Young people such as college students are particularly vulnerable to the adverse mental and psychological health consequences of the stay-at-home orders or lockdown measures, as they pose a potential threat to their physical, mental and emotional health as well as their educational and developmental progress (Singh et al., 2020). Adolescence is a critical period of formative growth that affects well-being across the life course. It is a period of change in physical, mental, emotional, social and psychological state of an individual (Cabrera et al., 2019).

A survey conducted by Young Minds United Kingdom which was carried out with 2,438 young people aged 13-25, between 26th January and 12th February 2021 shows that "The pandemic has had a devastating impact on many of the young people we heard from – some told us that they are deeply anxious, have started self-harming again, are having panic attacks, or are losing motivation and hope for the future. We know that some young people will be dealing with multiple pressures, especially those who have been bereaved or experienced other trauma during this time.

When asked what the central pressures were during the current lockdown, respondents mostly spoke of loneliness and isolation, concerns about a school, college, or university work, and frequent breakdowns. Many young people also expressed fears about the future. Although some were optimistic about the vaccine roll-out, others were concerned that easing restrictions too soon could lead to other conditions in the future.

Anxiety, Depression and Stress Level on Physical Well-Being.:- Hrabowy (2018) stated that prolonged stress and worry can lead to a variety of health concerns and can even influence hormonal levels. The body's central nervous system goes into overdrive and releases cortisol that can boost sugar levels and triglycerides. High level of cortisol in the body can result in physical reactions, including: short-term memory loss and concentration problems, digestive disorders, sleep disorders, lowered immune system, elevated blood pressure and in rare cases even a heart attack. Sheridan, Z., et al. (2015) emphasizes that anxiety has been found to be associated with functional impairments and an increased risk of developing adverse health problems.

In a study conducted by Labrague and Ballad (2020) among college students enrolled in the Central Philippines, college students reported moderate levels of lockdown fatigue. Physical exhaustion or tiredness, headaches and body pain, decreased motivation and increased worry were the most pronounced manifestations of fatigue reported. Lower levels of lockdown fatigue among the students were associated with increased personal resilience and coping skills.

Based on the research conducted by Son et, al (2020) on the effects of COVID-19 on the mental health of college students in the United States, majority of participants or 86% reported disruptions to their sleep patterns caused by the COVID-19 pandemic with over one third (38%) reporting such disruptions as severe. Half of students who reported some disruption or 50% stated they tended to stay up later or wake up later than they did before the COVID-19 outbreak. Another disruptive impact brought by the pandemic was irregular sleep patterns such as inconsistent time to go to bed and to wake up from day to day (17%). Some (7%) reported increased hours of sleep while others (6%) suffered from poor sleep quality.



COVID-19 has also negatively impacted a large portion of participants' dietary patterns (70%). Many (26%) stated the amount of eating has increased, including having more snacks since healthy dietary options were reduced while others (20%) addressed that their eating patterns have become inconsistent due to Irregular time of eating and skipping meal. Some students (12%) reported decreased appetite whereas others (5%) were experiencing emotional eating, or tendency to eat when bored. On the other hand, some students (14%) reported that they were having healthier diet as they were cooking at home and not eating out so much as they used to.

Anxiety, Depression and Stress Level on Emotional Well-being. :- According to Jean Hailes (2021), social connections, friendships and relationships with others help shape who we are and how we behave. They are also one of the most significant influences on health and wellbeing. Low social connection has been generally associated with declines in physical and psychological health. (Schrader, 2020). Excessive or inappropriate anxiety negatively affects social life. Higher levels of anxiety lead to an avoidant coping strategy and undermines the motivation to communicate with other individuals such that high-anxious people are more likely to avoid social interactions. (Wu et.al, 2012). Not only has the Covid-19 pandemic had a profound psychological impact, but it also affects personal freedoms to engage in behavior's that are consistent with subjectively held values beyond health, for instance, visiting loved ones, engaging in recreational activities, spending time outdoors (Helter et al. 2021). It was also indicated in Son et al. (2020) study, that students' overall interactions with other people such as friends have decreased significantly. In particular, their worries about lack of in-person interactions (e.g., face-to-face meeting). that disruptions to their outdoor activities (e.g., jogging, hiking) has affected their mental health.

Anxiety, Depression and Stress Level Anxiety in Mental Well-being.:- It is expected that the continued spread of the disease, travel restrictions and the closure of educational institutions across the country would have a significant effect on the education, social life, and mental health of students (Odriozola-gonzalez et al. 2020). The students from the less privileged backgrounds have experienced larger negative impacts due to the Covid-19 outbreak (Aucejo et al. 2020). Reduction in family income, limited access to digital resources, and the high cost of internet connectivity have disrupted the academic life of the students. Moreover, 1.5 billion students across the world are now deprived of basic education (Lee 2020) leading to a serious psychological impact on their health.

Based on Son et, al (2020) research on college students, some were experiencing depressive thoughts during the COVID-19 pandemic. Major contributors to such depressive thoughts were loneliness, insecurity or uncertainty, powerlessness or hopelessness, concerns about academic performance, and overthinking. Mild and moderate suicidal thoughts were attributed to depressive thoughts were also reported.

According to Jiang (2021), research studies have mainly reported adverse mental health impacts due to stress factors associated with COVID-19. A variety of factors associated with the high risk of mental issues during the COVID-19 pandemic have been reported by several researchers. In China, a study conducted at the start of the outbreak reported that 58.3% of Chinese participants were depressed. A similar study revealed that some factors, like timely and up to date information regarding the COVID-19, were associated with less stress, anxiety, and depression. Studies conducted in Europe also reported several COVID-19 risk factors associated with depression. Such as, a German study conducted on the general population during COVID-19, revealed higher levels of depression (14.7%), psychological distress (65.2%), and general anxiety (44.9%).

Anxiety, Depression and Stress Level in Spiritual Well-being. :- Spirituality, a source of comfort, support and meaning, instills the idea of a sense of belonging and existential interconnectedness, promoting mental health. In the literature, in fact, the accent has been placed on the association that exists between having spirituality and having a greater perception of well-being, physical and mental health A particularly important aspect is related to coping, or the function performed by spiritual well-being in the management of stressful events. Spiritual coping can be understood as cognitive and behavioral efforts to find or maintain meaning, purpose and connection in the face of difficult situations. (Coppola et. al, 2021) Some authors over the years have argued that faith and spirituality can also be perceived as a source of resilience both from a physical, psychological and mental point of view.



Closely connected to spiritual well-being, there are spiritual needs, which include everything that refers to the need to find meaning, value in one's life, peace and a sense of connection. These needs are not necessarily exclusively religious; in fact, even those who do not have a religious faith still refer to systems of beliefs that provide feelings of meaning and purpose. In this period of the COVID-19 pandemic they seem to assume a role and an even deeper meaning in relation to the bewilderment that people are confronted with when faced with such a pervasive, disruptive event, creating daily fragility, fear and uncertainty. In particular, the spiritual distress in those people going through adverse situations, such as that caused by COVID-19, should not be underestimated. By spiritual distress we mean suffering connected to the impossibility of feeling meaning in life, a state of anguish that occurs when an individual experience suffering that in some way undermines their personal identity, for example by raising existential questions about the reason for that particular suffering. (Coppola et. al, 2021)

To date, there have been several studies that explore the impact of the pandemic on students' well-being in other parts of the world. In Aims, no formal research has been conducted yet on the effects of the pandemic on their physical, emotional, social, and spiritual well-being. The study results will significantly benefit the Student Welfare Services department in drafting effective programs to address the needs of the students.

RESEARCH OBJECTIVES:

Statement of the Problem. COVID-19 Pandemic has brought different problems and radical changes to the lives of many, particularly to students. Through AIMS SWS' extensive efforts and routine interviews, it reflects that the changes brought by this disease significantly affect the mental and physical health condition of the AIMS students. Following this, the researchers want to conduct a quantitative study to measure the influence of the COVID-19 Pandemic on AIMS students in SY 2021-2022. Specifically, the study seeks to answer the following questions:

- What is the COVID-19 anxiety, depression and stress level of AIMS students?
- What is the measure of well-being of AIMS students in terms of the following aspects:
 - Physical
 - Emotional
 - Mental
 - Spiritual
- Is there a significant relationship between the following paired variables:
 - Anxiety and well-being;
 - Depression and well-being; and,
 - Stress and well-being?
- Based on the findings of the study, what inputs can be drawn to contribute in the development of a mental resiliency program for AIMS students?

Purpose of the Study. The purpose of this study is to determine the COVID-19 anxiety, depression, and stress levels of Asian Institute of Maritime students and their impact on their overall well-being. In addition, to aid in the overall development of mental resiliency programs in student welfare services to alleviate the harmful effects of anxiety. Intensively contemplate the implication of this research for better understanding and application to further studies. Thoroughly, this study provides significance to the following:

School Guidance Counsellors, Advocates and Facilitators. This study conveys added understanding about the innovative approach relevant to improving guidance intervention and counselling services beneficial to students' growth, well-being, and wellness, particularly in the current global issue. Thus, accumulate knowledge about the effect of COVID-19 and its different components to formulate a well-planned guidance program conforming to the needs of 21st-century learners and be advocates of positive well-being and welfare during these uncertain times.

Teachers and Educators. This study empowers them to apply positive discipline in handling students that focuses more on progress in all aspects of their development and assists all individuals to flourish, be resilient, seek good health, and be optimistic for the future. Furthermore, this is to provide a junction for teachers and educators to help their students better learn and adjust to the new normal set-up.



Students. Through this study, students will be able to determine the effects brought by COVID-19 and new normal restrictions on their well-being. They would primarily benefit from this study, enabling them to profit from the modified intervention and programs to enhance their well-being, performance, resiliency, and positive perspective to achieve their goals and aspirations in life. Furthermore, this study focuses on students' development and provides elucidation on their present needs.

Parents. This study provides parents with information about their children's current circumstances, which can be used in parenting strategies to help their children achieve better physical and mental health. The pandemic has brought detrimental changes to the younger generation that need attention. Providing the necessary information to support their children's emotional health and well-being is much more suitable today.

School Administrators. In general, this valuable research would highlight the importance of the school's guidance and counselling program focused on promoting well-being and wellness among students. Learn about new processes that institute constructive schooling or education despite the crisis the world is facing. Furthermore, this is to provide deep knowledge about COVID-19 anxiety influences and the possible resolutions to be the basis for new procedures in helping the school construct a harmonious and vigorous environment.

The AIMS Community. This study provides the whole AIMS community an indistinct and better understanding of students' current conditions during the pandemic to construct a school-wide program comprising: enhancing well-being, wellness, and overall positive behavior support, particularly establishing psychosocial support and a positive school environment. To necessitate delivering essential programs to the entire school community to address the impending needs of all its members.

Conceptual Framework. This study will look into the impact of the COVID 19 pandemic on the well-being of AIMS students. With this objective, the study will posit the cause-and-effect relationship of variables. Thus, the Independent Variable – Dependent Variable (IV-DV) format will be applied (see Figure 1).

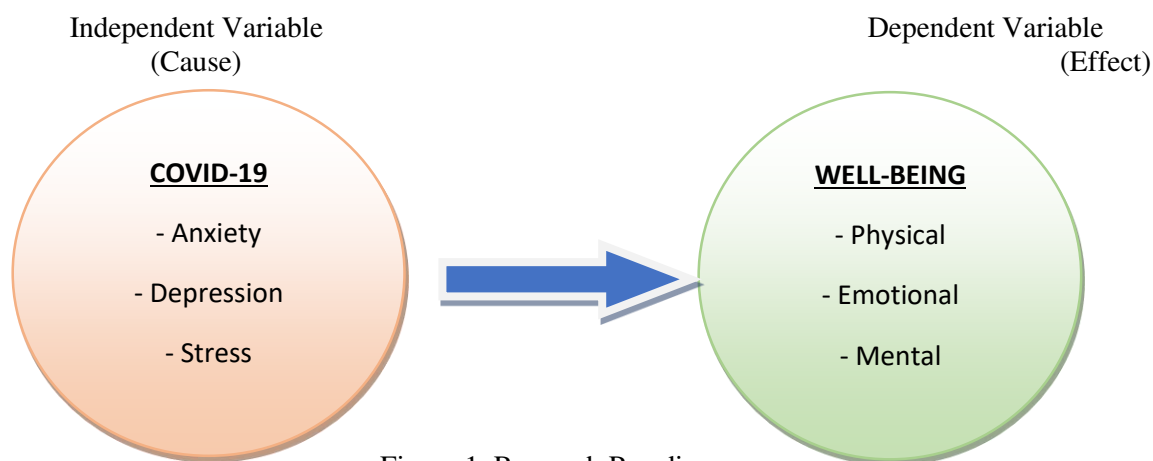


Figure 1. Research Paradigm

According to Davis (2020), the independent variable of the study is the cause where its value is independent of the other variables while the dependent variable is the effect and its value depends on the changes in the independent variable. Henceforth, anxiety, depression, and stress levels are the independent variables. The levels of these variables were believed to have increased due to the advent of the COVID-19 pandemic. On the other hand, physical, emotional, mental, and spiritual well-being are the dependent variables. With the assumed increase of anxiety, depression, and stress levels, the well-being variables' stability is assumed to be affected. Hence, in considering that the independent variables possibly impact the dependent variables, determining their relationship is essential as this will answer the study's primary objective. Thus, the above premise became the basis in expressing the hypothesis of the study.



Hypothesis. At 0.05 level of significance, the study will test if there is a significant relationship between the anxiety, depression, stress levels and the well-being of the AIMS students.

RESEARCH METHOD:

Research Design. The study will use the descriptive design. A descriptive method is concerned with conditions that are prevailing, processes that are going on, and effects that are felt in trends that are developing. According to Goods and Scates (1985), descriptive research includes studies that purport to present facts that are going on such as information about a group of persons, a number of objects, sets of conditions, a class of events, or a system of thought.

Variables of the study requiring descriptive data are anxiety, depression, and stress levels as well as the well-being of AIMS students. To further determine the relationship between the anxiety and well-being; between depression and well-being; and, between stress and well-being, correlational design will be used. According to Calmorin and Calmorin (2012), “correlation is designed to determine the relationship of two variables (X and Y).” Hence, the utilization of correlational method for the study.

Population and Setting. The AIMS students are the main population of the study. As much as the study intends to determine the impact of COVID-19 on the well-being of AIMS students, the setting therefore is the respective homes of the students as they are confined for a long period of time due to the prohibition set by the Inter-Agency Task Force (IATF) for minors to go out-of-home. With this long period of isolation, worries and uncertainties are felt by many individuals, including the AIMS students. The home lockdown setting is assumed by the proponents to have an effect or impact on the well-being of the AIMS students.

Sampling. The study will employ the stratified random sampling. According to Mukundan (2018), stratified sampling is a method of dividing the population into various subgroups or strata and drawing a sample from each. Each subgroup or stratum consists of items that have common characteristics. Thus, the process of selecting a simple random sample from each stratum is referred to as “stratified random sampling”. Further, proportionate and disproportionate sampling will be specifically applied. Proportional random sampling, or stratified random sampling involves the division of a population into smaller sub-groups known as strata and is formed based on members' shared attributes or characteristics (James & Beer, 2021). This is yielded by dividing the Total Sample Size over the Entire Population and multiplied by the Population of Subgroups. Using the program/course of the respondents as basis for stratification, this procedure will be applied for the BSMT, BSMarE, BSCA, BSNAME, BSHM and BSBA (See Table 1.).

Table 1. Total Population and Sample Size of Respondents, N=2,229

Program/Course	Total Population*	Sample Size
1. BS Marine Transportation	1,592	245
2. BS Marine Engineering	308	47
3. BS Customs Administration	121	19
4. BS Nav. Arch. & Mech. Engineering	87	13
5. BS Hospitality Management	66	10
6. BS Business Administration	24	4
7. BS Computer Science	6	6**
8. BS Electrical Engineering	4	4**
9. BS Mechanical Engineering	7	7**
10. BS Industrial Engineering	3	3**
11. B Performing Arts – Dance Track	8	8**
12. B Performing Arts – Theater Track	3	3**
Total:	2,229	369

*Source: 1st Trimester, SY2021-2022, Center for Student Records and Certification, AIMS

**Disproportionate Samples

On the other hand, disproportionate sampling will be applied for the BSCS, BSEE, BSME, BSIE, BPea-Dance and BPea-Theater courses. According to James & Beer (2021), in a disproportionate



sampling, the size of each stratum is not proportional to its size in the population. This is so applied because responses from minority subsets have a sample size that would otherwise be too low for the study to draw any statistical conclusions (“What is stratified sampling. . .,” 2021). Hence, the application of this sampling method for the remaining programs/courses as they all have a very low subgroup size. In application of the above sampling techniques, the sample size of the study will be 369 AIMS students taken from a total population of 2,229.

Instrument. To measure the depression, anxiety and stress levels of the respondents brought by the COVID-19 pandemic, the study will adapt the 21-item “Depression, Anxiety and Stress Scale” (DASS-21) of Lovibond and Lovibond (1995). The DASS-21 is a widely used instrument that intends (Basha & Kaya, 2016) to reveal the psychological status of individuals as well as in determining the level of negative emotional states. It has been demonstrated to be a reliable and valid measure in assessing mental health in Filipinos and Chinese, hence, was used in research related to the COVID-19 epidemic (Tee et al., 2021).

Likewise, to measure the well-being of the AIMS students, the study will use the “Well-Being Checklist” of Loomans (2018). The instrument will measure the extent to which an individual care for him or herself in the four dimensions of self – physical, emotional, mental and spiritual. The above instruments will no longer undergo reliability tests as they are considered “standardized questionnaires” and have been used in numerous studies and assessments. For a sample copy of the instruments, please see the appendices section of this study. Due to the prolonged enforcement of community quarantine in the country to prevent COVID-19 infections, the proponents will convert the proposed instrument into an online survey questionnaire using a software application called the “Google Forms”. This is to ensure the administration of the survey in place of the face-to-face surveying which is prohibited under the Inter-Agency Task Force (IATF) rule due to the pandemic. For the Google link copy of the instrument, please refer below:

<https://forms.gle/3pyzNHekBxxT8tnZ7>

Data Collection. The researchers will obtain written permission from the student to be the study's respondent, including the study's intent and benefits. Upon obtaining it, the researcher will send the link to the questionnaire. After gathering the pertinent data, the researchers will apply the statistical treatment and interpret the results.

Statistical Treatment. Two main statistical procedures/tools will be employed in yielding the data of the study. First, weighted mean will be used to describe the extent of the following variables: depression, anxiety, stress and well-being. This is reflected in problems 1 and 2 of the study. Second, Simple and Multiple Linear Regression will be used to test if there exist a significant relationship on the following variables: between anxiety and well-being; between depression and well-being; and, between stress and well-being. This is specifically presented in problem 3 of the study. To specifically derive the results of the study, the Statistical Package for Social Science (SPSS) will be used.

RESULTS AND DISCUSSION:

Results. The results of the study present that the student participants from Asian Institute of Maritime Studies (AIMS) have mild levels of Stress ($M= 17.31$, $SD= 10.91$). This may mean that the students experience a low level of over-arousal and inability to relax. They were also found to have moderate levels of Depression ($M= 16.78$, $SD= 11.80$). This shows that, on average, the students are experiencing a little higher than normal level of mental health concerns like depression, feeling gloomy, and dispirited.

A significant finding suggests that the participants have severe levels of Anxiety ($M= 15.67$, $SD= 10.89$). It can be inferred based on the instrument used that the students of AIMS experience a very high level of apprehensions and worrying. This is for the reason of the wide variety of circumstances that the students experience during the pandemic. Fear of contracting the disease, problems with academics, changes in social relationships, limited physical interaction with families and friends and so on are all factors affecting their level of anxiety.



Table 2. Descriptive Statistics of the Participants' Level of Depression, Anxiety, and Stress (N=368)

	Mean	SD	Verbal Interpretation
Depression	16.78	11.80	Moderate
Anxiety	15.67	10.89	Severe
Stress	17.31	10.91	Mild

Depression: 0-9 = Normal, 10-13 = Mild, 14-20 = Moderate, 21-27 Severe, 28+ = Very severe
 Anxiety: 0-7 = Normal, 8-9 = Mild, 10-14 = Moderate, 15-19 = Severe, 20+ = Very severe
 Stress: 0-14 = Normal, 15-18 = Mild, 19-25 = Moderate, 26-33 Severe, 34+ = Very severe

Furthermore, the results also show that the students have well-being ranging from moderate to high level, in terms of: Physical (M= 6.11, SD= 1.86); Emotional (M= 7.33, SD= 1.66); Mental (M= 7.09, SD= 1.91); Spiritual (M= 7.29, SD= 1.88); and Overall Well-being (M= 6.95, SD= 1.68). These indicate that, on average, the students of AIMS have positive measures of their well-being. Given the mild to severe levels of mental health concerns, it can be assumed that this can be a protective factor among the students.

Table 3. Descriptive Statistics of the Participants' Well-Being (N=368)

	Mean	SD	Verbal Interpretation
Physical	6.11	1.86	Moderate Well-being
Emotional	7.33	1.66	High Well-being
Mental	7.09	1.91	High Well-being
Spiritual	7.29	1.88	High Well-being
Overall Well-being	6.95	1.68	Moderate Well-being

Interpretation: 1-2 = Very Low Well-being, 3-4 = Low Well-being, 5-6 = Moderate Well-being,
 7-8 = High Well-being, 9-10 = Very High Well-being

The researchers computed for Simple and Multiple Linear Regression Analyses using SPSS version 26 (IBM, 2019) to test and examine the significant relationship of the students' level of depression, anxiety, and stress on the level of their well-being. The results reveal that there are significant relationships between the variables, especially when tested separately; that is, there are negative or inverse correlations with the Overall Well-being when regressed from: Depression, B= -.078, SE= .006, t= -12.621, p= .000; Anxiety, B= -.075, SE= .007, t= -10.599, p= .000; and, Stress, B= -.077, SE= .007, t= -11.089, p= .000.

These mean that as one variable increases, the other decreases, or vice versa. The findings also indicate that for every one (1) unit/ score increase in: Depression, there is a -.078 change in the students' well-being; Anxiety, there is a -.075 change; and, Stress, there is a -.077 change in their well-being. Although it is noted that there are small changes, these changes are significant.

Furthermore, a multiple regression analysis was computed to see the relationship of the mental health issues of depression, anxiety, and stress when all variables are considered in the model. The results show that when all the variables are taken into account, that is when we consider the presence of the levels of all the variables together (and not separately; thus, this is closer to reality), only depression (B= -.064, SE= .013, t= -4.933, p= .000) was found to have a significant correlation to the overall well-being, and not anxiety, B= -.004, SE= .015, t= -.257, p= .798, or stress, B= -.014, SE= .016, t= -.856, p= .392.

This means that considering the level and the students' experience of having both depression, anxiety, and stress, it is found that only the depression may have a later negative and significant relationship with the students' overall well-being. Thus, when the students experience changes in their anxiety and stress level, however mild or severe they could be, it may not be significant to cause any



change in their well-being, unlike the changes in depression. It is identified that depression is one of the causes that can impair a person's sleep, food, mental and physical health, self-esteem, social interaction, and academic achievement, among other things, according to the International Board of Credentialing and Continuing Education Standards. A student dealing with one of these can experience negative effects on their attention, interpretation, concentration, memory, social interaction and physical health. Depression can be dangerous to one's health significantly, if it lasts for a long time and has a moderate or extreme severity. It can make the affected person suffer much and perform poorly at work, school, and the family.

Table 4. Linear Regression's Model Summary Statistics of the Participants' Level of Depression, Anxiety, and Stress on their Overall Well-Being (N= 368)

Model	R	R ²	Adjust R ²	SE of Estimate
1 Depression	.551	.303	.301	1.401
2 Anxiety	.485	.235	.233	1.468
3 Stress	.501	.251	.249	1.452
4 Depression, Anxiety, and Stress	.553	.306	.300	1.402

Table 5. Linear Regression Coefficients of the Participants' Level of Depression, Anxiety, and Stress on their Overall Well-Being (N= 368)

Model	B	SE	β	t	p value	Interpretation
1 Depression	-.078	.006	-.551	12.621	.000	Significant
2 Anxiety	-.075	.007	-.485	10.599	.000	Significant
3 Stress	-.077	.007	-.501	11.089	.000	Significant
4 Depression	-.064	.013	-.453	-4.933	.000	Significant
4 Anxiety	-.004	.015	-.025	-.257	.798	Not Significant
4 Stress	-.014	.016	-.089	-.856	.392	Not Significant

Dependent Variable: Overall Well-being

Discussion. The study primarily focused on determining the COVID-19 anxiety, depression, and stress levels of students and their impact on their overall well-being. This is to aid in the development of mental resiliency programs of the Student Welfare Services to alleviate the harmful effects of these factors. Based on the instrument used, the results indicate that students have mild levels of stress, moderate levels of depression and severe levels of anxiety. Depression and anxiety are the most common types of mental disorders, and comorbidity is also prevalent with these two disorders, which means that depression and anxiety may be simultaneously present in one person. Many individuals with anxiety also have depression and vice versa (Beiter et al., 2014). Meanwhile, stress is the typical reaction of a person's physical and mental aspect towards any change that requires an adjustment or response to perceived threats in a person's life. May it be literal or imagined, stress affects the physiological and psychological well-being of people. In turn, these effects can result in several stress reactions, such as the fight-or-flight response (Seaward, 2018). In a conducted study amongst Filipino students, stress was positively associated with their everyday routine and significantly affected their mental state. Such routines that correlate with their stress response were ranked in the following order: academics, amount of workload, and time management (Dy, Ferido, Espiritu-Santo, & Ria, 2015).



This only shows that the students are more susceptible to developmental health concerns especially during pandemic because of the fear of rapid quarantine, delays in school opening, and moving to online teaching.

Furthermore, the results also shows that the students of AIMS have a moderate to high measures of well-being. According to the World Health Organization (WHO), “wellbeing exists in two dimensions, subjective and objective. It comprises an individual’s experience of their life as well as a comparison of life circumstances with social norms and values”. The students’ life circumstances include health, education, social relationships, their environment, security, civic engagement, housing and school-life balance that are fundamental to the overall health of a student, enabling them to successfully overcome difficulties and achieve their highest potential in life.

In addition, given the mild to severe level of mental health and the moderate to high measures of well-being, this can be inferred that this is a protective factor among the students. Since the pandemic brought myriad different stressors into the lives of most people, including college students, this was a time requiring extraordinary coping mechanisms. Based on the study conducted by Lopes (2021), the higher levels of satisfaction with life and dimensions of psychological well-being, as well as the use of appropriate coping strategies, may constitute protective factors in undergraduates in relation to depression, anxiety and stress symptoms. Concerning the relationship among variables, the results presented that there is a significant relationship between mental health and well-being of the students. As one variable increases, the other variable decreases or vice versa. This means that when the level of anxiety, depression and stress decreases, the well-being of the students increases. This shows that students of AIMS are resilient to factors that may affect their well-being. However, it is found that depression may have a later negative impact with the student’s overall well-being.

CONCLUSION AND RECOMMENDATION:

The researcher found out that AIMS students has a severe level of anxiety than the levels of depression and stress, however, the students also have positive measures of their well-being. But, considering that depression may have a later negative and significant relationship with the students’ overall well-being, programs related to this factor is recommended. Based on the findings, the researchers developed recommendations for improving mental resilience and implementing preventive measures among students. It has emphasized the need for programs and projects of training workshop and coping with crises during academic studies. The researcher will also establish a mental-emotional intervention programs guided by experts and will expand the teleconsultation services. At the same time, a collaborative project with ITDO and the Academic Department about educational support and digital literacy training to streamline distance learning, and ensure adequate skills to continuously adjust, adapt and be accustomed to the hybrid modality of the new normal.

Directions for Future Research. A study that will thoroughly evaluate the effectiveness of the programs and projects recommended to identify its benefits to the students as part of the AIMS community and the society. Also, the same study is recommended for the AIMS faculty and staffs to assess their level of emotional and mental well-being in times of crises and its effect on their job performance.

REFERENCES:

1. Aucejo, E. M., French, J., Ugalde Araya, M. P., & Zafar, B. (2020). The impact of COVID- 19 on student experiences and expectations: Evidence from a survey. *Journal of Public Economics*, 191, Article 104271. Retrieved from <https://doi.org/10.1016/j.jpubeco.2020.104271>
2. American Psychological Association. (2020, September). Mental Health during and after COVID-19. Retrieved from <https://www.apa.org/topics/covid-19/student-mental-health>.
3. Basha, E. & Kaya, M. (2016). Depression, Anxiety and Stress Scale (DASS): The Study of Validity and Reliability. *Universal Journal of Educational Research*. Retrieved November 15, 2021 from <https://files.eric.ed.gov/fulltext/EJ1121626.pdf>
4. Cao, W., Fang, Z., Hou, G., et al. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287, Article 112934. Retrieved from <https://doi.org/10.1016/j.psychres.2020.112934>



5. Cabrera, G., Daya, H., & Echague, N. (2019). Factors Affecting the Psychological Well-Being of College Students in a State University. *The Guidance Journal*, 66(2), 56-72. Retrieved from https://www.researchgate.net/publication/339973463_Factors_Affecting_the_Psychological_Well-being_of_College_Students_in_a_State_University
6. Coppola, I., Rania, N., Paris, R., & Lagomarsino, F. (2021). Spiritual well-being and mental health during the COVID-19 pandemic in Italy. Retrieved from <https://doi.org/10.3389/fpsyg.2021.626944>
7. Davis, B. (2020, January 23). What is the relationship between dependent and independent variables? *MV Organizing*. Retrieved November 1, 2021 from <https://www.mvorganizing.org/what-is-the-relationship-between-dependent-and-independent-variables/>
8. Hrabowy, I. (2018) How does anxiety influence your health. Retrieved from
9. <https://www.summahealth.org/flourish/entries/2018/04/how-does-anxiety-influence-your-health>
10. James, M. & Beer, K. (2021, October 4). Stratified random sampling. Investopedia. Retrieved November 14, 2021 from https://www.investopedia.com/terms/s/stratified_random_sampling.asp
11. Jiang, S., Manzoor F., Mumtaz, A., & Rahaman, M. (2021). COVID-19 and Mental Health: A Study of Stress, Resilience, and Depression among the Older Population in Pakistan. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8067402/>
12. Joaquin, J. J., Biana, H. T., & Dacela, M. A. (2020). The Philippine Higher Education Sector in the Time of COVID-19. *Frontiers in Education*. Retrieved from <https://doi.org/10.3389/educ.2020.576371>
14. John Heiles (2021). Mental and emotional well-being. Retrieved from
15. <https://www.jeanhailes.org.au/health-a-z/mental-emotional-health/family-friend>
16. Kim, C., Yoo, Y., Lee, H., Lee, H., & Shin, S. (2018). Psychiatric Findings in Suspected and Confirmed Middle East Respiratory Syndrome Patients Quarantined in Hospital: A Retrospective Chart Analysis. *Psychiatry Investigation*, 15(4), 355-360. DOI:10.30773/pi.2017.10.25.1. Retrieved from https://www.wgalil.ac.il/wp-content/uploads/2021/09/Eman_tarabia.pdf
17. Kuhfeld, M., Soland, J., & Tarasawa, B. (2020). Projecting the Potential Impact of COVID-19 School Closures on Academic Achievement. *Educational Researcher*, 49(8). Retrieved from <https://doi.org/10.3102/0013189X20965918>
18. Labrague, L., & Ballard, C. (2020). Lockdown Fatigue Among College Students during the COVID-19 Pandemic: Predictive Role of Personal Resilience. *Coping Behaviors and Health Perspectives in Psychiatric Care*. Retrieved from <https://doi.org/10.1101/2020.10.18.20213942>
19. Lee, J. (2020). Mental Health Effects of School closures during COVID-19. *The Lancet, Child and Adolescent Health*. Retrieved from [https://doi.org/10.1016/S2352-4642\(20\)30109-7](https://doi.org/10.1016/S2352-4642(20)30109-7)
20. Lee, J. (2020). Reflections Features Mental health effects of school closures during COVID-19. *The Lancet Child & Adolescent Health*, 4, 421. Retrieved from - [https://doi.org/10.1016/S2352-4642\(20\)30109-7](https://doi.org/10.1016/S2352-4642(20)30109-7)
21. Lewis, P. (2020, September 18). COVID-19 Impact on young peoples mental health. House of Lords Library. Retrieved from <https://lordslibrary.parliament.uk/covid-19-impact-on-young-peoples-mental-health/>
22. Lopes, A., & Nihei, O. (2021). Depression, anxiety and stress symptoms in Brazilian university students during the COVID-19 pandemic: predictors and association with life satisfaction, psychological well-being and coping strategies. Retrieved from <https://doi.org/10.1371/journal.pone.0258493>
23. Martinez, A.B., Co, M., Lau, J. et al. (2020) Filipino help-seeking for mental health problems and associated barriers and facilitators: a systematic review. *Social Psychiatry and Psychiatric Epidemiology*, 55, 1397–1413. <https://doi.org/10.1007/s00127-020-01937-2>
24. Mukundan, V. (2018). Stratified sampling. Wall Street Mojo. Retrieved November 14, 2021 from <https://www.wallstreetmojo.com/stratified-sampling/>
25. Odriozola-gonzalez, P., Planchuelo-gomez, A., Jesús, M., & De Luis-garcía, R. (2020). Psychological effects of the COVID-19 outbreak and lockdown among students and workers of a



- Spanish university. *Psychiatry Research*, 290, Article 113108. <https://doi.org/10.1016/j.psychres.2020.113108>
26. Scharder J. (2020). Social Connection Boosts Health, Even When You're Isolated. *Psychology Today*. Retrieved from <https://www.psychologytoday.com/us/blog/feeling-it/202003/social-connection-boosts-health-even-when-youre-isolated>
27. Schiff, M., Pat-Horenchik, R., & Benbenisti, R. (2020). Life in the shadow of corona: feelings and needs of students at the hebrew university. Hebrew University, Jerusalem. Retrieved from https://www.wgalil.ac.il/wp-content/uploads/2021/09/Eman_tarabia.pdf
28. Sheridan, Z., Boman, P., Mergler, A., & Furlong, F. (2015). Examining well-being, anxiety, and self-deception in university students. *Cogent Psychology*, 2:1, doi:10.1080/23311908.2014.993850
29. Simon, J., Helter, T.M., White, R.G. et al. Impacts of the Covid-19 lockdown and relevant vulnerabilities on capability well-being, mental health and social support: An Austrian survey study. *BMC Public Health* 21, 314 (2021). <https://doi.org/10.1186/s12889-021-10351-5>
30. Singh, S., Roy, D., Sinha, K., Parven, S., & Joshi, G. (2020). Impact of COVID-19 and lockdown on mental health of children and adolescents: A narrative review with recommendations. *Psychiatry research*, 293(113429). Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7444649/>
31. Son, C., Hegde S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of covid-19 on college students' mental health in the united states: interview survey study. *Journal of Medical International Research*. 22(9) doi: 10.2196/21279. Retrieved from <https://preprints.jmir.org/preprint/21279>.
32. Shukla, P. (2020, August 10). Impact of COVID-19 on Students Mental Health and Well being. Retrieved from <https://www.psychreg.org/covid-19-students-mental-health-wellbeing/>.
33. Tee, M., Wang, C., Tee, C., Pan, R., Reyes, P. W., Wan, X., Anlacan, J., Tan, Y., Xu, L., Harijanto, C., Kuruchittham, V., Ho, C., & Ho, R. (2021). Impact of the COVID-19 Pandemic on Physical and Mental Health in Lower and Upper Middle-Income Asian Countries: A Comparison Between the Philippines and China. *Frontiers in psychiatry*. Retrieved November 15, 2021 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7901572/>
34. Terada, Y. (2020, June 23). Impact on Students Academic and Mental Well Being. Retrieved from <https://www.edutopia.org/article/covid-19s-impact-students-academic-and-mental-well-being>
35. Volkan, E., & Volkan, E. (2020). Under the COVID-19 lockdown: Rapid review about the unique case of North Cyprus. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(5), 539-541. Retrieved from <http://dx.doi.org/10.1037/tra0000809>
36. What is Stratified Sampling? Definition, Examples, Types. (2021, October 13). Retrieved November 15, 2021 from <https://www.formpl.us/blog/stratified-sampling#>
37. Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*. 17 (5), 1729. Retrieved from <https://doi.org/10.3390/ijerph17051729>
38. Wu, T., Luo, Y., Broster L., & Gu, R. (2012). The impact of anxiety on social decision-making: behavioral and electrodermal findings. *Social Neuroscience*, 8:1, 11-21, doi:10.1080/17470919.2012.694372. Retrieved from <https://pub.med.ncbi.nlm.nih.gov/22670854/>
40. Young Minds. (2020). Coronavirus and Mental Health. Retrieved from <https://www.youngminds.org.uk/young-person/coping-with-life/coronavirus-and-mental-health/>
41. Young Minds UK. (2021, February). Coronavirus impact on young people with mental health needs. Retrieved from <https://youngminds.org.uk/about-us/reports/coronavirus-impact-on-young-people-with-mental-health-needs/>



A Qualitative Investigation on Mental Health Profile, Perception and Status of Aims Students: A Pre-Pandemic Inquiry

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Abstract: *The World Health Organization (WHO) defined mental health as “a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (Legg, 2020). It is therefore important to sustain good mental health in all stages of our life. However, the adolescent stage is an important phase in managing mental health. It is during adolescence that individuals achieve autonomy. Teens are working to figure out who they are, making adolescent identity development a central feature of their teen life (Williams, 2018). At this point, individuals begin to explore their potentials and learn the art of self-management. However, reports show that mental health is listed as one of the most common problems in young adults (Jurewicz, 2015). Hence, this study was aimed at examining the occurrence of similar cases to AIMS students specifically investigating their status on the following aspects: 1) demographic and clinical profile; 2) perception on mental health; 3) present mental health status; and, 4) recommendations to promote positive mental health in the institution.*

A total of 25 AIMS students were purposively sampled and undergone focus group discussion (FGD) to narrate their mental health perception and status as well as their recommendations to promote positive mental health within the institution. A documentary analysis was also employed to review the demographic and clinical profiles of the participants to support the data generated from the FGD. Corresponding consents were acquired to protect the identity of the participants and comply with the institutional ethical standards. Demographically, the participants are between 18-22 years old, all single and Roman Catholic. Majority are male participants (21) who mostly belong to maritime programs. Their clinical profile reveals that the participants were distributed from eldest to the youngest order and majority (21) are living with their immediate families. Involvement inside and outside campus organization is quite high (22), while undergoing full study load (25). Some of the participants revealed to be occasional drinkers (9), alcoholic drinkers (2) and smokers (2); while a considerable number is overweight (6) and obese (5). Majority of the participants described mental health as a function of cognition. Their mental health issues ranged from eating habits, sleeping difficulties, and medical procedures while few raised concerns on insecurities, anxiety, and depression. Their primary source of stress originated from family-related concerns such as expectations and finances. To cope, they tended to use emotion-focused strategy to address the stress they experienced from family, self and school. Physical/social activities were primarily suggested as positive mental health promotion practices in the campus. This is succeeded by educational programs and psycho-spiritual activities. Findings were utilized in drafting mental health initiatives for the institution.

Key Words: *Mental Health, Anxiety, Stress, Coping Strategies, Asian Institute of Maritime Studies (AIMS)*



INTRODUCTION:

The World Health Organization (Ozorio, 2011) defined mental health as “a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community”. People have different ways of coping with the stresses of life depending on what they perceive as effective in managing challenging circumstances. These coping mechanisms somehow determine their mental health condition. Other proponents, such as Galderisi, et al (2015), defined mental health as a dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with the universal values of society. Basic cognitive and social skills, ability to recognize, express and modulate one's own emotions, as well as empathizing with others, flexibility and ability to cope with adverse life events and function in social roles, and a harmonious relationship between body and mind represent important components of mental health which contribute in varying degrees, to the state of internal equilibrium. This proposed definition stipulated that good mental health can be sustained even in the most difficult circumstances on condition that all skills are utilized to strike a balance between serving one's interests as well as, of others. Based on the above definitions, the importance of sustaining good mental health cannot be underestimated as this ensures that people don't just strive hard to become successful but also to be instrumental towards others' empowerment. Good mental health can be maintained when individuals go beyond self-preoccupation and discover capabilities to reach out to others. This therefore posits to independent mental health management.

The adolescent stage is an important phase in managing mental health. According to Bohnsack (2021), adolescents learn best through practice and must learn to problem solve, establish their own set of values, and take on more responsibilities. Adolescents benefit from guidance and support, hence, helping them exercise healthy autonomy may mitigate psychological risks. However, research demonstrates that increased autonomy without guidance from adults is harmful to adolescents' development (Davis & McQuillin, 2021; as cited in Bohnsack, 2021). Klein (2011) articulated that sometimes a level of independence is too much, too soon. Maybe allowing your son to set his own part-time work schedule around school didn't work so well – and grades suffered. Just because you need to pull back doesn't mean your child will never be able to handle that level of independence – it just means not yet. It means you have an opportunity to do a little more teaching and supervising. Gengler (2018) suggests that it's healthier to view establishing autonomy as a collaborative process. In this view, parents and their teen work together to figure out a new relationship based on the teen's growing maturity. This way, teens are not disconnected from their parents, but connected in different ways. Parents and teens also relate to each other in new ways. On the other hand, using controlling or coercive measures to protect an adolescent from making risky decisions may lead an adolescent into further pursuit of autonomy and often in the opposite direction intended by well-meaning adults (Davis & McQuillin, 2021; as cited in Bohnsack, 2021). Carter (2018) argued that parents who are too controlling – those who don't step down from their manager roles – breed rebellion. Many kids with micromanaging parents will politely agree to the harsh limits their parents set with a “yes, sir” or “yes, ma'am” attitude, but then will break those rules the first chance they get. They do this not because they are bad kids, but because they need to regain a sense of control over their own lives.

It is on the latter scenario where most adolescents experience mental health problems and, as a result, attributed consequences were also be prevalent. According to the Center for Disease Control and Prevention (2021), poor mental health in adolescence is more than feeling blue. It can impact many areas of a teen's life. Youth with poor mental health may struggle with school and grades, decision making, and their health. These problems often go hand-in-hand with other health and behavioral risks like increased risk of drug use, experiencing violence, and higher risk sexual behaviors than can lead to HIV, STDs, and unintended pregnancy. Because many health behaviors and habits are established in adolescence that will carry over into adult years, it is very important to help youth develop good mental health. This study is aimed to examine the occurrence of similar cases in AIMS campus in relation to the findings of related literature on mental health. Some referral cases on mood problems, suicidal tendencies, and aggressive behavior were reported to the Guidance and Counselling Office (GCO) from July to November, 2019. These cases were managed through counseling session and sessions with



parents and 'guardians. Data generated from this study will be utilized to design intervention programs which include preventive and remedial measures for those afflicted with mental health issues.

LITERATURE REVIEW:

Mental Health: Definitions and Descriptions. As the lead agency in looking after the general health and well-being of the world's population, the World Health Organization defined mental health as "a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community" (Ozorio, 2011).

On the other hand, Galderisi et al. (2015) argued on a new definition of mental health stating that differences across countries in values, cultures and social background may hinder the achievement of a general consensus on the concept of mental health. Hence, we aimed at elaborating an inclusive definition, avoiding as much as possible restrictive and culture-bound statements. Mental health, therefore, is a dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society. Basic cognitive and social skills; ability to recognize, express and modulate one's own emotions, as well as empathize with others; flexibility and ability to cope with adverse life events and function in social roles; and harmonious relationship between body and mind represent important components of mental health which contribute, to varying degrees, to the state of internal equilibrium.

With the above definitions, mental health awareness is therefore important to every individual. The objective of mental health awareness, according to Samaiya (2019), is to educate the people about mental illness, the causes, and the process through which they can deal with it. On the other hand, Stander (2021) articulated that mental health awareness also reduces the stigma and discrimination that people with mental illness are often subjected to. Many people struggle with mental illness but do not realize it. This means that, although effective medicines and therapies are available, these individuals either do not receive treatment or do not receive it in time. To prevent this, an awareness program improves knowledge of mental health, their symptoms and treatment options. Healthcare professionals, communities and patients can only make informed decisions if they have the right knowledge and information.

Besides awareness, promoting mental health is also essential as this reinforces at all times the importance of each person's mental health care. According to WHO (n.d.), mental health promotion involves actions to strengthen the policy environment and the use of strategic communication for network building, stakeholder engagement, enhanced mental health literacy, and behavior change. Mental health promotion interventions improve overall wellbeing and are delivered in the settings where people live, work, learn, and thrive. These include school and workplace mental health programs, early childhood interventions, social support and community engagement, women empowerment, anti-discrimination programs, and other interventions that address the social determinants of mental health. In order to maximize impact, mental health promotion activities must be linked closely with mental health services, and engage a variety of health and non-health (e.g. education, labor, social welfare, justice, environment, etc.) sectors.

Mental Health Issues in Young Adults. Teenagers experience many of the same mental health issues as adults (Morin, 2019). Physical, emotional and social changes, including exposure to poverty, abuse, or violence, can make adolescents vulnerable to mental health problems (WHO, 2021). It is therefore important to keep in mind that anyone can develop a mental health problem. Although some teens may be at a higher risk based on genetics and their past experiences, all teens are susceptible to mental illness – including straight-A students and star athletes (Morin, 2019).

WHO (2021) enumerated multiple factors affecting mental health. Factors that can contribute to stress during adolescence include exposure to adversity, pressure to conform with peers and exploration of identity. Media influence and gender norms can exacerbate the disparity between an adolescent's lived reality and their perceptions or aspirations for the future. Other important determinants include the quality of their home life and relationships with peers. Violence (especially sexual violence and bullying), harsh parenting and severe and socioeconomic problems are recognized risks to mental health.



Discrimination is another cause of mental health among young adults. In study done in University of California Los Angeles (Tokuyama, 2021), found that young adults who have experienced discrimination have a higher risk for both short- and long-term behavioral and mental health problems. Researchers examined a decade's worth of health data on 1,834 Americans who were between 18 and 28 years old when the study began. They found that the effects of discrimination may be cumulative — that the greater number of incidents of discrimination someone experiences, the more their risk for mental and behavioral problems increases. The study also suggests that the effects of discrimination in young adults are connected with disparities in care for mental health concerns and institutional discrimination in health care overall, including inequities in diagnoses, treatment and health outcomes. Morin (2019) listed four common mental health conditions among teenagers: depression; anxiety; attention deficit hyperactivity disorder; and, oppositional defiant disorder. Depression in teenagers (Mantra Care, 2021) originates from different factors depending on the individual. Some can be stressed at school or home, being embarrassed about something that happened, or losing someone close to them like family members and friends. Other causes of depression include things like drugs and alcohol, lack of sleep, eating too much junk food (especially fast foods) or not having enough fresh fruit and vegetables in your diet. Sometimes people might turn to comfort eating when they're stressed out instead of trying healthy ways to feel better about themselves again.

Hurley (2021), on the other hand, argued that all teens experience some amount of anxiety at times. Anxiety is actually a normal reaction to stress, and sometimes it helps teens deal with tense or overwhelming situations. For many teens, things like public speaking, final exams, important athletic competitions, or even going out on a date can cause feelings of apprehension and uneasiness. They may also experience an increase in heartbeat or excessive sweating. That's how the brain responds to anxious feelings. For some teens, however, anxiety can go beyond these typical symptoms to negatively affect friendships and family relationships, participation in extracurricular activities, and even their schoolwork. When feelings of anxiety interfere with normal daily living, the presence of an anxiety disorder should be considered. According to the National Institute of Mental Health, approximately 25% of 13- to 18-year-olds have an anxiety disorder, and just under 6% have a severe anxiety disorder.

What's causing the rise in teenagers with anxiety? How did we get here? While we don't know for sure (McCarthy, 2019), there are a number of factors that could be contributing. In addition to genetics, brain chemistry, personality, and life events, take the following into consideration: high expectations and pressured success; a world that feels scary and threatening; and, social media. There are also some children who have unexpected and disproportionate reactions to normal developmental experiences like going to school, going to a party, doing a sleepover or going to camp; children who worry excessively about everyday life activities.

According to the American Psychological Association (2019), the percentage of young Americans experiencing certain types of mental health disorders has risen significantly over the past decade, with no corresponding increase in older adults. Rosenberg (2019) had likewise agreed that mental health problems are on the rise among adolescents and young adults, and social media may be a driver behind the increase. According to a new study, published by the American Psychological Association, rates of mood disorders and suicide-related outcomes have increased significantly over the last decade among these age groups, impacting females and those who are wealthier, in particular.

Coping Strategies for Mental Health Problems. According to Morin (2021), whether you have been dumped by your date or you have had a rough day at the office, having healthy coping skills can be key to getting through tough times. Coping skills help you tolerate, minimize, and deal with stressful situations in life. Managing your stress well can help you feel better physically and psychologically and it can impact your ability to perform your best.

While treatments like medication and psychotherapy are incredibly helpful, sometimes people experiencing mental health conditions need to do more day-in and day-out to feel good or even just okay. Some common self-help suggestions people receive are to exercise, meditate and be more present, which are helpful and work for many people. However, other proven methods are not mentioned as often. Many of them are quick and simple techniques that can easily be added to daily routines (Pombo, 2019). These include adopting healthy sleep patterns; exercising regularly; developing coping, problem-



solving, and interpersonal skills; and learning to manage emotions. Protective and supportive environments in the family, at school and in the wider community are important (WHO, 2019).

Morin (2021), however, argued that not all coping skills are created equal. Sometimes, it's tempting to engage in strategies that will give quick relief but might create bigger problems for you down the road. Therefore (Pombo, 2019), finding the right coping mechanism takes time and patience, but it can enormously impact how you feel. If you have not had success with techniques you have tried, or you are looking to add a few more to your toolkit, here are seven coping mechanisms recommended by mental health professionals worth trying out: radical acceptance, deep breathing, opposite-to-emotion thinking, the 5 senses, mental reframing and emotional awareness.

On a theoretical perspective, coping skills can be learned based on established principles and philosophies. Therefore, the two main types of coping skills can be of big help: 1) problem-based coping; and, 2) emotion-based coping. Problem-based coping (Morin, 2021) is helpful when you need to change your situation, perhaps by removing a stressful thing from your life. For example, if you're in an unhealthy relationship, your anxiety and sadness might be best resolved by ending the relationship (as opposed to soothing your emotions). On the other hand, emotion-based coping is helpful when you need to take care of your feelings when you either don't want to change your situation or when circumstances are out of your control. For example, if you are grieving the loss of a loved one, it'd be important to take care of your feelings in a healthy way (since you can't change the circumstance). According to Belyh (2019), those who use emotion-focused feel that the situation is not something they have a control over, and they do not have the ability to manage or control the cause or root of the problem. For teenagers, a usual strategy of this type is to call friends and meet up with them for an all-night party, with a lot of booze. They will simply drown themselves in alcohol so they can forget their frustrations, even if only for a night or two. This can be a temporary escape from stress. However, students must be warned in resorting to this coping strategy for it can become addictive and may lead to a much severe mental health problem.

Definition of Terms. The following terms have been operationally defined to properly describe the variables in the study:

Mental Health: This refers to ability to adjust and self-manage even in the most adverse circumstances. Mental health includes a variety of dimensions, such as the physical/ health.

Health Issues: These pertain to acute or chronic health problems of college students. College student-participants are AIMS students whose ages range from 18-22, all single, Roman Catholics, male or female participants currently enrolled in BS Marine Engineering, BS Marine Transportations or BS Naval Architecture and Marine Engineering program.

Sources of Stress: This includes an event, experience or environmental stimulus that causes stress in an individual.

Positive Mental Health Practices/ Intervention: This refers to activities, events, lectures that provide guidelines on how to get through the most challenging circumstance.

Interview Guide for Forum Group Discussion (FGD): This focuses on participants' concept of mental health. Stressors, sources of stress, health issues, ways of sustaining good mental health conditions, and recommendations on mental health practices in campus.

RESEARCH OBJECTIVES:

Statement of the Problem: This research investigated the mental health of the participants specifically, to answer the following questions:

- What is demographic and clinical profile of the AIMS students?
- What is the perception of AIMS students towards mental health?
- What is the current mental health status of the AIMS students?



What programs can AIMS students recommend to promote positive mental health in the institution?

Significance of the Study: The results of this study will be of great significance to the following groups: the guidance personnel, faculty, and students and administrators. The guidance personnel will help the school in the development of programs focused on suitable strategies to deal with the peculiarities of mental health issues. On the other hand, the guidance personnel can recommend a program specifically designed for students to prevent the development of mental health problems and its consequences wherein faculty acting as advisers will maintain contact with students. Lastly, students can avail of the services of a revitalized mental health program.

Scope and Limitations: This study was limited to the mental health issues of college students of AIMS and therefore was not intended to compare findings between genders. The bases in collecting data were the Focus Group Discussion (FGD) and individual medical profile from Student Welfare Services-Health Services Unit (SWS-HSU). The schedule of interviews was adjusted depending on the availability of participants which were held in the Student Welfare Service-Guidance and Counseling Office (SWS-GCO). Some interviews were cancelled due to overlapping of activities. Sessions were not recorded so the facilitator summarized the notes at the end of the focus group discussion. The FGD, supported by the medical profile of students though robust in content, were limited only to a few students. The generalizability of the findings was restricted to populations who have similar characteristics or groups that share traits similar to those of the participants of this study, such as year level, course program, age, family profile and others.

RESEARCH METHOD:

Research Design: The study employed a qualitative method of data gathering and analyses. Data was collected through Focus Group Discussion (FGD) and was interpreted through the use of thematic analyses. FGD is frequently used as a qualitative approach to gain an in-depth understanding of social issues by obtaining data from a purposely selected group of individuals rather than from a statistically representative sample of a broader population (Nyumba, 2018). Thematic analysis, on the other hand, is a technique to identify, analyze, and interpret patterns. It categorizes data into different themes that can be analyzed. Researchers use this method for taking a more in-depth understanding of the data. Data obtained from demographic and clinical profile, as well as from the qualitative responses of the research participants, served as a useful data in examining the perspectives regarding the concept of mental health, the ways of keeping self in good mental health condition, the health issues experienced in the past, and the ways to promote mental health practices in school.

Sampling: A total of 25 students participated in this study. Purposive sampling, a method of handpicking the samples, was utilized in this study to ensure that the group of respondents is a representative sample, which demonstrates the characteristics chosen to identify the sample, are closely represented by the characteristics chosen to identify research participants. The Social Welfare Service (SWS) administered three batches of FGDs from participants referred by the peer facilitators and recruited by the SWS Head who expressed interest in the design of mental health practices for the campus in the 2nd and 3rd Trimester of the academic year, 2019-2020. The conduct of FGD was subjected to the availability of participants at the time the study was conducted.

Research Participants: Below is the demographic profile of participants elucidating their ages, religion, gender, ordinal position, living arrangement, involvements in organization, type of study load, concerns with their professor, and overall health status. Respondents are 25 AIMS students across programs/ year levels, with ages ranging from 18-22, all single, Roman Catholics with female subjects being outnumbered by 21 male participants who belong to BSMarE, BSMT, or BS NAME programs. Participants' classification of ordinal position is distributed among the participants from the eldest to the youngest post, with middle post yielding the highest number of participants, 16 succeeded by the



eldest, 8 and youngest, 1. Out of 25 participants, 21 are living with their immediate families, 1 with relatives, and 3 are living alone with good housing conditions recorded for all participants.

Moreover, respondents' involvement in organization is quite high with 22 engaged in organizations in/outside the campus, and has full study load, 2 studying and managing a business at the same time, while one didn't indicate a specific answer. Among the participants, 13 expressed problems with professors. Data generated from the students' medical profile (Sept 2019) indicated that 9 are occasional drinkers, 2 alcoholic drinkers, and 2 are smokers. Six of the participants are overweight, and five are reported as obese. As a result, 13 respondents were advised to reduce weight, 12 to modify lifestyle and two to monitor their blood pressure.

Research Instrument: The FGD was guided by an unstructured questionnaire formulated and validated by the SWS Head upon review of literatures and data obtained from students. The following questions were utilized in the conduct of the FGD:

What is your idea of mental health?

What are the health issues you experienced in the past?

What are your sources of stress?

How do you keep yourself in good mental health condition?

In what ways can we promote positive mental health practices in school?

Prior to the conduct of FGD, participants signed a contract of voluntary participation for the research. They also filled-up a personal information sheet indicating their demographic profiles such as: gender, religion, type of academic load, living arrangement, etc. To further substantiate their individual information, the clinical profile of the participants, which were filed at the Health and Services Unit (HSU), was also used in this study. This profile includes social history, physical exam results and recommendations (see Appendix A).

Data Collection Procedure: The Peer Facilitators group were given the orientation by the SWS Head regarding the study and were tasked to invite students who would like to be part of the design of mental health intervention program in the campus. Students who expressed interest in the study were scheduled for FGD depending on their availability. Interviews were conducted in three batches during their free time. FGDs were not recorded but summarized at the end of each group interview. The conduct of FGD began in the month of November 2019 and ended in January 2020.

Data Analysis: The open-ended questions were treated with thematic analysis, specifically to determine students' perception of mental health, their mental health issues, sources of stress, coping styles, and recommendation on mental health practices in the campus. Themes were created from the respondents' qualitative answers according to its relevance to the questions.

RESULTS:

Demographic and Clinical Profile: The participants were 25 AIMS students across all programs/year levels, with ages ranging from 18-22, all single, Roman Catholics, with female subjects being outnumbered by 21 male participants who belong to BSMarE, BSMT and BSNAME programs.

Participants' classification of ordinal position is distributed among the participants from the eldest to the youngest post, with middle post yielding the highest number of participants, 16 succeeded by the eldest, 8 and youngest, 1. Out of 25 participants, 21 are living with their immediate families, 1 with relatives, and 3 are living alone with good housing conditions recorded for all participants. Moreover, respondents' involvement in organization is quite high with 22 engaged in organizations in/outside the campus, and has full study load, 2 studying and managing a business at the same time, while one didn't indicate a specific answer. Data generated from the students' medical profile (September 2019) indicated that 9 are occasional drinkers, 2 alcoholic drinkers, and 2 are smokers. Six of the participants are overweight, and five are reported as obese. As a result, 13 respondents were advised to reduce weight, 12 to modify lifestyle and two to monitor their blood pressure.



Table 1. Participants' Concept of Mental Health

Cognitive Perspective	Combination of thoughts, feelings, and behaviors
<i>Paano tumatakbo ang utak mo at kung pano kamakisalamuha sa ibang tao.</i>	<i>It is how you react in your environment, involving the way of thinking. Pag hindi makontrol ang emotions nakakaffect sa iba.</i>
<i>Kapag alam mo sa sarili mo na mahaba ang patience mo, then suddenly mabilis kang mainis, not normal or abnormal na ang mental health.</i>	<i>It is a mental condition. It affects how you react to other people. It has an effect to your body.</i>
<i>Status ng pag-iisip. It is how you handle the situation.</i>	<i>Affected emotions, kapag hindi maganda ang iniisip it will reflect on how you will act.</i>
<i>Mindset, problem in mental health, hindi nagagawa and isang bagay ng maayos, hindi pinag-iisipan ang mga desisyon, danger sa sarili.</i>	<i>Taong may problema na di kinaya ang problema, nabaliw, depression, stressful.</i>
<i>Problema sap ag-iisip, parang bata pa lang problema.</i>	<i>Issue, anxiety, self-proclaimed issue</i>
<i>Problema sa utak, pinanganak na kulang sa pag-iisip.</i>	<i>Procrastination, unproductivity</i>
<i>Kapag hindi nakontrol ang utak.</i>	<i>Paano tumatakbo ang utak mo at kung pano ka makisalamuha sa ibang tao.</i>
<i>Paano madevelop yung mental thinking para masabi na healthy ka.</i>	
<i>Paghahandle ng problems, paano nakakapag isip ng maayos.</i>	
<i>State of being mentally fit.</i>	
<i>More on sa utak, kapag dinadamdam</i>	
<i>Inisip ng tao.</i>	

Mental Health Perception: More than half of the participants revealed that they equate mental health with cognitive dimension of well-being. Most participants believed that mental health describes how individuals think, followed by those who described it as a combination of thoughts and feelings. Only a small fraction of participants defined mental health as a combination of thoughts, feelings, and behavior. Review of literature mentioned that research proponents differ in some ways regarding their definition of mental health. WHO's view of mental health as a state of complete well-being (Ozorio, 2011) has evolved to a broadened definition. The Center for Disease Control and Prevention (2021) posited that mental health includes emotional, psychological, and social well-being. It affects how we think, feel, and act. Some respondents missed its holistic development which now includes the physical, emotional, social, and even the spiritual dimension, thus each dimension has to be enhanced to enable students maximize their capabilities and cope effectively with their challenging developmental tasks. It is important to broaden the concept of mental health for individuals to sustain good/positive mental health condition. To be able to understand and regulate one's behavior, one must increase awareness of the interplay of the different dimensions of mental health -the physical, emotional, social, and cognitive among others. Manwell (2015) mentioned in his paper that two of his research subjects claimed that mental health does not only exist in the individual but also in the interaction between the person and his/her environment. These findings were confirmed by the Health Resources & Services Administration, (2011) which cited that one's well-being should be considered within the context of social issues, economics, and service provision. Respondents need to adapt a holistic concept of mental health taking into consideration not only their functions but also their access to community resources.



Current Mental Health Status: Themes extracted were concerns with eating habits (2), sleeping difficulties (5), and medical procedure as health issues. Three participants added that they have mental health concerns such as insecurities, anxiety, and depression. More than one-fourth have health issues which should be a point of concern since the promotion of health does not only involve prevention/treatment of disease, impairment or disability but also the promotion of mental health. Health issues may be an antecedent to a development of vulnerability to mental health issues or vice versa. As shown in the Health Services Unit (HSU) medical profile of the participants, few admitted being chronic drinkers, and some of them were advised to reduce weight and modify lifestyle. Therefore, health literacy (capacity to obtain and process and understand basic health information and services) is vital to making appropriate health decisions. Healthy eating habits like setting a dietary goal should be encouraged, otherwise, these individuals are likely to develop further mental health concerns, as weight problem is associated with reduced psychological well-being, alcoholism, depression and low self-esteem.

Table 2. Participants' Health Issues and Mental Health Concerns

Medical Procedure	Lack of Sleep	Eating Habits	Mental Health Issues
<i>Surgery</i>	<i>Sleeping habits – 3 hours of sleeping</i>	<i>Eating habits- 2 meals a day only or skips meal due to work overload</i>	<i>Mental Health Depression Insecurities-Anxiety (hindinakakatulong)</i>

With reference to sources of stress, four themes were extracted. Two-thirds of the respondents' primary source of stress originated from family expectations and finances. Other stressors include uncertainty of the future and one's career path, self- expectations, and mental health. One of the respondents mentioned about problem with friends and another one highlighted traffic as his stressor. These findings were supported by other literature. According to Mental Health Center (2016), family relationships can substantially affect mental health, behavior and even physical health. Numerous studies have shown that social relationships, particularly family relationships, can have both long- and short-term effects on one's mental health. Depending on the nature of these relationships, mental health can be enhanced or impacted negatively.

Table 3. Participants' Source of Stress

Academics	Family	Career	Self-expectations
Academics- pressure from workload, professors, organization	Family expectations, family emergencies, family finances, role in the family	Career, future seems uncertain	Self-pressure, insecurities, capabilities, mental health

Related to respondents' coping strategies, data generated two themes, the problem- focused and emotion-focused strategies. Responses under the emotion-focused seek forms of comfort to relieve self from stress while those under the problem-focused strategy signify ways of actively doing things, doubling efforts and trying harder to make things work. Some behaviors can serve either function depending on the individual's reason for using them. For instance, seeking support is emotion-focused if the goal is to gain emotional support and reassurance, and problem-focused if the goal is to get practical help or advice. Majority of the participants utilized emotion-focused strategies more than the problem- focused ones, specifically the leisure activities that provide relief and comfort. According to



Belyh (2019), those who use emotion-focused feel that the situation is not something they have a control over, and they do not have the ability to manage or control the cause or root of the problem. For teenagers, a usual strategy of this type is to call friends and meet up with them for an all-night party, with a lot of booze. They will simply drown themselves in alcohol so they can forget their frustrations, even if only for a night or two. This can be a temporary escape from stress. However, students must be warned in resorting to this coping strategy for it can become addictive and may lead to a much severe mental health problem.

Table 4. Participants' Coping Style with Stressors

Problem-focused Strategies	Emotion-focused Strategies
<i>Positive thinking motivate self, look at the bright side, expect the worst, and prepare yourself</i>	<i>Eating comfort foods (chocolate, ice cream) Eating</i>
<i>Time management</i>	<i>Communication with God and serving in church (choir member Connection with God, praying</i>
<i>Reflecting on resources wasted, failing grades, plan for the future. Remind myself to let go things beyond one's control. Writing problems, reflect at the end of the day.</i>	<i>Doing things that you really like: singing, listening to pop music watch funny movies. Aliwin ang sarili, maglaro ng mobile games, computer games, travel, going to the mall, playing basketball, bond with family</i>
<i>Communicating with friends or best friends. Communication with family and friends. Talking with few friends.</i>	<i>Alcohol – 1 bottle/3x a week, oo nakakatulong gives him courage to release his emotions</i>
<i>Communicating with friends/ bestfriends Communication with family and friends, Talking with few friends</i>	<i>Does not think the source of stress</i>
	<i>Communicating with friends/ bestfriends, family</i>
	<i>Using social media</i>
	<i>Taking care of Pet (kalapati)</i>
	<i>Seek help from psychometricians/ guidance associates</i>
	<i>Taking a rest</i>

Proposed Mental Health Program: More than half of the respondents suggested some mental health practices in the campus. Responses from research question #3 were grouped into three themes, the physical/social activities, educational, and psycho-spiritual activities. Physical/Social activities surfaced as the most frequent response to promoting mental health in the campus, succeeded by the educational and psycho spiritual programs. Under these physical and social activities is the respondents desire to engage in competition or opportunities where they can enhance their endurance and social skills. Related to educational programs are information relevant to become proactive in handling developmental tasks such as planning one's career, sustaining motivation, and commitment to one's endeavor among others. Of equal importance too is the psycho- spiritual program wherein students are provided with a venue for self-expression alone or confession with a priest - a way of engaging mind and spirit in handling mental health issues. These suggestions serve as a springboard for the institution to conceptualize a mental health program for students. From the perspective of a broadened, revolutionized, contextual concept of mental health, students' health issues, effective and efficient mental health program can be strategically designed.



Table 5. Positive Mental Health Practices in School

Educational Activities	Physical/Social Activities	Psycho-spiritual Activities
Career path and career orientation	Games/Sports (competition)	AIMS confession hotline
Posters for consultation in the guidance office	Field trips and out bound tour (trekking)	Freedom wall
Motivational talks Monthly seminar Open forum	Social activities	

Overall, the mental health condition of respondents suggest that they cope using emotion-focused strategies prior to using problem-focused strategies with majority experiencing pressure from academics and expectations from family. Out of the twenty-five participants, more than half of them suggested some mental health practices in the campus.

DISCUSSION:

Based on the results generated, the concept of mental health elicited two themes: primarily mental health as a cognitive dimension of well-being and followed by a combination of thoughts, feelings, and behavior. Most participants believed that mental health describes how individuals think. Issues on mental health demonstrated 8 themes related to (1) health issues which include (a) eating habits, (b) sleeping difficulties, (c) and medical procedure, [2] sources of stress which pertain to (a) family, (b) uncertainty of the future and one's career path, (c) self-expectations, and (3) coping mechanisms which refer to (a) emotion- focused strategies and (b) problem-focused strategies with (a) commonly utilized by participants. Lastly, proposed mental health program illustrated three themes: physical/social; educational; and, psycho-spiritual activities. All data were integrated to serve as guidelines in promoting mental health awareness in the campus.

CONCLUSION AND RECOMMENDATION:

The research questions were answered based on the responses of the participants and the implications on mental health practices: Majority of respondents perceived mental health as a function of cognition, while a few described it as a combination of thoughts and feelings. This may serve as guidelines in promoting mental health awareness, a revolutionized concept of mental health to destigmatize mental health concerns. An individual with mental health problems must be viewed from a holistic perspective and handled using a holistic strategic approach. The current status on mental health of respondents suggests that a few have health issues, and generally use emotion-focused strategy to deal with their self-doubts, family, and academic concerns. Promoting mental health awareness should include collaboration among significant others, family and school authorities, wherein individuals with mental health problems must be assisted to utilize a combination of emotion-focused and problem-focused strategies. Respondents suggested mental health program in the campus include physical/social, educational, psycho-spiritual activities which can serve as a springboard for institutional initiatives in sustaining good/positive mental health in the campus.

Recommendation : The following can serve as guidelines to promote mental health awareness: Promotion on the new definition of mental health that can be disseminated through forums, posters, discussions, etc. to destigmatize mental health problems and encourage help-seeking behaviors for those afflicted with these problems.

Symposiums for parents focused on enhancing communication skills and identifying warning signs of mental health problems among young adults.



Symposiums and fora for faculty on mental health awareness, specifically those who have several referral cases to SWS-GCO.

Online recollection week (3 days) wherein students are required to go through the activities supervised by assigned faculty. Homework is submitted on a daily basis and at the end of the recollection, students will receive feedback from the assigned supervisor.

Information dissemination/consultation regarding health education initiatives (eg. healthy eating options, ways to cook healthy food and the importance of keeping hydrated, which include the availability of potable water).

Forums on the ramification of risky behaviors and lifestyle choices (chronic alcoholism, smoking, poor diet, lack of exercise and sleep, etc.) on one's career path and well-being be included. This way, students are assisted not only to address: specific health problems but also develop problem-solving capabilities as well.

REFERENCES:

1. American Psychological Association. (2019, March 14). Mental Health Issues Increased Significantly in Young Adults Over Last Decade. Retrieved from <https://www.apa.org/news/press/releases/2019/03/mental-health-adults>
2. Barkley, A. (2021, October 2). What is Thematic Analysis? Advantages and Disadvantages. The Academic Papers. Retrieved from <https://www.theacademicpapers.co.uk/blog/2021/10/02/what-is-thematic-analysis-advantages-and-disadvantages/>
3. Belyh, A. (2019, September 23). 7 emotion-focused strategies to reduce stress. Cleverism. Retrieved from <https://www.cleverism.com/7-emotion-focused-strategies-to-reduce-stress/>
4. Carter, C. (2018, October 23). How independent should your teenager be? Greater Good Magazine. Retrieved from https://greatergood.berkeley.edu/article/item/how_independent_should_your_teenager_be
5. Center for Disease Control and Prevention. (2021, June 28). About mental health. Retrieved from <https://www.cdc.gov/mentalhealth/learn/index.htm>
6. Galderisi, S., Heinz, A., Kastrup, M., Beezhold, J. & Sartorius, N. (2015, June 4). Toward a new definition of mental health. Retrieved from <https://onlinelibrary.wiley.com/doi/full/10.1002/wps.20231>
7. Gengler, C. (2018). Teens becoming independent. University of Minnesota Extension. Retrieved from <https://extension.umn.edu/teen-development/teens-becoming-independent>
8. Hurley, K. (2021, February 25). 6 Hidden Signs of Teen Anxiety. Psycom. Retrieved from <https://www.psycom.net/hidden-signs-teen-anxiety>
9. Klein, J. (2011, August 1). How much independence should a teenager have? She Knows. Retrieved from <https://www.sheknows.com/parenting/articles/834169/how-much-independence-should-a-teenager-have/>
10. Center for Disease Control and Prevention. (2021, May 12). Adolescents and school health. Retrieved from <https://www.cdc.gov/healthyyouth/mental-health/index.htm>
11. Mantra Care. (2021). Teen Depression: 11 Reasons Why Teens Fall Into Depression. Retrieved from <https://mantracare.org/therapy/child-teen/teen-depression/>
12. McCarthy, C. (2019, November 20). Anxiety in Teens is Rising: What's Going On? Healthy Children. Retrieved from <https://www.healthychildren.org/English/health-issues/conditions/emotional-problems/Pages/Anxiety-Disorders.aspx>
13. Mental Health Center. (2016, August 3). How does family life affect mental health? Retrieved from <https://www.mentalhealthcenter.org/how-does-family-life-affect-mental-health/>
14. Morin, A. (2019, November 8). Common Mental Health Issues in Teens: How Adolescents Are Susceptible to Mental Illness. Very Well Family. Retrieved from <https://www.verywellfamily.com/common-mental-health-issues-in-teens-2611241>
15. Morin, A. (2021, November 29). Healthy Coping Skills for Uncomfortable Emotions: Emotion-Focused and Problem-Focused Strategies. Very Well Mind. Retrieved from <https://www.verywellmind.com/forty-healthy-coping-skills-4586742>



16. Nyumba, T., Wilson, K., Derrick, C. & Mukherjee, N. (2018, January). The use of focus group discussion methodology: Insights from two decades of application in conservation. Retrieved from https://www.researchgate.net/publication/322405274_The_use_of_focus_group_discussion_methodology_Insights_from_two_decades_of_application_in_conservation
17. Pombo, E. (2019, February 1). Self-Help Techniques for Coping with Mental Illness. National Alliance on Mental Illness. Retrieved from <https://www.nami.org/Blogs/NAMI-Blog/January-2019/Self-Help-Techniques-for-Coping-with-Mental-Illness>
18. Samaiya, P. (2019, May 7). The Importance Of Mental Health Awareness. Enter Tales. Retrieved from <https://www.entertales.com/importance-mental-health-awareness/>
19. Stander, C. (2021, November 23). The Importance of Mental Health Awareness. Linked In. Retrieved from <https://www.linkedin.com/pulse/importance-mental-health-awareness-tyhn-transform-your-health-network/>
20. Tokuyama, E. (2021, November 7). Discrimination increases risk for mental health issues in young adults, UCLA-led study finds. UCLA. Retrieved from <https://newsroom.ucla.edu/releases/discrimination-risk-mental-health-young-adults>
21. Ozorio, T. (2011, January 24). What is mental health and mental well-being? Retrieved from <https://www.mind.org.uk/information-support/your-stories/what-is-mental-health-and-mental-wellbeing/>
22. Rosenberg, J. (2019, March 20). Mental Health Issues on the Rise Among Adolescents, Young Adults. AJMC. Retrieved from <https://www.ajmc.com/view/mental-health-issues-on-the-rise-among-adolescents-young-adults>
23. World Health Organization. (n.d.). Promoting mental health. Retrieved from <https://www.who.int/westernpacific/activities/promoting-mental-health>
24. World Health Organization. (2021, November 17). Adolescent mental health. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health>



A COMPARISON OF CREATIVE THINKING ABILITY OF HIGH ACHIEVERS IN COLLEGE STUDENTS

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Abstract: *Creative thinking is different from just thinking. Creative thinking means to express yourself in your own way. It is an important human character. According to Piaget, the most initial aim of education is not to train individuals who repeat the previous generations, but to train inventors who have the skill of producing new things and who are creative. This article compares the differences in creative thinking ability among students who are high achievers. A total no of 300 college students participated in this study. Three groups were formulated for high achievers in Science, Arts and Commerce, each group contains 100 students. A self-developed instrument was used to measure the creative thinking potential. Result of the study reveals that there is no difference between high achievers of Science, Arts and Commerce.*

Key Words: *Creative thinking, High Achievers, College Student, Science, Arts and Commerce*

INTRODUCTION:

“Creativity is a fundamental feature of our intelligence and it is present in everyone” -
MARGERET BODEN

“Everyone is born creative” - HUGH MACLEOD

“Everybody has a creative potential and from the moment you can express this creative potential, you can start changing the World” - PAULO COELHO

Creativity is what drives innovation and progress. Creativity involves lateral thinking which is the ability to perceive patterns that are not obvious. Creativity is the ability to make something new. This might be a picture or a piece of music-but it might also be a new idea. Creative thinking means to come up with new ways to think about the surrounding world in order to make something innovative. It refers to using abilities and soft skills to come up with new solution to problems. It is considered something in a new way, i.e., thinking outside the box which often allows finding a new solution. It is intentionally gaining new insights and different ideas through existing information. Creative thoughts involve tapping into different styles of thinking and examining information from different viewpoints to see new patterns. Anyone can foster a creative mind with some practice. Creative thinking encourages students to use a variety of approaches to solve problems, analyse multiple viewpoints, adapt ideas and arrive at new solution. College is a great ground for enhancing creative thinking skills. As these skills lets things from a fresh perspective and different angles. It is an inventive thought process which results in surprising conclusions and new ways of doing things. Creative thinking can be aided by Brainstorming, Lateral Thinking and Mind Mapping to generate ideas.

Now a day's creativity is increasingly gaining importance. Professionals from all fields are becoming aware of its importance for the development of creative thinking [1]. Changes in the field of creativity research has inspired numerous definitions, for example, Torrance, he is known as a leader



of creative research, defined creativity as “the process of forming ideas or hypothesis, testing hypothesis and communicating the results” [2]. Creative potential exists among all people and can be improved through learning [3].

LITERATURE REVIEW:

No objectives and complete information have been gained till now in education about the high achievers who are having the skills of creative thinking ability. According to the Resource Article-“The Psychology of High Achievers”- High achievers take great pleasure in reaching their goals. They like to be one of the best at what they do and this helps them stay motivated through the hard work and disappointment that come with improving skills. Psychologists have found that high achievers primarily concern themselves with reaching their goals, while low achiever primarily worry about avoiding failure. It’s not that high achievers are okay with failing; it’s that they understand the importance of pushing themselves beyond their comfort zone, which allows them to continually improve and ultimately, succeed at a high level.

RESEARCH OBJECTIVE:

To compare the difference in Creative Thinking ability among college students who are High Achievers in Science, Arts and Commerce

RESEARCH METHODS:

Subjects: A survey method was used for research. The target population for this study included college students. A stratified random sampling was used to determine the sample.

Six strata were formulated:

1. U.G Girls Science.
2. U.G Boys Science.
3. U.G Girls Arts.
4. U.G Boys Arts.
5. U.G Girls Commerce.
6. U.G Boys Commerce.

From each stratum 50 Girls and Boys were conveniently taken from each Science, Arts and Commerce.in this way 300 college students participated; out of which 100 each belongs to Science Arts and Commerce, including both sexes. They were further splitted into Creative thinkers who were high achievers according to the stated norms of academic achievement that is the students who scores 80% and above marks. The Summary of the sample is shown in Table 1.:

TABLE 1: DISTRIBUTION OF THE SUBJECTS BY THE STREAM

LEVEL OF ACHIEVEMENT	Sex wise category of U.G students	Total number of students
HIGH ACHIEVER WITH CREATICAL THINKING	U.G Girls Science.	50
	U.G Boys Science.	50
	U.G Girls Arts.	50
	U.G Boys Arts.	50
	U.G Girls Commerce.	50
	U.G Boys Commerce.	50
Total		300

Hypothesis

- Ho There is no statistically significant difference between Creative thinking and High achievers.
- Ho There is no statistically significant difference between High Achievers of Science, Arts and Commerce.



DISCUSSION AND ANALYSIS:

Creative thinking was mostly assessed using an abbreviated version of the Torrance Tests of Creative Thinking (TTCT). The TTCT was developed within an educational context to test for creativity. [4]. The TTCT was developed in 1966, and it has been renamed four times: 1974, 1984, 1990 and 1998. The creativity test measures four elements of the creative thinking process:

- Fluency (the number of ideas produced).
- Flexibility (the different categories of ideas produced).
- Originality (the unusualness or the infrequency of an idea).
- Elaboration (embellishment and development of an idea).

Another instrument that was used by Khatena & Torrance [5] named as “What Kind of Person Are You? (WKOPAY) was a 50-item self- report checklist, used to asses individuals’ perception of their own creative behaviour. An instrument “Test Your Creativity Level Scale” (TYCL) was also used for measuring creativity. This instrument consisted of 50 items organized in a five-point Likert scale format that ranged from strongly agree to strongly disagree. In the light of above, researchers developed an instrument named as ITCT (Instrument for Testing the Creative Thinking). It was comprised of a self-reported 48-items organized on a five-points Likert scale format that ranged from strongly agree to strongly disagree. The instrument indicated the four creative abilities, fluency, originality, elaboration and flexibility. The instrument was finalized after pilot study on a small sample drawn from same population to test the feasibility of the research questions and clarity of the instrument. Item responses were carefully examined to see how the respondents performed. Accordingly, the instrument was modified and Cronbach’s alpha used to measure the reliability that was found 0.79.

RESULTS:

The primary purpose of the study was to compare the difference between creative thinking ability among students who are high achievers of science, arts and commerce. Table 2. Shows the descriptive statistics of student’s creative thinking and high achievers.

TABLE 2 : PARTICIPANT’S WHO ARE HIGH ACHIEVERS OF SCIENCE, ARTS AND COMMERCE AND ASPECTS OF CREATIVE THINKING

Aspects of Creative Thinking	High Achievers of Science	High Achievers of Arts	High Achievers of Commerce	N
Fluency	27	25	26	76
Flexibility	24	26	24	75
Originality	24	26	25	74
Elaboration	25	23	25	75
Total	100	100	100	300

TABLE 3: PARTICIPANT’S WHO ARE HIGH ACHIEVERS OF SCIENCE AND ASPECTS OF CREATIVE THINKING

Aspects of Creative Thinking	N	High Achievers of Science	Mean	SD
Fluency	76	27	51.5	17.32
Flexibility	75	24	49.5	18.03
Originality	74	24	49	17.67
Elaboration	75	25	50	17.67
Total	300	100	200	70.71



TABLE 4: PARTICIPANT’S WHO ARE HIGH ACHIEVERS OF ARTS AND ASPECTS OF CREATIVE THINKING

Aspects of Creative Thinking	N	High Achievers of Arts	Mean	SD
Fluency	76	25	50.5	17.32
Flexibility	75	26	50.5	17.32
Originality	74	26	50	16.97
Elaboration	75	23	49	18.38
Total	300	100	200	70.71

TABLE 5: PARTICIPANT’S WHO ARE HIGH ACHIEVERS OF COMMERCE AND ASPECTS OF CREATIVE THINKING

Aspects of Creative Thinking	N	High Achievers of Commerce	Mean	SD
Fluency	76	26	51	17.67
Flexibility	75	24	49.5	18.03
Originality	74	25	49.5	17.32
Elaboration	75	25	50	17.67
Total	300	100	200	70.71

CONCLUSION:

This study attempted to provide empirical evidence about the difference in creative thinking of college students of UG Science, Arts and Commerce. The emanating results indicated that high achievers are not significantly different in terms of creative thinking abilities. Creativity is distinct from intelligence. Children scoring high on intelligence tests are not necessarily highly creative. The research provides empirical evidence that creative thinking abilities are independent from the level of achievement in higher achievers from different streams, as it may be Science, Arts or Commerce. Further studies need to be carried out to confirm the nature of this comparison. However, before considering the implications of this study, it is important to consider the size of the sample, the environment setup and some other variables may be playing some role for such findings. Therefore, care should be taken when generalizing from the results. Creativity is an important aspect of human life. It includes personality traits, abilities and skills. It’s our responsibility to develop the creative among students to develop their creativity by providing a creative environment, helping children to build up their skills through play, behaving creatively and praising children’s creative efforts. In today’s information age creative thinking is viewed as crucial for educated persons to cope with a rapidly changing world.

REFERENCES:

1. Fletcher, A. (2001) *The Art of Looking Sideways*. London, Phaidon.
2. Torrance, E.P. (1965), *Rewarding creative behaviour: Experiments in classroom creativity*. Englewood Cliffs, NJ: Prentice-Hall.
3. Torrance, E.P. (1998). *The Torrance Tests of Creative Thinking Norms- Technical Manual Figural Forms Aa and B, Bensenville, IL: Scholastic Testing Service*.
4. Anastasi, A. (1976). *Psychological Testing (4th ed.)* New York: Macmillan Publishing.
5. Khatena, J., & Torrance, E.P. (1976). *Khatena -Torrance creative perception inventory*. Chicago: Stoelting.



A Digital Health App for Families Victims of Enforced Disappearances

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Abstract: *Spain continues to be the second country in the world, after Cambodia with mass graves, about 400; it occupies the same position in relation to the high number of missing people, 114,226. This study highlights the challenges and the new procedures for the launching of a DHI app adapted to the needs of families victims of enforced disappearances and it analyzes, among other issues. Based on a participatory research action (PAR) carried out between 2017 and 2019 with 15 families victims of enforced disappearances in Spain, it is confirmed that to deal with the tireless and emotional exhaustion that the search for a digital health intervention (DHI) entails, it could be a beneficial solution if it is carried out in the short term for the emotional support and monitoring of the process of mourning and trauma recovery.*

Keywords: *Enforced disappearances, Victims, Trauma, Digital Health Intervention, Spain.*

INTRODUCTION:

The fact that Spain is the second country with the highest number of forced disappearances has led several researchers to delve into the causes, filed complaints and treatment of the families who are victims of this type of disappearance (Rodríguez Arias, 2009; Garzón, 2008). As Rodríguez Arias specifies: “Spain is the second country in the world in the crime against humanity of enforced disappearance of persons, which is one of the forms of crimes against humanity recognized since Nürenberg and by the Rome Statute of the International Criminal Court” (Villarreal, 2019). To better understand the origin of forced disappearances, this study is taking as a reference the definitions presented by the researcher and criminal lawyer Rodríguez Arias who points out that, enforced disappearance was invented by the Nazis. A person is chosen and they are taken, as Marshal Wilhelm Keitel said, to the 'Nacht und Nebel': at night and in the fog. That person is eliminated and made to disappear, usually in a ditch or in a pit. The researcher makes the distinction between an armed conflict and enforced disappearance well, according to the Geneva Convention of 1949, in the first case, it forces the winners of a war to bury the vanquished.

Therefore “the Nazis create enforced disappearance”, because it is a way of paralyzing. When they advanced to the east occupying Russia, the way to cheapen the number of troops they had to leave in the rear was this. If they arrived at a town, they caught 20 and executed them in the square, 200 partisans would suddenly come out, but if instead they took 20 in the 'night and fog', that paralyzes. Those 20 families think that maybe they are still alive, that if they collaborate and behave well, they will still come back. It is a profoundly perverse logic. That comes from there and the Spanish Civil War was a preliminary rehearsal”(Villarreal, 2019). In the case of Spain, after holding the first democratic elections after the extensive dictatorship, and counting on the political consensus, it was accepted to put an end to what had happened by resolving the conflict with Amnesty Law 46/1977. Despite the



limitations and restrictions that this law has generated for the families that needed to start searching for the disappeared, since 2006, the issue of forced disappearances has become a topic of public interest throughout the country. In this context and based on Rodríguez Arias reflections, it is also important to take into account the Rome Statute of the International Criminal Court (article 7.2 i) in which it is specified that: “the apprehension, detention or kidnapping of persons by a State or a political organization, or with their authorization, support or acquiescence, followed by the refusal to admit such deprivation of liberty or to report on the fate or whereabouts of said persons, with the intention of leaving them outside the protection of the law for a prolonged period.

However, the absence of investigation of forced disappearances and the consideration of these crimes as "political crimes" by the Governments, has made it possible to extend the idea of not prosecuting these crimes, considering them prescribed. In the Spanish case, as in many others, the argument behind the statement indicates that this persecution could reopen past wounds that damage the political consensus agreed upon almost forty years ago, with the Pact of Silence to give way to the Transition and the forgetting crimes without reparation. Hence, the United Nations opens the possibility of claiming from the Right to truth, a right that is considered "fundamental, inalienable, intangible and imprescriptible". In this sense, it is noted that: “Victim shall be understood as any person who has suffered harm, individually or collectively, including physical or mental injury, emotional suffering, economic loss or substantial impairment of their fundamental rights (...) the term “victim” shall also include the immediate family or dependents of the direct victim and persons who have suffered harm when intervening to assist victims in danger or to prevent victimization”(Art. 8: 60/147, United Nations General Assembly).

Following this line, the Human Rights Committee by taking into account the Art. 7 of the International Covenant on Civil and Political Rights, in which it is declared that the right to the truth tries to prevent the psychological suffering of the relatives of the victims of forced disappearances. From this background, in Spain, the families of the victims demand memory, justice and reparation. However, and to date, the responsible institutions have not worked on emotional repair, which makes the severe traumatic event more irreversible (Herman, 1992). Given that, in this work the perspective of the families who are victims of forced disappearances is addressed. Consequently, this study turns to international law, human rights and the jurisprudence of the Inter-American Court of Human Rights, from which States are obliged to investigate cases of forced disappearance until the victim has been found and identified. Following Capellá i Roig (1999) we understand forced disappearance as “an attack against human dignity that affects the deepest values of any society that respects the primacy of law, human rights and fundamental freedoms; outrage condemned as a negation of the objectives of the Charter of the United Nations and as a serious and manifest violation of human rights and fundamental freedoms proclaimed in the Universal Declaration of Human Rights and reaffirmed in other relevant international instruments (Capellá i Roig 1999, in Galella, P, 2014, p.83) However, and for the Spanish case, the absence of investigations into forced disappearances and the consideration of these as "political crimes" by the Government is observed. The transition became a fact that has made it possible to extend the idea of not prosecuting these crimes, considering them prescribed, in order not to reopen past wounds that damage the political consensus signed forty years ago with the so-called “Pact of Silence”, to give way to the Transition and forget these crimes, where the lack of recognition of the victims is evident in terms of truth, justice and reparation, among other issues. Consequently, from the preceding analysis, it follows that enforced disappearance, being considered a crime against humanity due to its systematic practice against a population, is subject to imprescriptibility and, therefore, its permanence, until the unlawful situation ceases and begins the calculation of the statute of limitations. With all of the above, forced disappearance continues to place Spain in first place among the countries of the European Union that have not carried out reparation actions for the victims. In this line, the Spanish Ministry of the Interior has registered a total of 202,529 files (1,228 prior to 2010) of missing persons since 2010, 5,529 of which were still open on 31st December 2019, in other words, 9.3% of the total,



according to the 2020 report “Missing People in Spain”, with figures taken from the Missing Persons and Non-Identified Mortal Remains (PDyRH) database and the Criminal Statistics System (SEC). Of the 5,529 cases still open on 31st December 2019, a total of 2,556 (40% of the total) were Spanish missing persons, followed by Moroccans, counting for 1,432 files for missing persons (25% of the total). Among the cases mentioned, families who reported the disappearance of one of their relatives can access the Alertcops application for which they are given a password. This application is used for searches related to: cases of theft, vandalism, damage, assault, fights, sexual assault, domestic violence, bullying, anti-extremism, assistance to people with hearing problems and missing persons (Ministry of the Interior, 2020). However, this study and the analysis of the implementation of an app does not correspond to this study proposal since one of the points to take into account is that a disappearance is not the same as a forced disappearance as previously specified. The digital app proposed through this study aims to provide psychological accompaniment with a specific focus on trauma; just as with families of stolen babies, this population has no psychological accompaniment or tools allowing them to get through this situation. While certain people within these groups receive or have received individual treatment, until now they have not had digital and easily accessible tools allowing them to reduce their levels of anxiety or apprehension in various moments of the day or the week. Through this research it is observed that even if there have been various digital interventions designed for the improvement of people’s health, many of them have failed due to lack of commitment by users (Yeager & Benight, 2018) or their mistrust, as the use of apps also involves different risks and challenges where privacy and data protection are not always presented in terms of information for the client and requests for consent (van Dijck, Poell & de Waal, 2018).

LITERATURE REVIEW:

The first cases of stolen babies in Spain occurred during Francisco Franco’s regime, but continued until relatively recently. The stolen babies’ organizations specify that there are around 300,000 stolen babies in Spain (Escudero, 2021, 99). The theft of babies in Spain (1940-1999) was systematic (medical doctors, nurses, Catholic priests and nuns) and based on Doctor Antonio Vallejo Nágera’s concept of eugenics used, during the period under Franco, as an argument for the appropriation of descent. After the dictatorship, in 1975, these practices were motivated economically (Bueno Morales & González Besteiro, 2018 in Escudero, 2021 p.99).

As a result to the transition to democracy in 1978, the number of stolen babies decreased, but the practice, continued. As Aguilar (2017) specifies, the stealing of babies continued in private and public hospitals for some time after democracy and this is due to the fact that many people working for Franco’s regime continued working in public offices in times of democracy (in Barrenechea Lopez, 2017; 29). But the modification of the adoption law in 1987 provided greater control and documentation of births and adoptions (Bueno Morales & González Besteiro, in Escudero, 2021, p.100).

Based on the consulted literature, it can be observed that there are no previous studies of this population of families of stolen babies victims of unforced disappearances from a social psychosocial perspective in Spain nor in how the recovery process can be implemented through a digital health intervention. As several studies point out, the psychological distress symptoms of traumatized people simultaneously call attention to the existence of an unspeakable secret and deflect attention from it (Escudero, 2021, p.100). We will study Post-traumatic Stress Disorder (PTSD) in a population that has never been studied before. Because of this, new characteristics and contributions to trauma studies may emerge.

One of the few antecedents on the subject can be found in a pilot study based on Social Media Psychology called "Te Estamos Buscando" (We are looking for you campaign) (Escudero, 2020), in which through workshops and group dynamics provided results and information on the needs of this population that may contribute to the creation of an application responding to these needs.



The motivation for this inquiry is to put an end to the uncertainty faced by families, to make the facts of past atrocities public and, in some cases, to collect evidence for criminal proceedings. However, fact finding as a means of reparation can also lead to the revictimization of those affected, thereby causing a secondary harm. Since science and technology can assist with fact finding, they are commonly viewed as furthering processes of truth, justice, and reparation by advancing knowledge of human rights violations committed in the past. Yet, scientific findings can also be at odds with state aims and obligations and can result in the serious secondary harm of revictimization. Revictimization is “the victimization that occurs not as a direct result of the criminal act but through the response of institutions and individuals to the victim” (UNODC, 1999, in Medina & Sandberg Wiener, 2016)

In accordance with Herman (1992) this and following we can point out that: "Sharing the traumatic experience with others is a precondition for the restitution of a sense of a meaningful world (...) The response of the community has a powerful influence on the ultimate resolution of the trauma. Restoration of the breach between the traumatized person and the community depends, first, upon public acknowledgment of the traumatic event and, second, upon some form of community action" (1992, 70 in Escudero, 2020, p.100).

Based on research by different academics such as Medina and Sandberg Wiener (2016), it is possible to agree that families should not bear the cost of poorly designed repair policies. In this, the studies reviewed agree in pointing out that the States must do everything in their power to recognize the suffering that families have suffered and avoid causing them further harm. In this sense, there is a need to promote a series of concrete actions in order to consolidate the action of the States to recognize the risk of re-victimization and the right to reparation for victims. Two actions that would help states mitigate this damage and better serve the needs of families. For this reason, we recommend that States consider forensic identification as part of their obligation to repair families, both to close cases and to prevent revictimization.

Among the recommendations pointed out by the researchers, there may be some coincidences, to the extent that it is agreed that the States must use state-of-the-art scientific methods and provide support teams so that the families, or their representatives, observe and participate in the scientific process. This means that the Spanish State must provide families with enough information so that they can ask informed questions about the process and understand the risk of anomalous identification, and disclose when doubts arise about the validity of the scientific methods used by the State in their identification processes. This will allow families to hold the State accountable for fulfilling its reparation obligation and will reinforce the legitimacy of the identification process as a reparation measure.

There are many survivors of stolen babies and families of missing people throughout the European Union, and we therefore believe that the experience of this app in Spain could be transferred to other countries and their populations with similar experiences and needs. In Spain, those affected have come together to create organizations such as S.O.S Stolen Babies of Catalonia and other autonomous regions, Alumbra and the international platform “We are Looking for You” campaign from 2017 and 2018 (known as TEB), in contact with people in England, Germany and Ireland who have also initiated investigations into the systematic theft of babies and illegal adoptions within their own borders, and who represent a population for whom this application could be of use.

In accordance with authors like van Dijck, Poell and de Waalv (2018), the launch of a new application represents new challenges: “The insights into specific health platforms help us reflect on the conflicting public values at stake in this debate: the concern for privacy versus the benefit of personalized medicine and the privatization of data by corporate owners versus the accessibility of health data and knowledge to public research” (2018; 98). More specifically, during the work with groups of families victims of enforced disappearances carried out by Ibrus and Tafel-Viia (2019), a high level of distrust towards government institutions was observed as part of their past and present experiences.



For that reason, to be able to develop a DHI, it is essential that people feel safe when using this type of application because the greater the security when using the platform, the greater the commitment, in the prior knowledge of their rights and how the results obtained from the app will be used. More explicitly, in order for these people to give away their data, they need to be convinced of the personal/collective gain from the exchange and that it complies with European regulations.

Previous experiences and workshops held between 2017 and 2019 with the relatives of stolen babies in Spain were organized as part of participatory action research (PAR) based on concepts by Kurt Lewin (1946) and the experience of Fals Borda, (2008).

RESEARCH OBJECTIVES:

In the outlined context, this study starts from the observation of a lack, a gap not considered in the regulations promoted by the State that, however, is highlighted in the consulted literature: the need to promote the emotional accompaniment of families who are victims of forced disappearances. Therefore, the objective of this study suggests the need to create new ways of accompanying families victims of forced disappearances and promoting digital health intervention (DHI) for trauma recovery. Hence, we focused on analyzing: How the previous work carried out can help ensure that the application meets the needs of this specific, diverse and large population? At the same time, it seeks to understand the relationship between the commitment and the effectiveness of the intervention, in order to generate commitment that promotes the accompaniment and continuity of the processes.

While it is common knowledge that mobile health apps are often used to complement established treatment methods and to improve treatment accessibility (Bakker, Kazantzis, Rickwood, & Rickard, 2016; Donker et al., 2013 in Sander et al., 2020), unfortunately the quality of these applications contrasts considerably with their quantity, which demonstrates the need to create procedures for the evaluation and evaluation of their usability and impact (Schellong, Lorenz & Weidner, 2019). Therefore, previous research and work on group dynamics with families who are victims of enforced disappearance could significantly contribute to the launch of a digital health intervention.

RESEARCH METHOD:

For this study, we take into account Anderson's (2008) suggestions: before conducting studies on novel psychosocial interventions, such as a mobile app, it is important to conduct more basic work evaluating the development and feasibility of the intervention. In this case, this "basic work", as Anderson states, includes group dynamics, as a way of approaching the population, considering the group as a suitable space to foster trust and commitment to the use of the application. For this reason, to approach this study based on participatory action research (PAR) has allowed us to understand the connection between the individuals within this population and their circumstances (García-Ramírez, Balcázar & Suárez-Balcázar, 2003). Hence, we have developed strategies aimed at fostering well-being and quality of life within the community, and thereby this population has been given an active role in increasing its power and its voice (Prillestensky & Nelson, 2002), such as through the "We are Looking for You" campaigns known as TEB ("Te Estamos Buscando") (Escudero, 2017, 2018).

In PAR, the researcher takes the side of the social issue that represents the group (silenced, oppressed, (re)victimized), developing research aimed at highlighting the group's strengths and minimizing its problems and limitations, generally used to identify and victimize it. In other words, the PAR is a community-centered model, in this case around the population in question, based on questions such as "what is needed, in terms of scientific information and capacity, to produce effective initiatives" (García-Ramírez, Albar-Marín, Morano Báez & Castro, 2017; 53). For this reason, the work undertaken with collective to be heard, identifying criteria and guidelines (Bradbury & Reason, 2001) and has highlighted the group's strengths (Balcázar et al., 1998). As part of this PAR, group dynamics allowed us to observe the various processes through which this population has progressively passed, the changes



within the group due to external and internal problems, the decisions taken and the standards of operation based on shared priorities and objectives. Group dynamics and research work conducted with the group correspond to that stated by Kurt Lewin (1944, 1946, 1947) emphasizing the power of the fluid, ever-changing forces that characterize interpersonal groups. Through action research with the families victims of enforced disappearances that included group dynamics, safe spaces were created, a necessary prerequisite for trust, in which to share unresolved traumatic events and express needs, initially of the individual and in many cases later becoming those of the group.

DISCUSSION AND ANALYSIS:

For some time now, numerous platforms promoting a healthier life have emerged in which patients, doctors, IT teams and researchers interact. In this study, our aim is to analyze the possibility to implement a DHI for populations victims of enforced disappearances in Spain. For this reason, we base study on the fact that cases of post-traumatic stress disorder (PTSD) are widespread around the world (Kessler et al., 2017). PTSD is a prevalent mental health issue that commonly occurs after a person has experienced a traumatic event, which can include being threatened with death or experiencing the death of others (e.g. the death of a family member or a friend), sexual violence, or serious injury (Ptsd.va, in Rodríguez-Paras et al., 2017; p.1; in Escudero, 2021, p.105). Different scholars argued that it is common knowledge that Mobile Health Applications / Digital Health Interventions have been the object of study in various lines of research over the last decade (Lin & Yang, 2009; Madsen, 2018), other studies showing that health apps are a subset of those apps with a pronounced medical quality (e.g. prevention, monitoring, treatment or alleviation of certain diseases or disorders) and must conform to control norms, while for medical device apps even stricter norms apply (Gregor-Haack, 2018 in Escudero, 2021, p.106).

Given all this, even if several treatments and various adaptations of the same app have been developed, many authors conclude that the impact and implications of mental healthcare for PTSD remain insufficient (Kazlauskas et al., 2016; Koenen et al., 2017; Sareen, 2014) and that even when patients are diagnosed with PTSD, there may be a shortage of available therapists specializing in psychotraumatology, leading to lengthy delays in receiving treatment (Tajariol et al., 2021). By taking into consideration the different applications for trauma recovery, it stands out PTSD Coach –a mHealth app designed to explain PTSD concepts to patient– also provides self-management tools based on cognitive behavioral therapy (CBT). Patients can use the tools in this app to learn, perform self-assessments, manage symptoms and find support. In addition, this app includes a Learn session through which trauma survivors as well as their relatives and/or close friends can read precise and scientific information about PTSD and its effects. In addition, people using the app may, through the “self-assessment” and “manage symptoms” options, track over time to see their progress and a list of mitigation techniques (Rodríguez-Paras et al, 2017). Considering the families victims of enforced disappearances, the mitigation techniques are a very important tool, as this will make a variety of options available to them if their distress persists or if the technique was not to their liking; more specifically: once the trauma survivors finish using each mitigation technique, they are prompted to complete the checklist again and if their level of distress is still the same or higher, then they are offered another mitigation tool to try (Escudero, 2021, p.107). Through the interventions carried out between 2017 and 2019 within the framework of the PAR, with members of SOS Babies Stolen from Catalonia and SOS Babies Stolen from Pamplona, two significant facts were verified. On the one hand, there are no spaces that seek to provide accompaniment and reparation to families who are victims of forced disappearances in Catalonia. On the other hand, and taking into account the characteristics of this population (mostly older adults), it is confirmed that the creation of an app would allow remote and daily access to a device that could help mitigate the discomfort of being a relative of a person forcibly disappeared, while facilitating the extension of the search and the emotional processes that all this



represents. The words of the following two testimonials from family members could illustrate the usefulness of this tool, as they point out that:

“I don't always feel like talking about it, there are days when memories flood me with pain and I am paralyzed, I can't leave my house. Not everyone can understand what it feels like” (Personal Communication, F1).

“We have not received any help or emotional support, and there are many families who suffer from this situation. And we need help, we need to see that they are interested in our emotional health, we are still alive and we are still looking” (Personal Communication, F2).

In this sense, and by taking into account what was expressed within the groups and collectives consulted, it is observed that the benefits of an app for this population would be to offer an accessible and easy-to-use tool that would facilitate the connection with the information, by while the use of the new medium could contribute to the accompaniment and improvement of their emotional discomfort. In this sense, the DHI proposal takes into account in its design, the skills and needs of families, offering a "friendly" application adapted to the characteristics of the population. For its design, it coincides with the recommendations expressed by Harte (2017) and his colleagues when they state that: “Older adults are not familiar with technology and often fear deleting something by accident or not saving important data correctly. Warning tones or symbols, such as a caution symbol, should only be used if absolutely necessary. For audio feedback, clear, low-frequency tones should be used” (2017, 21). On the other hand, Avis et al., (2015) specify that although digital interventions have an important role to play in health promotion: “This way of delivering information and interaction is not exempt from pitfalls (...) One available method for refining digital interventions is focus groups, an approach traditionally used in the advertising and marketing research fields to solicit consumer feedback on concepts and products” (2015, 1).

CONCLUSIONS:

The progress towards the emotional reparation of the families victims of forced disappearances in Spain, continues to be a national debt. Although at the end of this work, it can be observed in the Spanish state some movements in favor of the recognition of the victims through the approval of the Democratic Memory Law (July 27, 2022, Cong. Diputados, Serie A, no. 64 Exp. No. 121/000064) there is still a long way to go in terms of emotional repair. Going through the text of the new law, it is important to highlight that:

“(…) this Law has a double objective. On the one hand, it aims to promote knowledge of the democratic stages of our history and of all those individual figures and collective movements that, with great sacrifice, progressively built the links of democratic culture that allowed reaching the agreements of the 1978 Constitution, and to the current Social and Democratic State of Law to defend the rights of Spaniards, their nationalities and regions. On the other hand, this Law seeks to preserve and maintain the memory of the victims of the War and the Franco dictatorship, through knowledge of the truth, as a right of the victims, the establishment of justice and the promotion of reparation and establishment of a duty of memory of the public powers, to avoid the repetition of any form of political violence or totalitarianism” (BOE, Series A, No. 64-4, 5).

As can be seen throughout the text, the purpose of this Law is the recovery, safeguarding and dissemination of Democratic Memory in order to promote cohesion and solidarity between the different generations around constitutional principles, values and freedoms. The spirit of the text advocates the recognition of those who suffered persecution or violence for political, ideological reasons, religious conscience or belief, sexual orientation and identity, during the period between the 1936 coup d'état, the Civil War and the Franco's dictatorship until the enactment of the Spanish Constitution of 1978. In this sense, progress is observed in terms of recognizing and promoting moral reparation and recovering memory, including the repudiation and condemnation of the coup d'état of July 18, 1936 and the



subsequent Franco dictatorship. However, this law does not contemplate the forced disappearance of babies during the first years of democracy; this confirms the need to be able to set up spaces for the reparation of these victims, as is the case of a DHI. On the other hand, the Law proposes a series of measures aimed at suppressing elements of division among citizens and promoting bonds of union around constitutional values, principles and rights. In this sense and in the case of the victims, a significant advance is the consideration of a victim in accordance with the international parameters of Human Rights, insofar as it recognizes the nullity of all the sentences and sanctions dictated during the Civil War and the Dictatorship by Franco's repressive organs, declaring them illegitimate. Another noteworthy element is that the Law promotes the preparation of a State Census of Victims of the Civil War and the Dictatorship, responding to the fragmentation and dispersion of the information available on forced disappearances in that period. In terms of Comprehensive Democratic Memory Policies, the Law allocates some chapters where the active role of women in Spain as protagonists in the struggle for democracy and the values of freedom, equality and solidarity is recognized, which on the other hand is an element throughout the text of the Law. In this sense, the fact that this Law includes among the victims the children abducted and adopted without the legitimate and free consent of their parents as a consequence of the War and the Dictatorship deserves special mention, as well as their parents, brothers and sisters who have had to deal with such loss and the trauma experienced by many of the mothers. As can be seen, there are many advances, however, the new Law does not propose or consider concrete measures that promote the improvement and mitigation of pain and emotional accompaniment, of a large and diverse population. For this reason, the results of the interventions carried out with the families that collaborated with this study represent a clear and necessary basis for the emotional repair. Although health applications that seek to collect personal data often promise to offer personalized solutions, in this particular case, the contributions of this health application will help to better understand the seriousness of the traumatic event experienced by families who are victims of enforced disappearances occurred during the dictatorship and democracy.

REFERENCES:

1. American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. American Psychiatric Association.
2. Adibi, S. (Ed.). (2015). *Mobile Health: A Technology Road Map*. Springer.
3. Anderson, R. (2008). New MRC guidance on evaluating complex interventions. *BMJ* 337(1), Article a1937–9. <https://doi.org/10.1136/bmj.a1937>
4. Andersson, G., & Titov, N. (2014). Advantages and limitations of internet-based interventions for common mental disorders. *World Psychiatry: Official Journal of the World Psychiatric Association*, 13(1), 4–11. <https://doi.org/10.1002/wps.20083>
5. Arnberg, F. K., Linton, S. J., Hultcrantz, M., Heintz, E., & Jonsson, U. (2014). Internet-delivered psychological treatments for mood and anxiety disorders: a systematic review of their efficacy, safety, and cost-effectiveness. *PloS ONE*, 9(5), Article e98118. <https://doi.org/10.1371/journal.pone.0098118>
6. Avis, J. L., van Mierlo, T., Fournier, R., & Ball, G. D. (2015). Lessons Learned From Using Focus Groups to Refine Digital Interventions. *JMIR Res Protoc*, 4(3), Article e95. <https://doi.org/10.2196/resprot.4404>
7. Bakker, D., Kazantzis, N., Rickwood, D., & Rickard, N. (2016). Mental health smartphone apps: review and evidence-based recommendations for future developments. *JMIR Mental Health*, 3(1), Article e7. <https://doi.org/10.2196/mental.4984>
8. Balcázar, F. E., Keys, C. B., Kaplan, D. L., & Suárez-Balcázar, Y. (1998). Participatory Action Research and people with disabilities: principles and challenges. *Canadian Journal of Rehabilitation*, 12, 105-112.
9. https://www.researchgate.net/profile/Christopher_Keys/publication/239921190_Participatory_Action_Research_and_People_with_Disabilities_Principles_and_Challenges/links/0deec53260cdd4e251000000.pdf



12. Barrenechea López, G. (2017). *Gender in Transitional Justice Contexts: Reproductive Rights in the Spanish Case of Stolen Babies*. [Master Thesis]. Lund University, Lund, Scania Province, Sweden.
13. Beristain, C. (2007). Reparations to victims in the inter-American human rights system. In *The role of the justice system in the face of massive violations of human rights*. Abuelas de Plaza de Mayo.
14. Berliner, L., Bisson, J., Cloitre, M., Forbes, D., Goldbeck, L., Jensen, T., ... Shapiro, F. (2019). *ISTSS PTSD prevention and treatment guidelines methodology and recommendations*. International Society for Traumatic Stress Studies. <https://www.istss.org/treating-trauma/new-istss-prevention-and-treatment-guidelines>
15. BOE, Proyecto de Ley de Memoria Democrática 621/000057, de 27 de julio de 2022, *Boletín Oficial del Estado*, Núm. 369. https://www.congreso.es/public_oficiales/L14/CONG/BOCG/A/BOCG-14-A-64-4.PDF
16. Bradbury, H. & Reason, P. (2001). Conclusion: Broadening the band with of validity: issues and choice-points for improving the quality of action research. In P. Reason, & H. Bradbury (Eds.), *The SAGE Handbook of Action Research: Participatory Inquiry and Practice*. SAGE. https://www.researchgate.net/publication/281504513_Conclusion_Broadening_the_bandwidth_of_validity_Issues_and_choice-points_for_improving_the_quality_of_action_research
17. Bueno Morales, M. M., & González Besteiro, J. M. (Eds.) (2018). *Bebés robados en Andalucía desde 1936. Buscando la verdad, la justicia y la reparación* [Stolen babies in Andalusia since 1936. Looking for truth, justice and reparation]. Dirección General de Memoria Democrática. Junta de Andalucía.
18. Byambasuren, O., Sanders, S., Beller, E., & Glasziou, P. (2018). Prescribable mHealth apps identified from an overview of systematic reviews. *npj Digital Medicine*, 1(1), Article 12. <https://www.nature.com/articles/s41746-018-0021-9?report=reader>
19. Cernvall, M., Sveen, J., Johannesson, K. B., & Arnberg, F. (2018). A pilot study of user satisfaction and perceived helpfulness of the Swedish version of the mobile app PSTD Coach. *European Journal of Psychotraumatology*, 9(sup1), Article 1472990. <https://doi.org/10.1080/20008198.2018.1472990>
20. Clement, J. (2020). *Annual number of global mobile app downloads 2016–2019*. Statista. Retrieved 4 April 2020, from <https://www.statista.com/statistics/271644/worldwide-free-and-paid-mobileapp-store-downloads/>
21. Cuijpers, P., & Schuurmans, J. (2007). Self-help interventions for anxiety disorders: An overview. *Current Psychiatry Reports*, 9(4), 284–290. <https://doi.org/10.1007/s11920-007-0034-6>
22. Dalvit, L. (2018). From Access to Proficiency: Reconceptualizing Digital Inclusion in a Rural Area in South Africa. In M. Ragnedda, & B. Mutsvairo (Eds.). *Digital Inclusion: An International Comparative Analysis*. Lexington Books.
23. Donker, T., Petrie, K., Proudfoot, J., Clarke, J., Birch, M. R., & Christensen, H. (2013). Smartphones for smarter delivery of mental health programs: a systematic review. *Journal of Medical Internet Research*, 15(11), Article e247. <https://doi.org/10.2196/jmir.2791>
24. Escudero, C. (2020). Stolen Babies in Spain: Mediated Stories for Recovery. Mothers' activism through online campaigns. *International Journal of Business and Social Science*, 11(3). <https://doi.org/10.30845/ijbss.v11n3p3>
25. Escudero, C. (2021) Missing People in Spain: An App for Trauma Recovery – A Digital Health Intervention for Survivors. In Oliveira, L; Tajariol, F.; Gonçalves, L. (Ed.) *Digital Services in Crisis, Disaster, and Emergency Situations* (98-121). INI Global Publisher of Timely Knowledge. DOI: 10.4018/978-1-7998-6705-0.ch005
26. Eysenbach, G. (2001). What is e-health? *Journal of Medical Internet Research*, 3(2), Article e20. <https://doi.org/10.2196/jmir.3.2.e20>
27. European Commission, (2018) Privacy Code of Conduct on mobile health (mHealth) apps. In *Shaping Europe's digital future*. <https://ec.europa.eu/digital-single-market/en/privacy-code-conduct-mobile-health-apps>



28. Fals Borda, O., Bonilla, V., & Castillo, G. (1972). *Causa popular, ciencia popular: una metodología del conocimiento científico a través de la acción* [Popular cause, popular science: a methodology of scientific knowledge through action]. Publicaciones de La Rosca de Investigación y Acción Social.
29. Fundación Telefónica, (2019). *Sociedad Digital en España 2018*. <https://www.fundaciontelefonica.com/cultura-digital/publicaciones/sociedad-digital-en-espana-2018/655/>
30. Galella, P. (2014) La obligación de investigar las desapariciones forzadas y su aplicación a los crímenes del franquismo en España. Universidad Nacional Autónoma de México-Instituto de Investigaciones Jurídicas. Anuario Mexicano de Derecho Internacional, vol. XIV, 2014, pp. 77-116 México, D. F., ISSN 1870-4654
31. García Ramírez, M., Albar-Marín, M. J., Morano Báez, R., & Castro, V. P. (2017). Metodología de la intervención social: implicaciones para la investigación y la práctica de la psicología comunitaria [Methodology of social intervention: implications for research and practice in community psychology]. In I. Maya-Jariego, M. García Ramírez, F. J. Santolaya -Soriano (Eds.). *Estrategias de Intervención Psicosocial [Strategies for Psychosocial Intervention]. Psicología Pirámide.*
32. García-Ramírez, M., Balcázar, F., & Suárez-Balcázar, Y. (2003). Investigación acción participativa en la psicología comunitaria: una herramienta para entender la diversidad humana [Participatory Action Research in community psychology: a tool for understanding human diversity]. *Apuntes de Psicología*, 21(3), pp. (409-417).
33. Giunti, G., Mylonopoulou, V., & Romero, O. R. (2018). More stamina, a gamified mhealth solution for persons with multiple sclerosis: research through design. *JMIR mHealth and uHealth*, 6(3). <https://mhealth.jmir.org/2018/3/e51/>
34. Gregor-Haack, J. (2018). Erstattung von Health-Apps durch die gesetzliche Krankenversicherung [Reimbursement of health apps by the German statutory health insurance]. *Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz*, 61(3), 328–333. <https://link.springer.com/article/10.1007/s00103-018-2689-z>
35. Grundy, Q. H., Wang, Z., & Bero, L. A. (2016). Challenges in assessing mobile health app quality: a systematic review of prevalent and innovative methods. *American Journal of Preventive Medicine*, 51(6), 1051-1059. <https://doi.org/10.1016/j.amepre.2016.07.009>
36. Harte, R., Quinlan, L.R., Glynn, L., Rodríguez-Molinero, A., Baker, P. M., Scharf, T., & ÓLaighin, G. (2017). Human-Centered Design Study: enhancing the usability of a mobile phone app in an integrated falls risk detection system for use by older adult users. *JMIR mHealth and uHealth*, 5(5), Article e71. <https://doi.org/10.2196/mhealth.7046>
37. Herman, J. (1992) *Trauma and Recovery. The Aftermath of Violence - From domestic abuse to political terror*. Pandora Edition.
38. Hoffman, J. E., Wald, L., Kuhn, E., Greene, C., Ruzek, J., & Weingardt, K. (2011). PTSD Coach [mobile application]. US Department of Veterans Affairs. <https://itunes.apple.com/de/app/ptsd-coach/id430646302?mt=8>
39. Hussain, M., Al-Haiqi, A., Zaidan, A. A., Zaidan, B. B., Kiah, M. L. M., Anuar, N. B., & Abdulnabi, M. (2015). The landscape of research on smartphone medical apps: coherent taxonomy, motivations, open challenges and recommendations. *Computer Methods and Programs in Biomedicine*, 122(3), 393–408. <https://doi.org/10.1016/j.cmpb.2015.08.015>
40. Ibrus, I. and Tafel-Viia, K. (2019), "Conclusions: Cross-innovations between Audiovisual and Health Sectors", Ibrus, I. (Ed.) *Emergence of Cross-innovation Systems*, Emerald Publishing Limited, Bingley, pp. 155-162. <https://doi.org/10.1108/978-1-78769-977-920191017>
41. Kazlauskas, E., Javakhishvili, J., Meewisse, M., Merecz-Kot, D., Şar, V., Schäfer, I., ... Gersons, B. P. R. (2016). Trauma treatment across Europe: where do we stand now from a perspective of seven countries. *European Journal of Psychotraumatology*, 7(1), Article 29450. <https://doi.org/10.3402/ejpt.v7.29450>



42. Keen, S. M., & Roberts, N. (2017). Preliminary evidence for the use and efficacy of mobile health applications in managing posttraumatic stress disorder symptoms. *Health Systems*, 6(2), 122–129. <https://doi.org/10.1057/hs.2016.2>
43. Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Benjet, C., Bromet, E. J., Cardoso, G., ... Ferry, F. (2017). Trauma and PTSD in the WHO world mental health surveys. *European Journal of Psychotraumatology*, 8(sup5), Article 1353383. <https://doi.org/10.1080/20008198.2017.1353383>
44. Koenen, K. C., Ratanatharathorn, A., Ng, L., McLaughlin, K. A., Bromet, E. J., Stein, D. J., ... Kessler, R. C. (2017). Posttraumatic stress disorder in the world mental health surveys. *Psychological Medicine*, 47(13), 2260–2274. <https://doi.org/10.1017/S0033291717000708>
45. Kuhn, E., Greene, C., Hoffman, J., Nguyen, T., Wald, L., Schmidt, J., ... Ruzek, J. (2014). Preliminary evaluation of PTSD Coach, a smartphone app for post-traumatic stress symptoms. *Military Medicine*, 179(1), 12–18. <https://doi.org/10.7205/MILMED-D-13-00271>
46. Kuhn, E., Kanuri, N., Hoffman, J. E., Garvert, D. W., Ruzek, J. I., & Taylor, C. B. (2017). A randomized controlled trial of a smartphone app for posttraumatic stress disorder symptoms. *Journal of Consulting and Clinical Psychology*, 85(3), 267–273. <https://doi.org/10.1037/ccp0000163>
47. Kuhn, E., van der Meer, C., Owen, J. E., Hoffman, J. E., Cash, R., Carrese, P., Olf, M., Bakker, A., Schellong, J., Lorenz, P., Schopp, M., Rau, H., Weidner, K., Arnberg, F. K., Cernvall, M., & Iversen, T. (2018). PTSD Coach around the world. *mHealth*, 4(5). <https://doi.org/10.21037/mhealth.2018.05.01>
48. Kuziemsky, C. E., Borycki, E. M., Purkis, M. E., Black, F., Boyle, M., Cloutier-Fisher, D., ... Tschanz, C. (2009). An interdisciplinary team communication framework and its application to healthcare ‘e-teams’ systems design. *BMC Medical Informatics and Decision Making*, 9(1), Article 43. <https://doi.org/10.1186/1472-6947-9-43>
49. Lewin, K. (1947) Frontiers in group dynamics: Concept, method and reality in social science; social equilibria and social change. In Lewing, G. W (Ed) *Human Relations*, I. (5-41).
50. Lewin, K. (1946). Action research and minority problems. In Lewing, G. W (Ed) *Human Relations*, I (2), 34-46. <https://doi.org/10.1111/j.1540-4560.1946.tb02295.x>
51. Lewin, K. (1944). The dynamics of group action. *Educational Leadership* (195-200).
- Lin, S. P., & Yang, H. Y. (2009). Exploring key factors in the choice of e-health using an asthma care mobile service model. *Telemedicine and e-Health*, 15(9), 884–890. <https://doi.org/10.1089/tmj.2009.0047>
52. Madsen, W. (2018). History in health: health promotion’s underexplored tool for change. *Public Health*, 154, 118–122. <https://doi.org/10.1016/j.puhe.2017.10.028>
53. Medina, E.; Sandberg, I. (2016) Science and Harm in Human Rights Cases: Preventing the Revictimization of Families of the Disappeared, 125 *Yale L.J.* F. 331 <http://www.yalelawjournal.org/forum/science-and-harm-in-human-rights-cases>.
54. Miner, A., Kuhn, E., Hoffman, J. E., Owen, J. E., Ruzek, J. I., & Taylor, C. B. (2016). Feasibility, acceptability, and potential efficacy of the PTSD coach app: A pilot randomized controlled trial with community trauma survivors. *Psychological Trauma: Theory, Research, Practice, and Policy*, 8(3), 384–392. <https://doi.org/10.1037/tra0000092>
55. Ministerio del Interior (2020) AlertCops [mobile application] <https://alertcops.ses.mir.es/mialertcops/>
56. Mojtabai, R., Olfson, M., Sampson, N. A., Jin, R., Druss, B., Wang, P. S., ... Kessler, R. C. (2011). Barriers to mental health treatment: results from the National Comorbidity Survey Replication. *Psychological Medicine*, 41(8), 1751–1761. <https://doi.org/10.1017/S0033291710002291>
57. Norman, C. D., & Skinner, H. A. (2006). eHEALS: The eHealth Literacy Scale. *Journal of Medical Internet Research*, 8(4), Article e27. <https://doi.org/10.2196/jmir.8.4.e27>
58. Olf, M. (2015). Mobile mental health: a challenging research agenda. *European Journal of Psychotraumatology*, 6(1), Article 27882. <https://doi.org/10.3402/ejpt.v6.27882>



59. Owen, J. E., Kuhn, E., Jaworski, B. K., McGee-Vincent, P., Juhasz, K., Hoffman, J. E., & Rosen, C. (2018). VA mobile apps for PTSD and related problems: public health resources for veterans and those who care for them. *mHealth*, 4(7), 28. <https://doi.org/10.21037/mhealth.2018.05.07>
60. Owen, J. E., Jaworski, B. K., Kuhn, E., Makin-Byrd, K. N., Ramsey, K. M., & Hoffman, J. E. (2015). mHealth in the wild: using novel data to examine the reach, use, and impact of PTSD coach. *JMIR Mental Health*, 2(1), Article e7. <http://doi.org/10.2196/mental.3935>
61. Palos-Sánchez, P., Saura, J. R., Álvarez-García, J. (2019) Innovation and Creativity in the Mobile Applications Industry: A Case Study of Mobile Health Applications (e-Health Apps). In M. Peris-Ortiz, M. R. Cabrera-Flores, A. Serrano-Santoyo (Eds.). *Cultural and Creative Industries. A path to Entrepreneurship and Innovation* (chapter 7). Springer. <https://doi.org/10.1007/978-3-319-99590-8>
62. Peñalva-Velez, A., Napal-Fraile, M., Mendioroz-Lacambra, A. M. (2018) Competencia digital y alfabetización digital de los adultos (profesorado y familia). [Digital skills and adult literacy (faculty and family)]. *International Journal of New Education*, 1(1). <https://doi.org/10.24310/IJNE1.1.2018.4892>
63. Price, R.H (1989). Bearing witness. *American Journal of Community Psychology*, 17, 151-167. <https://doi.org/10.1007/BF00931004>
64. Price, M., Yuen, E. K., Goetter, E. M., Herbert, J. D., Forman, E. M., Acierno, R., & Ruggiero, K. J. (2014). mHealth: a mechanism to deliver more accessible, more effective mental health care. *Clinical Psychology & Psychotherapy*, 21(5), 427–436. <https://doi.org/10.1002/cpp.1855>
65. Prilleltensky, I. & Nelson, G. (2002) Doing Psychology Critically. Making a Difference in Diverse Settings. *Journal of Community & Applied Social Psychology*, 13(4). <https://doi.org/10.1002/casp.711>
66. PubMed Central, Table 1 (2018). *Mhealth*, 4(28). Published online 2018 Jul 26. <https://doi.org/10.21037/mhealth.2018.05.07>
<http://mhealth.amegroups.com/article/viewFile/20524/20219/123518>
67. PubMed Central, Table 2 (2018). *Mhealth*, 4(28). Published online 2018 Jul 26. <https://doi.org/10.21037/mhealth.2018.05.07>
<http://mhealth.amegroups.com/article/viewFile/20524/20219/123519>
68. Ragnedda, M. (2017) *The Third Digital Divide: A Weberian Approach to Digital Inequalities*. Routledge.
69. Ragnedda, M., & Mutsvairo, B. (2018). Digital Inclusion: Empowering People through Information and Communication Technologies. In M. Ragnedda, & B. Mutsvairo (Eds.). *Digital Inclusion: An International Comparative Analysis*. Lexington Books.
70. Rizzo, A., Graap, K., Pair, J., Reger, G., Treskunov, A., & Parsons, T. (2006). User-centered design driven development of a virtual reality therapy application for Iraq war combat-related post traumatic stress disorder. *Proceedings of 6th Intl Conf. Disability, Virtual Reality & Assoc. Tech, Esbjerg, Denmark*. University of Reading, UK. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a575206.pdf>
71. Rodriguez-Paras, C., Tippey, K., Brown, E., Sasangohar, F., Creech, S., Kum, H. C., Lawley, M., Benzer, J. K. (2017). Posttraumatic Stress Disorder and Mobile Health: App Investigation and Scoping Literature Review. *JMIR mHealth and uHealth*, 5(10), Article e156. <http://doi.org/10.2196/mhealth.7318>
72. Sander, L. B., Schorndanner, J., Terhorst, Y., Spanel, K., Pryss, R., Baumeister, H., & Messner, E. M (2020). ‘Help for trauma from the app stores?’ A systematic review and standardized rating of apps for Post-Traumatic Stress Disorder (PTSD). *European Journal of Psychotraumatology*, 11(1), Article 1701788. <https://doi.org/10.1080/20008198.2019.1701788>
73. Sareen, J. (2014). Posttraumatic stress disorder in adults: impact, comorbidity, risk factors, and treatment. *Canadian Journal of Psychiatry*, 59(9), 460-467. <https://doi.org/10.1177/070674371405900902>



74. Seife, C. (2013, November 27) 23andMe Is Terrifying, but not for the Reasons the FDA Thinks. *Scientific American*. <https://www.scientificamerican.com/article/23andme-is-terrifying-but-not-for-the-reasons-the-fda-thinks/>
75. Schellong, J., Lorenz, P., & Weidner, K. (2019). Proposing a standardized, step-by-step model for creating post-traumatic stress disorder (PTSD) related mobile mental health apps in a framework based on technical and medical norms. *European journal of psychotraumatology*, 10(1), Article 1611090. <https://dx.doi.org/10.1080%2F20008198.2019.1611090>
76. SOS Bebes Robados Catalunya. (2017, June 16). *Te Estamos Buscando* [We are looking for you]. Created by Escudero, C. [Video]. YouTube. <https://www.youtube.com/watch?v=MfOMKmqKgsM>
77. SOS Bebes Robados Catalunya. (2018, November 29). *Te Estamos Buscando* [We are looking for you]. Created by Escudero, C. [Video]. YouTube. <https://www.youtube.com/watch?v=G0D6Txc08hU>
78. Stoecker, R. (1999). Are Academics Irrelevant?: Roles for Scholars in Participatory Research. *American Behavioral Scientist*, 42 (4), 840-854. <https://doi.org/10.1177/00027649921954561>
79. Tajariol, F., Gonclves, L. B., & Oliveira, L. (2021). Digital services in crisis, disaster, and emergency situations / edited by Lidia Oliveira, Federico Tajariol, Liliana Goncalves. (F. Tajariol, L. B. Gonclves, & L. Oliveira, Eds.). IGI Global.
80. UN Office on Drugs and Crime (UNODC), Handbook on Justice for Victims, 1999, available at: <https://www.refworld.org/docid/479eeb1a2.html> [accessed 3 September 2022]
81. Van Dijck, J., Poell, T., & de Waal, M. (2018). Healthcare and health research. In *The platform society. Public values in a connective world*. Oxford University Press.
82. Wakefield, B. J., Turvey, C. L., Nazi, K. M., Holman, J. E., Hogan, T. P., Shimada, S. L., & Kennedy, D. R. (2017). Psychometric Properties of Patient-Facing eHealth Evaluation Measures: Systematic Review and Analysis. *Journal of Medical Internet Research*, 19(10). <https://doi.org/10.2196/jmir.7638>
83. Yeager, C. M., & Benight, C., (2018). If we build it, will they come? Issues of engagement with digital health interventions for trauma recovery. *mHealth*, 4, 37. <https://doi.org/10.21037/mhealth.2018.08.04>



Research on Innovation and Entrepreneurship Teaching of College Students Based on the Integration of Professional and Entrepreneurship Education

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Abstract: Innovation and entrepreneurship education has become one of the important contents of China's higher education reform. The integration of professional education and entrepreneurship education has become an inevitable trend of innovation and entrepreneurship education. Reforming innovation and entrepreneurship courses is important to ensure the effective integration of specialization and innovation. This paper analyzes the current problems in teaching college students innovation and entrepreneurship courses based on the integration of professional and entrepreneurship education. It puts forward the reform ideas of college students' innovation and entrepreneurship curriculum from the aspects of education and teaching concept, outstanding professional characteristics, curriculum structure construction, teacher team construction, and teaching content design.

Key Words: Integration of professional and entrepreneurship education, innovation and entrepreneurship education, innovation and entrepreneurship courses.

INTRODUCTION:

"Innovation and Entrepreneurship Education" was proposed at the Tokyo International Conference on Innovation and Entrepreneurship Education in 1991. Its primary purpose is to cultivate people with creative personalities effectively, and it should be cultivated around seven skills, including initiative and risk-taking. In 2010, the Chinese Ministry of Education issued the "Opinions on Vigorously Promoting Innovation and Entrepreneurship Education in Institutions of Higher Learning and College Students' Self-Entrepreneurship," promulgated the syllabus of the "Foundation of Entrepreneurship" course, and gradually promoted the education of entrepreneurship and innovation and the employment and entrepreneurship of graduates 1. After Premier Li Keqiang proposed the concept of "mass entrepreneurship and innovation" in 2014, the State Council issued the "Implementation Opinions on Deepening the Reform of Innovation and Entrepreneurship Education in Colleges and Universities" the following year. It requires that colleges and universities should promote the integration of professional education and entrepreneurship education according to the orientation of talent training and innovation and entrepreneurship education goals. It is necessary to adjust the professional curriculum setting, explore and enrich various courses' innovation and entrepreneurship education resources, and strengthen innovation and entrepreneurship education in imparting professional knowledge. For all students, compulsory and elective courses such as research methods, subject frontiers, entrepreneurial foundations, employment, entrepreneurial guidance, etc., are offered



and are included in credit management. This way, a group of specialized courses for innovation and entrepreneurship education that is progressive, organically connected, and scientifically reasonable will be constructed. In 2021, the General Office of the State Council issued the "Guiding Opinions on Further Supporting College Students' Innovation and Entrepreneurship." It requires to deepen the reform of innovation and entrepreneurship education in colleges and universities and improve the system in colleges and universities that integrates classroom teaching, independent learning, combined practice, guidance and assistance, and cultural leadership. In this way, the innovative spirit, entrepreneurial awareness, and creative entrepreneurial ability of college students can be enhanced. Under the guidance of national policies, colleges and universities actively responded to the call, continuously strengthened innovation and entrepreneurship education, and strived to cultivate students' innovation and entrepreneurship ability. Innovation and entrepreneurship education have become an essential and even fundamental task in the reform and development of Chinese universities. Social and economic development requires many innovative and entrepreneurial talents who "dare to venture and create." Colleges and universities must undertake this task, which is the state and social development requirement for higher education. In the era of mass higher education, university teaching faces numerous challenges². It is reflected in the change in students' learning needs, the change in learner's role and the change in learning conditions, how to explore personal inner potential, how to cultivate students' market awareness, and how to respond to social needs actively. Effectively enhancing students' entrepreneurial interest and innovative spirit, and strengthening students' entrepreneurial awareness, have practical significance for the connotation construction, talent training quality, and graduate employment of applied colleges and universities. Therefore, it is an essential guarantee to improve the quality of college students' training to implement the reform and exploration of their innovation and entrepreneurship teaching and form a multi-level, three-dimensional innovation and entrepreneurship education curriculum system.

PROBLEMS EXISTING IN INNOVATION AND ENTREPRENEURSHIP COURSES FOR COLLEGE STUDENTS:

Innovation and entrepreneurship courses fail to integrate the characteristics of disciplines and majors

Technological progress and technological innovation have led to constant changes in the connotation of traditional occupations, emerging occupations are constantly emerging, and traditional occupations have been severely impacted. The construction of innovation and entrepreneurship courses for college students must keep pace with the times and adjust in time to adapt to society's rapid development³. Curriculum construction is not only a critical exploration direction of primary education curriculum reform but also an important content of strengthening discipline construction in colleges and universities. Curriculum construction should fully reflect the characteristics and professional characteristics of college students, better meet the future career requirements and reflect the characteristics of innovation and entrepreneurship education and the deep integration of disciplines and majors⁴. Therefore, the construction of entrepreneurship education courses for college students integrated with professional education is not only the need for the development of the times but also the need for teaching reform in colleges and universities.

The curriculum of innovation and entrepreneurship cannot fully meet the teaching needs

With the development of higher education in China, innovation and entrepreneurship education have become one of the essential teaching contents of universities. The talent training objectives of most majors require innovative spirit, entrepreneurial awareness and innovation, and entrepreneurial ability. The curriculum system requires the professional curriculum system to include theoretical teaching and practical teaching, including compulsory and elective courses such as scientific and technological research methods, frontiers of disciplines, the foundation of entrepreneurship, employment, and entrepreneurship guidance⁵. Theoretical courses include ideological and political theory, innovation and entrepreneurship, general education, and primary and professional courses. Each



major should set a certain number of credits for innovation and entrepreneurship and general education courses according to the major's characteristics and the society's actual needs. Although it is proposed that a certain number of innovation and entrepreneurship course credits should be set according to professional characteristics and actual social needs, the teaching tasks of most school courses are currently performed by innovation and entrepreneurship colleges or administrators. The school's innovation and entrepreneurship courses have the same teaching content, the same teaching mode, and the same teachers, which cannot reflect the professional characteristics. In terms of social needs, it is more reflected in daily life, and entertainment needs and rarely involves professional field needs. It cannot interact with students' professional course learning and cannot promote the learning and practice of professional knowledge.

Innovation and Entrepreneurship Courses Lack of Discipline and Professional Characteristics:

Innovation and entrepreneurship education in some colleges have short-sightedness, simplification, and utilitarianism problems. The current education only trains students to become low-level entrepreneurs. It cannot effectively stimulate students' innovative and enterprising consciousness, and the concept of innovation and entrepreneurship education is not advanced enough. The "two skins" of innovation and entrepreneurship education and professional education are not integrated into the school's system for the whole school. Scholars' research mainly focuses on the innovation and entrepreneurship education model and system, content of innovation and entrepreneurship education, innovation and entrepreneurship education model and other theoretical aspects, and for innovation and entrepreneurship education practice base, innovation and entrepreneurship education teachers, innovation and entrepreneurship education assessment and evaluation, innovation and entrepreneurship education guarantee. Mechanisms are rarely involved. At the same time, most innovation and entrepreneurship courses are based on marketing content. As a management course, the textbooks and reference materials of marketing all elaborate on problems and analyzing cases from the perspective of management. Non-management majors feel that the theory is too strong, the practice is insufficient, and the content and cases are far away from the majors they are studying. From the management's perspective, open innovation and entrepreneurship courses can not reflect the professional characteristics and the important position of technological innovation in marketing and enterprise development.

Lack of teachers specializing in innovation and entrepreneurship:

The leading force of innovation and entrepreneurship education is teachers. Currently, a team of teachers with good innovation, entrepreneurship knowledge, and practical ability is a scarce resource. Some teachers do not fully understand the concept of innovation and entrepreneurship, and even some teachers understand innovation and entrepreneurship as promoting the marketing model of specific industries to the campus to increase income opportunities for themselves. This kind of thinking that understands innovation and entrepreneurship as some shortcut to getting rich is even more worrying 6.

INNOVATION AND ENTREPRENEURSHIP CURRICULUM REFORM FOR COLLEGE STUDENTS:

Guided by the education and teaching concept of the integration of professional education and entrepreneurship education

Some college students' entrepreneurial projects remain in the state of small businesses. It does not reflect that entrepreneurship should be a process of entirely using one's professional background to discover and capture opportunities and thereby create novel products and services or realize their potential value. The key to this problem is to promote innovation and entrepreneurship education and establish advanced innovation and entrepreneurship education concepts. It is necessary to establish the deep integration of innovation and entrepreneurship education and professional education, highlight professional characteristics in innovation and entrepreneurship courses, guide students to use technological innovation as a breakthrough to carry out entrepreneurial activities and achieve theoretical



guidance. The primary goal of the integration of majors and entrepreneurship is the cultivation of innovative ability. In the design of teaching content, the teaching concept of integration of majors and entrepreneurship should be used as a guide to fully reflect the characteristics of interdisciplinary integration [7]. Interdisciplinary integration is not simply to learn the knowledge and skills of different disciplines but, more importantly, to form a coherent thinking and research method that eliminates the boundaries of disciplines. In the design of course content, interdisciplinary questions can be set. In analyzing and solving problems, knowledge, principles, and methods of other courses and disciplines can be introduced to promote the integration of different knowledge, methods, and thinking, resulting in the effect of $1+1>2$.

The innovation and entrepreneurship education of college students should highlight the professional characteristics

Integrating innovation and entrepreneurship education and professional education must aim at cultivating "professional + innovation and entrepreneurship" talents, which can clarify the development direction of innovation and entrepreneurship education, promote the reform and innovation of professional education, and cultivate comprehensive talents. Although the micro focus of innovation, entrepreneurship education, and professional education differ, the macro goal is cultivating innovative talents. Innovation and entrepreneurship education need professional education support, and professional education needs innovation and entrepreneurship education to inject new thinking and vitality. It requires colleges and universities to establish a concept based on professional education and effectively expand the breadth of education. Simultaneously, innovation and entrepreneurship education are not supplementary to professional education content. It cannot just add helpful content to avoid failure to achieve the goal of compound talent training. In talent training, innovation and entrepreneurship education is a vital component system and a deep-level extension of professional education, which can cultivate innovative and entrepreneurial talents suitable for developing social industries 8. In addition, integrating innovation and entrepreneurship should have clear educational goals, systems, content, and methods. It should be integrated into innovation and entrepreneurship education according to the characteristics of the majors, build a deep integration system, strengthen the practical teaching of innovation and entrepreneurship, and achieve the goal of students' overall development.

Construct a curriculum structure of professional and entrepreneurial integration that meets the goals of talent training

In order to effectively solve the problem of separation between professional education and entrepreneurship education, we can start with developing comprehensive courses and take the classroom as the leading position for talent training. Integrate professional courses with innovation and entrepreneurship courses, embed innovation and entrepreneurship content into professional courses, increase students' ability to grasp the market in course teaching, improve their sensitivity to economic activities, and truly realize the integration of specialization and innovation. At the same time, pay attention to intermittent integration, consider the integration content and what penetration method to adopt, and effectively grasp the integration opportunity 9. When explaining the characteristics of market resources, the innovation and entrepreneurship course allows students to deeply explore how to build a resource structure when starting a business and increase the theoretical height. In order to cultivate specialized creative and integrated talents, the comprehensive curriculum content should be optimized scientifically. Focus on interdisciplinary integration, break down professional barriers, encourage students to strengthen the connection between different courses, make course knowledge more closely integrated, and effectively develop students' innovative consciousness. Taking technological innovation as the core, taking innovation and entrepreneurship as the goal, guiding the teaching content with problems, guiding students' thinking with typical case analysis, guiding innovation and entrepreneurship practice with students' participation, fully embodying the characteristics of the major, realizing the deep integration of innovation and entrepreneurship education with disciplines and majors, satisfying Students' future occupational characteristics and requirements form a professional and practical innovation and entrepreneurship education curriculum.



The teaching content is based on typical cases of the integration of professionalism and entrepreneurship

Teaching is carried out with the case teaching method, and the teaching content is mainly based on typical professional cases, with cases in other fields as reference. Through students' access to relevant materials before class and exchange and discussion in class, teachers guide students to analyze the case's key points, discuss the direction of professional innovation and entrepreneurship, and stimulate students' innovative thinking and entrepreneurial enthusiasm. At the same time, with the development of the teaching content, students are required to determine the direction of entrepreneurship through classroom communication and discussion and complete the writing of the corresponding entrepreneurial plan based on the content learned in each class. Through case exchange, analysis, discussion, and thinking, students are guided in determining the direction of innovation and entrepreneurship. Through various forms such as student data access, industry investigation, internship practice, case analysis, exchange and discussion, project counseling, consultation and guidance, and simulated roadshows, innovative thinking in the professional field is integrated into innovation and entrepreneurship education activities. Timely feedback on the problems existing in the practice process gradually enriches and improves it to form a unique curriculum 10. The content of the course is closer to professional production and practice, has more prominent professional characteristics, and has more emphasis on the role of technological innovation in innovation and entrepreneurship. It not only enables professional college students to master the basic theory of marketing but also enables them to think about the direction of entrepreneurship from the perspective of professional and technological innovation, stimulates the enthusiasm of college students to participate in innovation and entrepreneurship, and cultivates college students' innovative and entrepreneurial spirit.

Strengthen the construction of innovation and entrepreneurship professional teachers

The teaching staff is the critical factor in guaranteeing the achievements of college students' innovation and entrepreneurship education. Professional education and innovation and entrepreneurship education are highly integrated, requiring every teacher to have the ability to carry out innovation and entrepreneurship education 11. The educational concept of innovation and integration puts forward higher requirements for professional teachers. To improve the quality of curriculum construction, on the one hand, it is necessary to enhance teachers' dual-creation education ability, and on the other hand, to establish a reasonable incentive mechanism to encourage more professional teachers to participate in curriculum construction. First of all, from the perspective of professional teachers, they should pay attention to frontier applications and industrial development based on tracking the frontiers of disciplines. Link scientific research with the country's and society's strategic needs and focus on transforming scientific research results. Actively participate in social services, and undertake or participate in the research and development of application projects. Actively connect with relevant enterprises and institutions, establish industry-university cooperation relationships, and excavate innovative and entrepreneurial teaching resources such as teaching cases and practical training topics from industrial applications. Secondly, from the school level, it is necessary to provide a platform for improving teachers' dual-innovation education ability and carry out teaching skills training and lectures for professional teachers. Provide policy and resource support for professional teachers to conduct on-the-spot research and temporary training in enterprises and gradually enrich teachers' industrial practice experience. Appropriate policy inclination is given in performance evaluation, a suitable incentive mechanism is established, and professional teachers are encouraged to participate in the reform of entrepreneurship and innovation education. In addition, the school can introduce some business professionals or successful people with experience in technological entrepreneurship as expert consultants for innovation and entrepreneurship practice. While sharing the practical experience of entrepreneurship with students can also provide specific opinions and suggestions on students' innovation and practice to improve students' innovation and entrepreneurship. Effectiveness of entrepreneurial practice.

CONCLUSION:

Integrating innovation and entrepreneurship education into professional education is necessary



for social and economic development and the enrichment of higher education content. Firstly, it must highlight professional characteristics in innovation and entrepreneurship education courses. Secondly, the knowledge and ideas of innovation and entrepreneurship should be integrated into teaching professional courses. Thirdly, realizing the organic integration of innovation and entrepreneurship education and school-enterprise cooperation, and collaborative education is necessary. Therefore, implementing diversified, multi-level, three-dimensional innovation and entrepreneurship teaching exploration for college students is an essential guarantee for improving the quality of college students' innovation and entrepreneurship education.

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REFERENCES:

1. Chen, K. Y., Xie, X. Q. (2020). Research the three-integration model of innovation and entrepreneurship education in colleges and universities in the new era. *Continuing Education Research*, 3, 60-63.
2. Li, R. Y., Yang, X. L., Li, J. S. (2017). Innovation and Entrepreneurship Education for Marketing Majors under the Background of "Innovation and Entrepreneurship": Taking Bowen School of Management, the Guilin University of Technology as an example. *Quality Education in the West*, 3(21), 151-153.
3. Su, K. Z., Song, D., Zhao, Z. (2022). The logical composition, practical obstacles, and long-term mechanism of innovation and entrepreneurship education in universities. *Modern Education Management*, 3, 40-47.
4. Shen, S. H. (2022). Real contradictions and improvement paths in developing innovation and entrepreneurship education curriculum systems in local colleges and universities. *Education and Vocation*, 14(4), 79-83.
5. Fu, C. Q. (2020). Problems and solutions of innovation and entrepreneurship education for college students. *Continuing Education Research*, 6, 78-81.
6. Wang, H. C., Liu, J. Y. (2017). Core, Difficulty, and Breakthrough of University Innovation and Entrepreneurship Education. *China Higher Education*, 2, 61-63.
7. Jia, J. M., Zhao, S., Li, W. F. (2021). Research on innovation and entrepreneurship teaching of college students from the perspective of innovation and integration. *Science and Technology Entrepreneurship Monthly*, 34(8), 147-150.
8. He, L., Luo, J. H., Gao, B. (2020). Research and practice of innovation and entrepreneurship teaching method reform in western local universities. *Education Modernization*, 17, 34-36.
9. Li, D. L., Liu, J. T., Yu, X. Y. (2019). Integration and Embedding: Innovation and Entrepreneurship Curriculum System Construction and Model Transformation. *Higher Education Exploration*, 3, 30-35.
10. Fu, T., Zhao, B. S., Xu, M. (2021). The mechanism, model, and path of the integration of innovation and entrepreneurship education and professional education under the "triple helix" theory. *Education and Vocation*, 4, 74-80.
11. Sun, W. Q., Meng, C. Y., Wang, W. J. (2020). Research on the Curriculum System of Cultivating Students' Innovation and Entrepreneurship Ability in Applied Colleges and Universities. *Modern Education Management*, 7, 75-81.



A STUDY ON CONSUMER ACCEPTANCE AND TRUST FOR CRYPTOCURRENCY IN OMAN

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Abstract: *The progress in the digital currencies' realm began in the early 1990s with the invention of cryptographic tools that enabled the construction of decentralized digital currencies. Cryptocurrency is a new type of money that has lately become popular. In addition, it is classified as a sort of digital money; it is only available in digital form and has no physical counterpart. Some of the Objectives of the research are To study the cryptocurrency's acceptance among people in Oman, to analyze the impact & issue of cryptocurrency on its users, to examine the benefit of cryptocurrency to its users, to study the challenges in the acceptance of cryptocurrency in Oman etc. This study was done in the Al Dakhiliyah Governorate to examine consumer acceptability and trust in cryptocurrencies. Analytical in the sense that it requires critical thinking skills and the examination of facts and information concerning consumer acceptability and trust in cryptocurrencies in the Sultanate of Oman Al Dakhiliyah Governorate. Analytical research is carried out in a variety of methods, including literature reviews and public opinion polls, to test the hypothesis Correlation was used on the selected variables.*

Key Words: *Virtual Currency, Cryptocurrency, Bitcoin, Oman.*

INTRODUCTION:

The term "cryptocurrency" first appeared in 1989, when American cryptographer David Chum adopted the term "digital cash" (it depends only on encryption) (Nigeria, 2021). However, the progress in the digital currencies' realm began in the early 1990s with the invention of cryptographic tools that enabled the construction of decentralized digital currencies. Cryptocurrency is a new type of money that has lately become popular. In addition, it is classified as a sort of digital money; it is only available in digital form and has no physical counterpart. It is also a decentralized currency that is not governed by any government. Furthermore, it is a set of encrypted data associated with a monetary unit. As a result, it is a type of digital asset built on a network that spans a huge number of computers. Cryptocurrencies are mined and bought in cryptocurrency exchanges.

The user of cryptocurrency: The individual who receives bitcoins to use in the purchase of real or virtual things or services is referred to as a cryptocurrency user.

The legal aspect of digital currencies: Since the encrypted currencies are not supported by public or private entities, the legal defense of these currencies then became difficult. However, digital currencies are legal in the European Union. Whereas the rest of the world is concerned about encrypted currencies because they breach the security walls of institutions such as financial institutions and banks. On the other hand, El Salvador is the only government that has made it lawful to utilize digital currencies like Bitcoin as legal tender.

Types of cryptocurrencies: There are over 2000 cryptocurrencies in the world, but the researchers focused on the three most popular: Bitcoin, Litecoin, and Ripple. First, Bitcoin is the most well-known and valued of all cryptocurrencies. It appeared in 2008 and was created by an anonymous individual named Satoshi Nakamoto (Franken field, 2022). Furthermore, Bitcoin has grown in popularity due to



people's desire to transmit money across borders without being hampered by banks, governments, or any other financial institutions. The second encrypted virtual currency is the Litecoin cryptocurrency. Its open-source Bitcoin software package was launched in October 2011. The Bitcoin and Litecoin currencies have different transaction speeds, whereas the Litecoin transactions are faster than Bitcoin transactions. The third commonly used currency is the Ripple currency, which debuted in 2012, three years after Bitcoin entered the cryptocurrency era. Ripple changed its name to Open Coin (a network used to move cash when huge organizations and financial services firms participate as counterparties to transactions). So, it differs from Bitcoin in terms of speed, as well as the fact that it is less expensive.

Central Bank of Oman and Cryptocurrencies: The Central Bank of Oman has formed a high-level task committee to examine the economic benefits and drawbacks of allowing the usage of cryptocurrencies in the nation (Oman Central Bank launches cryptocurrency task force, 2021).

In addition, the Central Bank of Oman has issued a warning against the usage of cryptocurrencies, stating that it is not legal money in the Sultanate. Furthermore, the bank did not provide any cryptocurrency trading licenses. Also, the Central Bank of Oman neither guarantees nor protects the usage and possession of cryptocurrencies as Central Bank money under Banking Law 114/2000 (Oman Observer, 2020). Moreover, the Central Bank of Oman had issued a warning for cryptocurrency users and the dangers involved, particularly in light of the lack of client protection procedures. Also, the central bank wants to make sure that everyone is safe before regulating, allowing, or even banning cryptocurrency.

RESEARCH OBJECTIVES:

- To study the cryptocurrency's acceptance among people in Oman.
- To analyze the impact & issue of cryptocurrency on its users.
- To examine the benefit of cryptocurrency to its users.
- To study the challenges in the acceptance of cryptocurrency in Oman.
- To give valuable suggestions about the acceptance's evaluation.
- To compare the difference between cryptocurrency and real money.

SCOPE OF THE STUDY:

As the number of people using cryptocurrency grows; in light of this, the present study looks at Oman's consumer acceptability and trust in cryptocurrencies. Therefore, this research will focus on people who use or don't utilize digital currencies. In addition, the focus of this research is restricted to the Al Dakhiliyah region. As well, this study will include the University staff. So, the research sample will be from Al Dakhiliyah only through questionnaire, due to the Corona epidemic, and because it does not necessitate more time and effort because of lack of resources.

LITERATURE REVIEW:

Koroma, J. Rongting, Z., Muhideen, S., Akintunde, T. Y., et.al.(2022), explained that citizens' contentment with blockchain cryptocurrency has been established, supporting decentralized transactions and transparency with confidence, according to this research. This would allow the Mano River Union and Sierra Leone to conduct regular and transparent e-commerce transactions, making it easier for residents to use blockchain cryptocurrencies without fear. As a result, technological attachment encourages people's faith in cryptocurrencies to be transparent on the blockchain, resulting in new information and comprehension. The Mano River Union must not fall behind in the development of blockchain technology, therefore ethical concerns and confidence in crypto enablers will assure global adaptation.

Abbasi, G. A., Tiew, L. Y., Tang, J., Goh, Y.-N., & Thurasamy, R. (2021), noticed that service providers devise methods to encourage people to utilize cryptocurrencies in their daily lives by emphasizing how to make the process of utilizing cryptocurrency more beneficial, easy, pleasant, and trustworthy. The adoption of bitcoin technology will be impossible until customers accept it as a viable alternative to traditional payment methods. Local financial institutions and authorities might both illustrate the benefits of bitcoin used to boost the country's adoption rate.



Ji-Xi, J, Salamzadeh, Y, & Teoh, A. (2021), found that despite global IT giants like Amazon and Microsoft embracing Bitcoin as a payment mechanism, Malaysians are still scared of cryptocurrencies. This research intends to give relevant authorities and companies (such as central banks, retail merchants, and cryptocurrency exchangers) insights into the elements that consumers consider when considering using bitcoin as a means of exchange.

Saad, S. Allaya, A. Taârit, F, & Hchaichi, R. (2021), describe national culture, characteristics relating to consumer psychology, and elements connected to legislation and monetary policy all have a role in preventing cryptocurrency proliferation. Despite all of the technical advancements, governments and central banks have found it difficult to include cryptocurrencies since they are generally opposed by strict regulation and monetary policy. On the other hand, psychological hurdles to bitcoin adoption include the need for human connection, organizational and functional impediments, and a variety of other characteristics connected to power distance and uncertainty avoidance.

Arli, D. Esch, P. Bakpayev, M, & Laurence, A.(2020), found that consumers' faith in cryptocurrencies is based on their understanding of cryptocurrencies, their trust in government, and the speed with which transactions are completed. The study provides a number of significant theoretical advances. To begin with, research reveals that customers who understand and are familiar with the workings of cryptocurrencies are more likely to trust and invest in them. Consumers are more likely to trust cryptocurrencies and peer-to-peer transactions if they are issued by a central issuer and controlled by their individual governments, according to the researchers.

Gupta, S, Mathew, M, & Sama, H. (2020), In this research is to identify the primary motivations for investing in cryptocurrencies, despite their unpredictable character and lack of legal framework. According to the findings, "Social Influence (SI)" is the most influential element, while "Effort Expectancy (EE)" is the least influencing component considered by investors.

Sangeetha, K,(2020), The research shows that the causes for the birth of cryptocurrencies include not only the limitations of the old currency system, which has been unable to cope with various crises but also the advancement of the Internet, which has resulted in the emergence of cryptocurrencies. Cryptocurrencies may prove to be a more appropriate means of payment. Moreover, a lot of legal wrangling, with the result that their consumers are subjected to a lot of legal wrangling as well as a financial risk Cryptocurrency, is a peer-to-peer network that is encrypted and used to facilitate transactions.

Alaeddin, O, & Altounjy, R.(2018), state that the importance of technical understanding reflects widespread agreement on the challenge of marketing these types of currencies among older generations, who are thought to be less informed in terms of modern technology. Furthermore, a high degree of trust is the primary predictor of the attitude that might result from a lack of government rules. Another consideration is guaranteeing consumer satisfaction. So, this has a great influence on instilling a desire in people.

Han, C. K, Min, H. S., Yuan, C. J., Yan, F. P., & et.al, (2018), opines the variables of behavioural Intention toward cryptocurrency is among Ipoh residents has been accomplished. Performance expectation, social influence, price value, effort expectancy, enabling condition, hedonic motivation, habit, trust, and perceived risk are constructed frameworks that have a substantial impact on Behavioural Intention towards Cryptocurrency.

Mendoza-Tello, J. Mora, H. Pujol-López, F, A, & Miltiadis, D, L. (2018), discovered that the hazards of adopting cryptocurrencies are obvious in terms of volatility, a lack of rules, and network assaults. Before performing electronic transactions with cryptocurrencies, it is a good idea to seek guidance, ideas, and as much information as possible. Through ideas, comments, and human ties, social networks have the power to innovate and improve learning. In online situations, these social behaviours might boost the intention to use and reduce the perceived danger.

Mahomed, N,(2017), summarised that learning more about the elements that influence BI (Business intelligence)and cryptocurrency usage in order to better advise business models and services tactics aimed at increasing adoption. Furthermore, the research aims to educate politicians and establish organisations on how to respond to cryptocurrencies at this early point in their potentially disruptive course.



Jani, S. (n.d.), the researcher found that the future of the cryptocurrency idea, according to the researcher, is bright, with more chances to bring beneficial improvements and advancement to the e-Business and e-Payment sectors. With the fast advancement and advancement of technology, the growth of cryptocurrencies is unstoppable. Since our research, advanced measures have been taken to improve and expand the bitcoin idea. Vendors are increasingly embracing Bitcoin as a form of payment. many individuals are now more aware of the potentials and opportunities that bitcoin offers.

Hypotheses

- Null Hypothesis: (H01): There is no relationship between education & acceptance of the use of cryptocurrency in Oman. Alternative Hypothesis: (Ha1): There is a relationship between education & acceptance of the use of cryptocurrency in Oman.
- Null Hypothesis: (H02): There is no relationship between the salary scale & acceptance of cryptocurrency in Oman. Alternative Hypothesis: (Ha2): There is a relationship between the salary scale & acceptance of cryptocurrency in Oman.

RESEARCH METHODOLOGY:

This study was done in the Al Dakhiliyah Governorate to examine consumer acceptability and trust in cryptocurrencies. The study is analytical and descriptive in nature, and it plays an important part in statistics and data analysis. Analytical in the sense that it requires critical thinking skills and the examination of facts and information concerning consumer acceptability and trust in cryptocurrencies in the Sultanate of Oman's Al Dakhiliyah Governorate. Analytical research is carried out in a variety of methods, including literature reviews and public opinion polls. Descriptive analysis, on the other hand, classifies, characterizes, compares, and measures data. It comprises the methods for describing the features of the study's variables. The data was collected using a basic random procedure by the researcher.

Population and Sample:

Two crucial words are population and sampling. A population is a collection of people that have a lot of things in common. As a result, the population in my study comprises both cryptocurrency users and non-crypto currency users in the Al Dakhiliyah Governorate. The sample is a subset of the population or a particular group from whom researchers gather primary data. A convenience sample strategy was used to pick respondents from the Al Dakhiliyah Governorate. It comprises everyone in the Al Dakhiliyah Governorate who uses or does not use cryptocurrencies, such as citizens, residents, both Omani and non-Omani, persons in residential areas, students, and college personnel. The sample is chosen based on single random sampling. A sample size of 58 people was chosen.

Source of Data and Data Collection:

Depending on the study's aims, demographics, and methodologies, there are several ways or sources for acquiring data. Data collecting relies on both types of data collection methods. One way is to utilize a questionnaire (primary data) to collect data from persons who use transportation services in Al Dakhiliyah Governorate. The population of the Al Dakhiliyah Governorate comprises both cryptocurrency users and non-crypto currency users, such as citizens and residents. The second method of data collection is secondary data collection, which involves gathering information from other sources:

- Articles
- Journals,
- Magazines,
- Newspapers,
- Periodicals,
- Books,
- Government reports.



Structured online questionnaire in Google Form were used to gather responses, which contained both :

- Open-ended
- Closed-ended questions.

TOOLS USED FOR DATA ANALYSIS:

The researcher employed a questionnaire to gather information , and it is a single random sampling. The questionnaire is a method of gathering information through a series of questions about consumer acceptability and trust in bitcoin in the Al Dakhiliyah Governorate. The questionnaire is utilized as the main data, and it has only a few questions that cover a wide range of topics. The questionnaire was created in Google Form, which checks all responses, either collectively or individually, in order to collect data. Demographic questions, open-ended and closed-ended questions were all included in the survey. Furthermore, the data were analyzed using SPSS, which provides a wide range of data visualization and statistics-simplifying tools. It's a sophisticated tool. It contains data manipulation tools. It provides data manipulation capabilities and allows users to execute more advanced studies such as factor analysis, hypothesis testing. To test the hypothesis correlation is used. Correlation is a statistical word that refers to the degree to which two variables move in lockstep. It also aids the researcher in analyzing efficiency and reducing errors. To evaluate the hypothesis, the researcher employed. The statistical examination is frequently used to compare two population means with limited sample sizes. SPSS was used by the researcher to verify the reliability of a questionnaire.

Reliability and validity of the questionnaire:

Reliability Statistics	
Cronbach's Alpha	N of Items
.807	25

Case Processing Summary			
		N	%
Cases	Valid	58	100.0
	Excluded ^a	0	.0
	Total	58	100.0
a. Listwise deletion based on all variables in the procedure.			

Table1

When developing a study strategy, and methodologies, and writing up the results, it's critical to consider dependability and validity. To assess the quality of research, reliability and validity are employed. They describe the accuracy with which a methodology, method, or test measure something. The research's reliability and validity are dependent on developing a robust research design, selecting appropriate samples and techniques, and thoroughly reviewing the findings. As a result, the researcher attempted to apply acceptable measuring methods based on current information and high-quality procedures. Furthermore, the researcher precisely stated the sample with whom the study will be done, as well as their age, geographic region, and employment. This study's dependability is high, as measured by Cronbach's alpha reliability of 0.807, which is good. Table 1: Statistics on Reliability Alpha 25 Cronbach's N of Items Furthermore, 58 replies were legitimate data for study because they were completed successfully.

Testing of Research Hypotheses:

Interpretation

Correlations			
		Education level	Use Cryptocurrencies
Education level	Pearson Correlation	1	.029



	Sig. (2-tailed)		.830
	N	58	58
Use Cryptocurrencies	Pearson Correlation	.029	1
	Sig. (2-tailed)	.830	
	N	58	58

Table 2

1.Null Hypothesis: (H01): There is no relationship between education & acceptance the use of cryptocurrency in Oman.

Alternative Hypothesis: (Ha1): There is relationship between education & acceptance the use of cryptocurrency in Oman.

H0: $\rho = 0$ (No correlation)

H1: $\rho \neq 0$ (correlation exists)

The correlation is 0.029 which is positive, but it is a weak correlation.

As $0.830 > 0.05$ so the result is not significant which mean to not reject H01 (so accepting H01 and reject Ha1). Which means accepting the hypothesis which is there no relationship between education & acceptance the use of cryptocurrency in Oman.

Correlations			
		Salary range	Ready to accept cryptocurrency
Salary range	Pearson Correlation	1	.040
	Sig. (2-tailed)		.768
	N	58	58
Ready to accept cryptocurrency	Pearson Correlation	.040	1
	Sig. (2-tailed)	.768	
	N	58	58

Table 3

2.Null Hypothesis: (H02): There is no relationship with the salary scale & acceptance of cryptocurrency in Oman.

Alternative Hypothesis: (Ha2): There is relationship with the salary scale & acceptance of cryptocurrency in Oman.

H0: $\rho = 0$ (No correlation)

H2: $\rho \neq 0$ (correlation exists)

The correlation is 0.040 which is positive, but it is a weak correlation.

As $0.768 > 0.05$ so the result is not significant which mean to not reject H0 (so accepting H01 and reject H1). Which means accepting the hypothesis there is no relationship with the salary scale & acceptance of cryptocurrency in Oman.

RESULTS:

The researcher concludes the research, the total number of responses was 58 responses. The male and females were equal. For the majority of respondents, the age of respondents was less than 35.



The percentage of Omanis was more in this sample. Holders of a bachelor's degree were more. The state of Nizwa ranked first in the sample for the governorate of Al Dakhiliyah. The average salary was 500 - 2000 the most. The answer was yes when asked whether they have heard before about cryptocurrencies being the highest. As for the use of cryptocurrencies, the answer is no for the majority. There was no experience with the use of cryptocurrencies for most respondents. It was a neutral rate for the acceptance of the use of digital currencies. The use of cryptocurrency instead of physical currency was the top answer to the share of agreement and Neutral. The government should restrict control of the cryptocurrency was the highest-ranking neutral by the sample. Many respondents are neutral that they know the idea of cryptocurrency trading platforms. In the future there will be an increase in the use of cryptocurrency was the top answer agreed. The answer was neutral that the lower cost (service fee per transaction) of transactions could lead to increased use of cryptocurrency. Most of the sample agreed and neutralized that cryptocurrency has more international acceptance compared to the local currency. Most agreed that by using cryptocurrency, there will be less exchange risk. Neutral got the highest number for the reason for the low acceptance of cryptocurrency is the lack of a central governing authority. The reason for the low acceptance of the cryptocurrency is the lack of knowledge of technological awareness/education, the highest answer was agreed by the respondents in the sample. Neutral took the highest percentage that major banks that accept cryptocurrency will provide a strong boost in use. Theft and hacking are the main reason for the decline in the use of cryptocurrency was the answer neutral and agree. Most agreed that there should be good control from the government and the central bank to increase the acceptance of cryptocurrency. The lack of acceptance of Cryptocurrency on major e-commerce sites is the reason why Cryptocurrency usage is declining, and the answer is most agreed. Neutral Mostly, the lack of acceptance of Cryptocurrency in a physical store is the reason for the low use of Cryptocurrency. Most agreed that using cryptocurrencies puts my financial activities at risk.

CONCLUSION:

This is the first empirical research in Al Dakhliya, Oman, examining customer acceptability and trust in cryptocurrencies in Oman. To summarize, the overall goal of this study is to determine consumer acceptance and trust for cryptocurrency among Al Dakhliya residents, and the findings revealed that most people in the Sultanate of Oman's Al Dakhiliyah Governorate are neutral toward cryptocurrencies, that few people use it, and that they are aware of the risks associated with it. Furthermore, people recognize that the lack of a central controlling authority is the primary cause for cryptocurrency's poor acceptability and that theft and hacking are the primary reasons for cryptocurrency's low usage. However, if the government and central bank are in good hands, cryptocurrency will be more widely accepted in Oman. Furthermore, it demonstrates that future researchers' recommendations are also offered and debated in this study. It may be improved with more research and expanded by conducting comparable research in other governorates. Furthermore, by broadening the scope of this study, future researchers will be able to collect additional data. Future researcher can work on other governorates, further studies can be conducted on the acceptance of cryptocurrencies among the traders specially e-commerce platforms.

RECOMMENDATION:

- The central bank should build a system in the Sultanate that restricts the hazards of digital currencies while also providing a high level of security in banks.
- To mitigate the hazards of digital currency, the government should attract a large number of students to research hacking and fraud (computer specialization).
- Before beginning to utilize digital currency, users should research the issues.
- Internet sites and data security must be created to decrease risks in the country (for the government and the central bank).
- Reducing the external variables (like value, price, supply & demand) that make these currencies dangerous to invest in.



- Reducing the dangers of cryptocurrency by controlling supply, demand, pricing, and interest rates.
- Digital currencies use is tied to fixed national currencies and easily exchanged. Reducing the cost and significantly increasing the speed of cross-border payments is for sure interesting.
- Digital currency-based protocols have the ability to reduce transaction costs. Real-time payment systems increase national economies by improving productivity. GDP growth is affected by efficiency and liquidity.
- If the government allows the use of cryptocurrency, people & shoppes will be able to pay through digital currencies.
- If there is more knowledge of technology awareness education there will be more acceptance of cryptocurrency.
- If there a good control of government & control Bank there will be more acceptability of Cryptocurrency.
- If there is acceptance of cryptocurrency on major e-commerce websites there will be more usage of cryptocurrency.
- If there is acceptance of cryptocurrency in the physical shops there will be a reason for more usage of cryptocurrency.
- Reducing the financial activities risk will increase the use of cryptocurrency.
- Having an access to new markets may help small enterprises. Small enterprises are usually developed on a steady stream of low-value payments. Many small company owners are unable to think about developing their businesses outside their country's boundaries due to the high costs of cross-border payments.
- Small and mid-sized banks can profit from direct access to international payments without having to invest big sums of money. Only the world's major banks now have the infrastructure - known as the correspondent banking network - to transfer money throughout the globe. To get access to these global payments network, these banks need smaller banks to deposit considerable sums of money in "nostro" and "vostro" accounts. Protocols like cryptocacy allow smaller banks to do international payments immediately and without depositing capital by allowing point-to-point settlement. Allowing additional banks to join in the international payments system could increase competition in finance sector, cut costs, and may be increase overall economic activity.

REFERENCES:

1. Abbasi, G. A., Tiew, L. Y., Tang , J., Goh, Y.-N., & Thurasamy,R. (2021 , March 8). *The adoption of cryptocurrency as a disruptive force: Deep learning-based dual stage structural equation modelling and artificial neural network analysis*. PLOS
2. ONE. Retrieved from February 14, 2022, from <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0247582>
3. Alaeddin, O, & Altounjy, R.(n.d.). *Trust, Technology Awareness and Satisfaction Effect into the Intention to Use Cryptocurrency among Generation Z in Malaysia*. Retrieved from February 21, 2022, from https://www.researchgate.net/profile/Rana-Altounjy/publication/329268583_Trust_Technology_Awareness_and_Satisfaction_Effect_int_o_the_Intention_to_Use_Cryptocurrency_among_Generation_Z_in_Malaysia/links/5bffa6d4a6fdcc1b8d4a6122/Trust-Technology-Awareness-and-Satisfaction-Effect-into-the-Intention-to-Use-Cryptocurrency-among-Generation-Z-in-Malaysia.pdf
4. Alqaryout, O., Siyam, N., Alkashri, Z, & Shaalan, K.(2019, December 10). *Cryptocurrency Usage Impact on Perceived Benefits and Users' Behaviour*. Retrieved from February 26, 2022, from https://www.researchgate.net/publication/340738436_Cryptocurrency_Usage_Impact_on_Perceived_Benefits_and_Users'_Behaviour
5. Arli,D, Esch, P, Bakpayev, M, & Laurence, A.(2020, June 10). *Do consumers really trust cryptocurrencies?* Marketing Intelligence & Planning. Retrieved from February 14, 2022,



- from <https://www.emerald.com/insight/content/doi/10.1108/MIP-01-2020-0036/full/html>
6. Barros, G, O, D. (2019). *Cryptocurrencies: Advantages and Risks of Digital Money*.
 7. Retrieved from February 26, 2022, from <https://www.gee.gov.pt/en/documentos/estudos-e-seminarios/temas-economicos/8685-te67-cryptocurrencies-advantages-and-risks-of-digital-money/file>
 8. Bunjaku, F. , Gjorgieva-Trajkovska, O , MitevaKacarski, E. (n.d.) . *CRYPTOCURRENCIES – ADVANTAGES AND DISADVANTAGES*. Retrieved from February 26, 2022, from <https://eprints.ugd.edu.mk/18707/1/Cryptocurrencies.pdf>
 9. Gil-Cordero, E, G., Sánchez, J, P, C., & Cortés, M, J , A. (2020, November 6).
 10. *Cryptocurrencies as a Financial Tool: Acceptance Factors*. Mathematics. Retrieved from February 26, 2022, from https://www.researchgate.net/publication/346764238_Cryptocurrencies_as_a_Financial_Tool_Acceptance_Factors
 11. Gupta,S, Mathew, M, & Sama,H. (2020, November 23). *Prioritizing intentions behind investment in cryptocurrency: a fuzzy analytical framework*. Journal of Economic Studies. Retrieved from February 14, 2022, from <https://www.emerald.com/insight/content/doi/10.1108/JES-06-2020-0285/full/html>
 12. Han, C. K, Min, H. S., Yuan, C. J., Yan, F. P., & et.al. . (2018, Agust). *ACCEPTANCE OF CRYPTOCURRENCY AMONG IPOH RESIDENTS*. Retrieved from February 21, 2022, from http://eprints.utar.edu.my/3102/1/fyp_MK_2018_CKH.pdf
 13. Ji-Xi, J, Salamzadeh, Y, & Teoh, A. (2021, August 28). *Behavioral intention to use cryptocurrency in Malaysia: an empirical study*. The Bottom Line. Retrieved from February 14, 2022, from <https://www.emerald.com/insight/content/doi/10.1108/BL-08-2020-0053/full/html>
 14. Koroma, J. Rongting, Z., Muhideen, S., Akintunde, T. Y.,et.al.(2022).*Assessing citizens' behaviour towards blockchain cryptocurrency adoption in the Mano River Union States: Mediation, moderation role of trust and ethical issues*.
 15. Retrieved from February 21, 2022, from <https://www.sciencedirect.com/science/article/pii/S0160791X22000264>
 16. Mahomed, N.(2017).*Understanding consumer adoption of cryptocurrencies*. Retrieved from February 21, 2022, from <https://repository.up.ac.za/handle/2263/64874>
 17. Mendoza-Tello, J. Mora, H. Pujol-López, F, A, & Miltiadis, D, L. (2018). *Social Commerce as a Driver to Enhance Trust and Intention to Use Cryptocurrencies for Electronic Payments*. IEEE Xplore. Retrieved from February 14, 2022, from <https://ieeexplore.ieee.org/abstract/document/8457201>
 19. Miraz, M. H., Hasan, M. T., Rekabder, M. S., & Akhter, R.(2022). *TRUST, TRANSACTION TRANSPARENCY, VOLATILITY, FACILITATING CONDITION, PERFORMANCE EXPECTANCY TOWARDS CRYPTOCURRENCY ADOPTION THROUGH INTENTION TO USE*. Retrieved from February 21, 2022, from https://www.researchgate.net/profile/Mahadi-Miraz-3/publication/356282702_Trust-transaction-transparency-volatility-facilitating-condition-performance-expectancy-towards-cryptocurrency-adoption-through-intention-to-use-1532-5806-25-S1-006/links/6194779907be5f31b78d4adf/Trust-transaction-transparency-volatility-facilitating-condition-performance-expectancy-towards-cryptocurrency-adoption-through-intention-to-use-1532-5806-25-S1-006.pdf
 20. N.D.(2021).Retrieved from February 21, 2022, from <https://usa.visa.com/content/dam/VCOM/regional/na/us/Solutions/documents/visa-crypto-consumer-perceptions-white-paper.pdf>
 21. Nica, O., Piotrowska, K., & Hoppé, K,R ,S. (2017, October 26). *Cryptocurrencies: Economic benefits and risks*. Retrieved from February 26, 2022, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3059856



22. Nigeria, G. (2021). *The idea and a brief history of cryptocurrencies*. Retrieved from February 21, 2022, from <https://guardian.ng/technology/tech/the-idea-and-a-brief-history-of-cryptocurrencies/>
23. *Oman Central Bank launches cryptocurrency task force*. (2021, September 26). Retrieved from February 14, 2022, from <https://www.unlock-bc.com/80596/oman-central-bank-launches-cryptocurrency-task-force/>
24. Oman Observer. (2020, July 19). *CBO Issues Cautionary Notice on Use of cryptocurrencies*. Retrieved from February 14, 2022, from <https://www.omanobserver.om/article/11836/11/cbo-issues-cautionary-notice-on-use-of-cryptocurrencies>
25. Saad, S. Allaya, A. Taârit, F, & Hchaichi, R. (2021). *Chapter 4: Towards a Better Understanding of the Resistance Factors of Cryptocurrency Spread* . Retrieved from February 21, 2022, from https://www.worldscientific.com/doi/abs/10.1142/9789811239670_0004
26. Sangeetha, K. (2020, March 9). *Legal and Economic Analysis of the Cryptocurrencies Impact on the Financial System Stability*. Retrieved from February 26, 2022, from https://www.easypublisher.com/media/features_articles/EASJEBM_33_208-212_G9opxjV.pdf
27. Sharma, R, P., & Sharma, A. (2018). *USING CRYPTOCURRENCY AND ASSOCIATED ADVANTAGES AND DISADVANTAGES*. Retrieved from February 26, 2022, from https://www.researchgate.net/publication/337973690_USING_CRYPTOCURRENCY_AND_ASSOCIATED_ADVANTAGES_AND_DISADVANTAGES



A COMPARATIVE STUDY OF LOCALS' PERCEPTION ON TRANSPORTATION SERVICES PROVIDED IN MUSCAT AND AL DAKHILIYAH GOVERNORATE OMAN

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Abstract: *Transportation services are integral to communities. Every country needs an effective transportation service. All transportation services are important to society, industry, and government. Transportation services are the activities designed to assist a person to travel from one place to another, to obtain services, to deliver goods, or carry out life's activities. It excludes school buses and charter or sightseeing services. It includes various modes for example buses, taxis, cars, rails, and ships. Recently, many countries in the Middle East have turned their attention towards improving their transportation service, as problems such as traffic congestion especially in cities, low mobility, higher individual expenditure of transport, and a rural-urban divide in services have arisen. Some of the objectives of the study are to study local characteristics of transportation services in Muscat and Al Dakhiliyah Governorate, to assess local awareness and perception of transportation services in Muscat and Al Dakhiliyah Governorate, to analyze the establishment of effective public transport services in Muscat and Al Dakhiliyah Governorate, to offer valuable suggestions to make the transportation services effective in Oman. This research was conducted to assess local needs in an opinion survey of transportation services provided in Muscat and Al Dakhiliyah governorate. Analytical because it includes critical thinking skills, and evaluation of facts and information about the transportation services in Muscat and Al Dakhiliyah governorate in Oman being conducted. For data collection purpose the researcher has used simple random technique to collect the data. For testing the hypothesis, correlation will be used to find out the relationship between selective variables.*

Key Words: *SCM, Public transport, Transportation, Travel.*

INTRODUCTION:

Transportation services are integral to communities. Every country needs an effective transportation service. All transportation services are important to society, industry, and government. Transportation services are the activities designed to assist a person to travel from one place to another, to obtain services, to deliver goods, or carry out life's activities. It excludes school buses and charter or sightseeing services. It includes various modes for example buses, taxis, cars, rails, and ships. In addition, effective transportation services are one of the basic components of the social, economic, and physical structure. It should be competitive and attractive, to be well regarded. public transport services must be safe and rapid, have high service quality, and utilize resources efficiently (Belwal, 2010).

Recently, many countries in the Middle East have turned their attention towards improving their transportation service, as problems such as traffic congestion especially in cities, low mobility, higher individual expenditure of transport, and a rural-urban divide in services have arisen. For example, Bahrain has a joint venture between the public and private sector BD 4.5 million, to reshape the recent public transport services. This project is anticipated to enhance the economy, development, and professionalism, by using effective transportation services (Belwal & Belwal, 2011). The Sultanate



of Oman is one of the GCC countries. It has less exposure to the different modes of transportation service. However, Oman is one of the fast-emerging economies in the Middle East. It is an Arab state in southwest Asia, bordering the Arabian Sea and the Oman sea and is bordered in the northwest by the United Arab Emirates (UAE), and Saudi Arabia to the west. It is a country with strategic locations, large port cities, ancient villages, and islands. Muscat governorate is considered the heart of Oman. It includes the capital city Muscat, which is the most populated city in Oman. Also, Al Dakhiliyah governorate is one of Oman governorates with Nizwa town as the original center. The implementation and development of transportation service and its acceptability depend on the perception and attitude of locals. The perception of users about transportation services is affected by the quality of transportation services, safety, design, layout, location, quality of vehicles, availability, time spent in travelling, information about services, ticket systems, and cost. Moreover, the reliability, frequency, friendliness of services, cleanliness of interiors and exteriors, comfort, ease of access, reasonable fares, and easy-to-understand timetables are positive reasons for utilizing public transportation services.

This study assesses and measures the needs and perceptions of people towards the establishment of effective transportation services in Muscat and the Al Dakhilia governorate. Also, it identifies facilitators and barriers to such services. The study will include important information in the coming period for the transportation sector in Oman, as it will contribute to assisting researchers in the field of public transport in knowing the behaviour of people towards transport services in Oman. However, the contribution of this study is the interrogation it makes of the socio-cultural, norms, physical conditions of the terrain and the behavioural implications, and transit needs.

OBJECTIVES/PURPOSE OF THE STUDY:

Improvement of transportation services can solve the locals' difficulties faced by the locals in Oman. Also, it offers a safe mode of transportation to residents, and meet broad social, industrial, and environmental, requirements. The main objective of this study is to assess and measure the perception, awareness, and needs of locals towards the establishment of effective transportation services in Muscat and Al Dakhiliyah Governorate. In order, to analyze the status of transportation services in Oman. Also, to find answers to questions related to transportation adaption and using transportation services. These questions include different issues like means of transportation services, development of Transportation service in Oman, reasons for depending on private cars, public transport experience, constraints, behaviour, and usage. etc.

The objectives of the study are:

- To study local characteristics of transportation services in Muscat and Al Dakhiliyah Governorate.
- To assess local awareness and perception of transportation services in Muscat and Al Dakhiliyah Governorate.
- To analyze the establishment of effective public transport services in Muscat and Al Dakhiliyah Governorate.
- To analyze the establishment of an effective merchandise transport service in Muscat and Al Dakhiliyah Governorate.
- To study the issues in effective transportation service in Muscat and Al Dakhiliyah Governorate.
- To offer valuable suggestions to make the transportation services effective in Oman.

REVIEW OF LITERATURE:

Sadler, D. (2021), explore that Muscat is the capital city of Oman and the largest metropolitan area in Oman. It has different public transportation services. One of them are taxis, which are available in different types: regular taxis and company taxis. It is easy to find a taxi in Muscat, unlike other governorates. Most of the taxis are not metered, and there is a need to negotiate a price before setting off or customers will pay the high bill. Uber and Careem are not available in Muscat and other



governorates in Oman. But there are some similar apps, like Mwasalat, and Otaxi. Mawaslat company is government-owned, is metered, and works. It connected the driver with the customer and gave estimated time to arrival. Also, it is provided to pay either by cash or credit card. Also, OTaxi is popular in Muscat, not use this at the airport, malls, or major hotels, because these areas are restricted to Mwasalat taxis only. The other type is buses. Muscat has a bus network which connects the major bus stations, the airport, hotels, and main tourist attractions.

Belwal, R. (2017), described social policy in transportation services, which aims to achieve personal welfare and strengthen the capacity of people to achieve their productive potential. The social and cultural environment impacts locals' usage of public transportation and the society's demand for public transportation services. The transportation service in Arab countries is not free from socio-cultural challenges. For example, mixing of genders, and travelling alone for females, which are still taboo in most societies. Omani society is multicultural and multi-religious. Also, Oman has a good position of social and religious freedom. Socio-cultural barriers for women, put some restraints on their participation. The high religiosity and traditional attitudes and behaviours prevent women's participation in public life. The previous studies about people's perception of using public transport reveal that sharing public transport with other gender was the main concern for most of the females in using public transportation. Also, it indicates that cultural norms and barriers prevent a lot of Omani women from using public buses, or taxis. Most Omani people think it is better for women to use their private cars rather than mingling with males. T

Murat, Y. & Cakici, Z. (2017), reviewed the awareness of the need to use public transportation resources more efficiently has increased. As a result, the transportation systems need to evaluate all services, to provide efficient and desirable transportation services. Moreover, transit customer surveys play a vital role in the evaluation of current and planned public transportation services. Using surveys for public transportation services to evaluate current or planned transportation services, there will be many issues that need to be solved to get the right and reliable data collection. But sometimes the collection data about transportations services are not supported by comprehensive and methodologically valid surveying techniques. The results obtained from surveys of transportations service customers are useful to planning and operations functions, and development of transportations services, it also gives an idea about customer perception.

Mahrez, A., Wahibi, S. (2014), explored that many countries around the world have great attention to the transport sector. Recently, countries in the Middle East have turned their attention towards improving the public transportation services, because of problems like traffic congestion, low mobility, and high costs of transport. Omani response about public transport and its use was positive. But the unavailability of suitable options of transportation modes, their inadequacy, and the low level of people, leads to constrained people only to use personal vehicles. However, there is a need to introduce newer public transportation services in Oman, and existing infrastructure to increase road safety, and to avoid environmental problems. Also, there is a need to develop innovative solutions and awareness programs for people to encourage individuals about public transport.

Belwal, R. (2013), reviewed that Oman does not offer good options for public transportation. It is minimal and so far, has been limited to shared taxis and buses, which are necessarily limited and not available in every governorate. However, the only public transportation services available in Oman are taxi, bus, and coach services, and these cover the selected routes between the Muscat governorate and a few cities. These services do not meet the demand and needs of public transportation services. Furthermore, Taxis are the first necessary means of public transportation followed by buses with limited and a few benefits. The buses are scarce, and locals do not rely on and do not use them much for their daily commute. Moreover, the other mods of public transportation are not available in Oman like trains, trams, metro, monorails, railways, articulated buses, and trolleybuses. These transportation modes are available in Europe and other countries, which are not yet in Oman. In addition, the success of UAE initiatives in transportation services has given a good way to the rest of the neighboring countries and Arabic countries to start developing their transportation system. So, it could be said that Oman has a primitive public transportation system. Oman's National Transport Company (ONTC) is still working to establish an organized, and good quality bus service to Oman residents.



Belwal, R., Minhans, A. & Al-Balushi, A. (2013), discussed that until now, Oman has not made significant progress in providing taxi services, and it lacks organization and service orientation. However, only Omani citizens are allowed to drive taxis after they get possession of a permit, a driving license and a vehicle. In addition, there are some inhibitions about the taxi services and taxi drivers. Passengers were afraid of older taxi drivers, the high cost of taxi service, and unavailability when needed. Also, some taxi drivers are charging high and inappropriate fares and some of them do not arrive at their desired location and drive rashly.

Belwal, R. & Belwal, S. (2011), reviewed the public transport services in Oman is not sufficient, however, the transport services in Muscat and Al Batinah is better than other governorates in Oman. Urban residents like in Muscat governorate are using public transport more than their rural residents like in Al Dakhiliyah governorate. Moreover, public transportation is acceptable in Oman to almost 60 % of local's and residents who use public transportation spend less on public transportation than private transportation, less than 20 OMR per month. On the other hand, the public transportation service costs are high for those who own a car and have monthly incomes less than 200 OMR. Public transportation is convenient and economical for locals, but the local perception regarding safety is mixed. Most males can use and share public transportation with another gender, and there is no constraint for them by the socio-culture barriers in using public transportation. The thinking of older people and the old traditions, which create socio-cultural barriers, affects their use of public transportation. but younger locals are more willing to use public transportation, without such prejudices. However, males usually travel more and frequently anywhere than females, which increases their monthly expenditure on transport. Unlike, male females do not consider public transportation, and do not share taxis with the male, because of socio-cultural barriers.

RESEARCH METHODOLOGY:

This research was conducted to assess local needs in an opinion survey of transportation services provided in Muscat and Al Dakhiliyah governorate. The research is analytical and descriptive research which serve a crucial role in statistics and data analysis. Analytical because it includes critical thinking skills, and evaluation of facts and information about the transportation services in Muscat and Al Dakhiliyah governorate in Oman being conducted. Analytical research is conducted in different ways including review of literature, public opinion. However, descriptive analysis classifies, describes, compares, and measures data. It includes the methods that describe the characteristics of the variables in the study. The study is descriptive because there is a comparison between Muscat and Al Dakhiliyah governorate in Oman about the resident perception of transportation service. For data collection purpose the researcher has used simple random technique to collect the data.

Reliability and validity:

Before conducting the analysis of all data, all the data's reliability was analyzed based on Cronbach's Alpha value. The reliability analysis was done on all complete data of the questionnaire. The reliability of the data was found to be (.754), as shown in the results of the reliability analysis tables below in tables 4.2.24 According to the table below, about 53 responses were effectively complete and valid data for analysis. This represents a 100.0% response per cent, which can be considered good considering time and effort.

Table 1 Case Processing Summary

		N	%
Cases	Valid	53	100.0
	Excluded	0	.0
	Total	53	100.0

Table 2 Reliability Statistics

Cronbach's Alpha	N of Items
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.754	21
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The Cronbach's Alpha value between (0.7-1.0) is determined as excellent reliability. The Cronbach's Alpha value of the data was found to be (.754); therefore, this indicated that the questionnaire data had excellent reliability. All the 29 options of the questionnaire had excellent reliability.

Hypotheses Testing

Hypothesis 1

Null hypothesis (Ho1): There is no relationship between the governorate of the respondents and satisfaction among the public transport users.

Alternative Hypothesis (Ha1): There is a relationship between the governorate of the respondents and satisfaction among the public transport users.

Table: 3 Correlations Test

		Resident of	Public Transport
Resident of	Pearson Correlation	1	.329*
	Sig. (2-tailed)		.016
	N	53	53
Public Transport	Pearson Correlation	.329*	1
	Sig. (2-tailed)	.016	
	N	53	53

Direction of relationship: There is a positive relationship between the governorate of the respondents and satisfaction among the public transport users. Because the value of correlation coefficients is positive. The respondent satisfaction among the public transport users .329* correlation coefficients.

Significance of relationship: The relationship between relationship between the governorate of the respondents and satisfaction among the public transport users is significant because the p-value .016 is less than alpha value 0.05. Hence, the null hypothesis (H01) is rejected, and the alternative hypothesis (Ha1) is accepted.

Hypothesis 2:

Null hypothesis (Ho2): There is no relationship between the age of the respondents and satisfaction level received by the respondents from the customer care and staff of public transport.

Alternative Hypothesis (Ha2): There is a relationship between the age of the respondents and satisfaction level received by the respondents from the customer care and staff of public transport.

Table: 4 Correlations Test

		Age	Customer Care
Age	Pearson Correlation	1	-.001
	Sig. (2-tailed)		.995
	N	53	53
Customer Care	Pearson Correlation	-.001	1
	Sig. (2-tailed)	.995	
	N	53	53



Direction of relationship: There is a negative relationship between the age of the respondents and the satisfaction level received by the respondents from the customer care and staff of public transport. Because the value of correlation coefficients is positive the satisfaction level received by the respondents from the customer care and staff of public transport has -.001 correlation coefficients.

Significance of relationship: The relationship between the age of the respondents and satisfaction level received by the respondents from the customer care and staff of public transport is not significant because the p-value .995 is more than alpha value 0.05. Hence, the null hypothesis (H0) is accepted, and the alternative hypothesis (Ha) is rejected.

CONCLUSIONS:

The researcher, therefore, concluded that the purpose of this analytical and descriptive research grounded theory study was to assess and measure the perception, awareness, and needs of locals towards the establishment of effective transportation services in Muscat and Al Dakhiliyah Governorate. As per the findings, the researcher concludes that people in Oman are mainly dependent on their private cars for transit. Only a few respondents depend on public transportation services, while some never use public transport at all. It can be analyzed that public transportation in Oman is still in its introduction. The current mix available of public transport is not sufficient and not available in all governorates in Oman, it needs more attention and commitment. There is a huge need to shift attention on transportations service improvements in the case of availability of transportations service in all governorates, types of transport available, cleanliness, station and parking of transport service, cost of transport service, and time management of transport service. Locals realize the need to have better transportations services, but their knowledge of transportation modes available and their use are limited. There is a little social misunderstanding of using public transportation, and social barriers especially for females in using public transportation. However, the most common reasons for preferring private cars are convenience, availability at any time, flexibility, privacy and safety, and unfortunately these are absent in public transportation.

RECOMMENDATIONS :

Recommendations for the government:

- The researcher recommends that among the suggestions for improving public transportation services, the most common are the introduction of railway services in Oman, cost-effectiveness in public transportation or standardization of prices.
- The researcher recommends creating a line of taxis services for a female to drive by females and separating public transportation for males and females.
- Increasing or formation of public transport companies in all the governorates and focusing on the development of transportation services in one governorate only.
- The researcher suggests that to improve the infrastructure of transportation services like sanitation and parking. Creating transport infrastructure that deals with the adverse climatic conditions.
- The transportation industry in Oman needs to be regulated and organized like countries of the GCC. Also, current initiatives by other countries like Singapore, the UK, and Australia should be studied to help offer a better mix of services.
- The researcher recommend Oman focused more in intracity transportation within all governorate and between, with organized scheduling.
- All the above factors can help the policymakers and transportation authorities to devise well-acceptable and good public transportation services in Oman.

Recommendation for the researchers:

- The researcher recommends the researchers to further research shall be done in other governorates in Oman, in order to help the development of transportations services. And, do not limit their research in Muscat governorate, due to many studies done to evaluate and assess



the transportation in Muscat, but there are no studies in another governorate like Al Dakhiliyah governorate.

Recommendation for the residents:

- According to the findings and previous studies, there is a lack of awareness of the use of transportation services. The researcher recommends that locals increase their knowledge about public transportation and do not limit themselves to social barriers in the use of transport, because these barriers show there is a misunderstanding for transportation service.

REFERENCES:

1. Al Maqbalia, M. & Refequea, M. (2017). Smart Transportation for Smart Oman: An Enquiry into its Potentials and Implications. Retrieved from <https://www.semanticscholar.org/paper/Smart-Transportation-for-Smart-Oman%3A-An-Enquiry-its-Maqbali-Refeque/dba6b7be8145e2a309f2777cc171d0f363ade859>. On 2 November 2021.
2. Al Mukhini, O., Balasa, A., Al Maqbalia, S. (2021). The Sultanate of Oman City Transportation in the Sharing Economy: Problems for Sustainable Development. Retrieved from <https://www.ejbm.org/index.php/ejbm/article/view/1052>. On 2 November 2021.
3. ALSI. (n. d.). THE CHALLENGES IN THE LOGISTICS AND TRANSPORTATION INDUSTRY IN OMAN. Retrieved from <https://www.alsioman.com/logistics-transportation-challenges/>. On 5 November 2021.
4. Belwal, R. (2013). People's Perception of Public Transport Services in Oman. Retrieved from https://www.researchgate.net/publication/260190662_People%27s_Perception_of_Public_Transport_Services_in_Oman. On 2 November 2021.
5. Belwal, R. (2017). Public transportation in Oman: a strategic analysis. Retrieved from https://www.researchgate.net/publication/320042197_Public_transportation_in_Oman_a_strategic_analysis. On 1 November 2021.
6. Belwal, R. & Belwal, S. (2011). Future Public Transportation Services in Oman: A socio-economic feasibility study on the introduction of an effective Public Transport mix in Oman. Retrieved from https://www.researchgate.net/publication/282664439_Future_Public_Transportation_Services_in_Oman_A_socio-economic_feasibility_study_on_the_introduction_of_an_effective_Public_Transport_mix_in_Oman. On 2 November 2021.
7. Belwal, R. & Belwal, S. (2010). Public Transportation Services in Oman: A Study of Public Perceptions. Retrieved from https://www.researchgate.net/publication/254609190_Public_Transportation_Services_in_Oman_A_Study_of_Public_Perceptions. On 2 November 2021.
8. Belwal, R., Minhans, A. & Al-Balushi, A (2013). Perception of Taxi Services in Oman—A Cross-Examination of Citizens' and Taxi Drivers' Perception. Retrieved from https://www.academia.edu/6109920/Perception_of_Taxi_Services_in_Oman_A_Cross_Examination_of_Citizens_and_Taxi_Drivers_Perception. On 1 November 2021.
9. Gkiotsalitis, K. (2020). Public transport planning adaption under the COVID-19 pandemic crisis: a literature review of research needs and directions. Retrieved from <https://www.tandfonline.com/doi/full/10.1080/01441647.2020.1857886>. On 5 November 2021.
10. Mahrez, A., Wahibi, S. (2014). "Assessment of the public's perceptions about the transport services in Oman," Proceedings of International Academic Conferences 0100384, International Institute of Social and Economic Sciences. Retrieved from <https://ideas.repec.org/p/sek/iacpro/0100384.html>. On 5 November 2021.
11. Murat, Y. & Cakici, Z. (2017). Comparative Analysis of Public Transport Users' Perception Targeting Sustainable Transportation Retrieved from



- https://www.researchgate.net/publication/313800607_Comparative_Analysis_of_Public_Transport_Users'_Perception_Targeting_Sustainable_Transportation. On 2 November 2021.
12. Ramos, S., Vicente, P., Passos, A., & Costa, P. (2019). Perceptions of the Public Transport Service as a Barrier to the Adoption of Public Transport: A Qualitative Study. Retrieved from https://www.academia.edu/6109920/Perception_of_Taxi_Services_in_Oman_A_Cross_Examination_of_Citizens_and_Taxi_Drivers_Perception. On 2 November 2021.
 13. Sadler, D. (2021). Getting around Muscat: Everything you need to know about taxis, public transport and renting a car Retrieved from <https://www.timeoutmuscat.com/moving-to-muscat/433099-getting-around-muscat-everything-you-need-to-know-about-taxis-public-transport-and-renting-a-car>. On 2 November 2021.
 14. Al-Rawas, M. (1989). Urban transportation problems in the Muscat area Sultanate of Oman. Retrieved from <http://usir.salford.ac.uk/id/eprint/2257/1/333995.pdf>. On 2 November 2021.
 15. Oman - Country Commercial Guide. (n. d.). Transportation & Logistic. Retrieved from <https://www.trade.gov/country-commercial-guides/oman-transportation-logistics001034>. On 5 November 2021.
 16. Omar, A., Yahia, H. (2018). EVALUATION OF TRANSPORTATION SERVICES TO MUSCAT INTERNATIONAL AIRPORT. Retrieved from https://www.researchgate.net/publication/328772091_EVALUATION_OF_TRANSPORTATION_SERVICES_TO_MUSCAT_INTERNATIONAL_AIRPORT. On 5 November 2021.
 17. Oxford Business Group. (n. d.). Oman transport investments are aimed at facilitating economic growth. Retrieved from <https://oxfordbusinessgroup.com/overview/sky%E2%80%99s-limit-heavy-investment-helps-transport-facilitate-economic-growth>. On 5 November 2021.
 18. Queiri, A. (2021). The Factors Influencing Tourist's Choice to Select Various Transportation Modes in Oman. Retrieved from <http://gbmrjournal.com/pdf/v13n3/V13N3-19.pdf>. On 5 November 2021.
 19. WHERE TO GO (n. d.). Transportation in Oman. Retrieved from <https://www.memphistours.com/Oman/Oman-Travel-Guide/Oman-Attractions/wiki/Transportation-In-Oman/?page=amp>. On 1 November 2021.



Adapting Ancient Vedic Teaching Method to current Education System

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Abstract: *Ancient Vedic Teaching Methods Create a Harmonious Learning Journey, connecting learning Environment with Nature to promote ethics like Humanity, truthfulness, discipline, self-reliance and respecting the Environment. The term Holistic Development refers to physical, mental, emotional and spiritual Development. The level of Students observation, interest, focus is enhanced by the adaptation of open environment learning, as in Gurukul system. To create a connection with the five elements (water, fire, earth, sky, air. To Rejuvenate Education System with Ancient Vedic Teaching Methods. The study on this clearly concludes, that there is significant difference among the experiment group and controlled group in the observing skill of science subject respective of learning Environment. The study was conducted among the primary students. It can be suggested that, schools can introduce open Environment Learning as a Regular Practice, to Improve students learning experience. This can be Implemented in the area where the students are in high stress, differently challenged, juvenile home, in adult education. In a vision of creating vibrant generation, with the Ancient Teaching methods.*

Key Words: *Vedic system, five elements, learning environment, holistic development, Education. Vedic system- Vedic Systems, is the major theme which examines the vast array of sourcebooks of the Vedic system forming the foundation of ancient Indian thought.*

Five Elements: Panchabhoothangal -Fire, Air, Water, Sky, Earth. Learning Environment: class room, open environment-under tree Holistic Development-Complete Development includes physical Development, Mental Development, social Development, Emotional Development, Spritual Development. Education- Inculcating the art of transferring knowledge to Wisdom.

INTRODUCTION:

“When there is harmony between the mind, heart, and resolution, then nothing is impossible”.

– Rig Veda

This study is about the importance of Vedic ideals of education in the modern education system. The need of this study is to maintain the discipline in the modern educational institutes and to create cordial relation between teacher and student. This study can convince the modern generation that in order to achieve high ideal of perfect mastery over senses, in order to erect the ideal of truth. India has a rich tradition of learning and education right from the antiquity. The gurukul system is one such profound method of education. These gurukul were usually established in the forest so that students could have a practical idea on how each thing functions differently on the planet, like fishing, hunting. We have simple efficient ancient gurukuls methods that should be brought back into implementation in this Modern Indian education system.

Introduction to Gurukul system:

The gurukul system is one such profound method of education. These gurukul system was the powerful education method practiced in India. The guru with the guru- matha



Take care the gurukulas, the student help guru matha's to cook, fetch water, wood for cooking etc. The method of teaching was Upanishads, no scripts were available individually to the students. In this education pattern, students had very good listening skill, grasping power, concentration power. We can say that there are five Gurukulam Active and regular Teaching in open Environment, life oriented teaching, self-care, Discussion method of learning, Respect and family bonding with teachers.

The Aims and objectives of Vedic Education:

Preparation for Moksha or Self Realization (Self Realization Aim)

Knowledge Attainment Aim

Cultivating Dharma

Vocational Aim or Securing a Job for Earning Artha or worldly Wealth

Preparation for fulfilling 'Karma' or worldly desires without giving up 'Dharma'

Creating rulers and army men for safeguarding the society

Character Development

Ancient Method adopted in this Study: *"Teaching in an Open Environment."*

In this method, the connection with the Nature Creates a Close bonding with the 5 elements. We all are aware of the 5 elements, for a holistic development the bonding towards the five elements is very important. We humans are always interconnected to the 5 elements, our development and progress is based on this attachment towards it. There is a dramatic change in our development if we are separated from these 5 elements.

1. water

2. fire

3. earth

4. sky

5. air

In a closed classroom we are denied from all these elements to the core, it is proven that the open environment provides a fresh air, good core to expand our observing skill and improves our learning ability in a natural way.

Statement of the study:

Efficiency enhancement through Vedic teaching method-Open Learning Environment

Adopted method: *Teaching in an open environment*

Imparting ethics like humanity, truthfulness, discipline, self-reliance, and respecting all creations to the students. Encourages the student to observe and learning about the surroundings around them This teaching method ensures good air and perfect atmosphere for studying on any normal day It is even scientifically proven that teaching in open can encourage creative and out of box thinking.

Need of the study:

In the modern education system, there is a lack of relationship between the soul and body. Students are lacking in the cultural and ethical value, which is a block in their holistic development and a great hindrance in their observing and critical thinking. Students are experiencing a stress full life at the young age itself due to the modern education system.

Aims of the study:

To Rejuvenate Indian education with Ancient Indian education methods

To promote a harmonious learning journey.

To develop the wholesome personality. -All round development of a child.

To build good relationship among the teachers and students

To enhance their moral and ethics which is lagging in the Modern education system.

Preservation of knowledge and culture.

Connecting the students with the five elements.



Hypothesis of the study:

There is significance difference in the observing ability among the primary school students, those who attended in classroom environment and open environment. There is a significance difference in the performance in the test conducted among the primary school students, those who attended in classroom environment and open environment.

Limitations of the study:

The subject for the study was taken from a primary school student of a government school in Udumelpet.

The samples drawn were restricted to 65 only Among the primary school students, the investor took only one school for the study. Since the study is conducted in only one school we can't conclude as a whole of primary school student.

Type of research Adopted:

The Researcher adopted the "Experimental research" among two sections of grade v students from a Government primary school udumelpet. one is a controlled group and another is an experiment group. The researcher selected two sections of the grade V students of the union panchayat primary school. section V-A was a controlled group and the section V-B was Experimented group. Grade A- students underwent the formal classroom environment learning of science subject. Grade B-Students underwent the open environment learning of science subject.

Area of study:

The investigator selected primary school in the Udumelpet for the study. The samples collected for the analysis consist of boys and girls from the in and around Udumelpet. It is a primary school with five blocks all in a ground floor, only two classes in a block. the school is situated in peaceful environment. The students belong to both urban and rural area.

Method Adopted:

The investigator adopted the survey method to study the "Adapting Ancient Vedic Education Methods to Modern education system- Teaching in an open environment". Among the grade -V students in a Panchayat Union Primary School Udumelpet.

Sampling Technique:

The Investigator Adopted systematic sampling technique method separately for both the groups, irrespective of their learning environment.

Sample size:

The investigator collected samples

Controlled group:30

Experimented group:31

Total sample strength:67

DATA COLLECTION:

The investigator conducted a survey based on the lesson they taught in the different environment, to Evaluate and compare their observation effectiveness among the two groups.

A test was conducted for 25 marks immediate after the teaching.

A questionnaire was given to get their personal details.

To the experimental group the questionnaire was prepared with their experience about the new environment learning.

INTERPRETATION AND DISCUSSION:

ANALYSIS OF DATA:

SIGNIFICANT DIFFERENCE BETWEEN THE SCHOOL ENVIRONMENT AND OPEN ENVIRONMENT TEST S CORES OF ACHIEVEMENT TEST.



<i>Environment</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>Calculated 't' value</i>	<i>Remarks at 5% level</i>
<i>School</i>	35	67.314	20.90	2.037	NS
<i>Open</i>	30	75.733	9.33		

At 5% level of significance, for df 28, the table value of 't' is 1.96).

It is inferred from the above table that calculated 't' value (2.037) is greater than the table value (1.96) for df 28 and at 5% level of significance. Hence the null hypothesis is rejected. Hence it shows that there is significant difference between the school environment and open environment test scores of achievement test. Open environment (75.733) method of teaching is better than school environment (67.314) method teaching in the primary school.

INTERPRETATION AND DISCUSSION

RECOMMENDATIONS OF THE STUDY:

The school management can plan a open environment learning as a regular practice
 Teachers need to trained incorporate their Morden teaching skills with the ancient teaching methods.
 Student need to be trained to accept our ancient traditional methods
 Parents need to be educated regarding the adaptation of Vedic methods and realise the importance.
 The school can organize some events or programs to engage parents and students together imparting the ancient Vedic methods.

SUGGESTIONS OF THE STUDY:

Similar studies can be conducted at other levels - secondary and high school.
 Similar studies can be conducted on the other teaching methods
 Similar studies can be conducted with the students with high stress and record their state.
 Similar studies can be done for a long period among the pre-primary level where we can observe the complete results.
 Similar studies can be done in the children with the Differently challenged.
 Similar studies can be done with the children program in juvenile home.

CONCLUSION :

Thus, the present study revealed that Classroom and Open environment learning are related to the student's performance. Open environment is better for students which enhances their observing level. Our Ancient Vedic teaching methods are the best methods, which can be brought back in our modern education system where knowledge is converted to wisdom.

REFERENCES:

1. Aggarwal, J.C. (1995) Theory of Principles of Education, Philosophical and Sociological Basis of Education. New Delhi: Vikas Publishing House Pvt. Ltd.
2. Aggarwal, J.C. (2009). Development of Educational System in India, New Delhi: Anmol Publications Pvt. Ltd.
3. Alex Wayman (1997), Untying the Knots in Buddhism, Motilal Banarsidass, ISBN 978-81-208-1321-2, pp. 52-53
4. Best, John W. & Kahn, James V (2004): Research in Education, Prentice Hall of India private Limited, New Delhi.
5. Bloom B. S. (1956). Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain. New York: David McKay Co Inc
6. Bloom. B. S., Engelhart. M. D., & Krathwohl. D. (1956). Taxonomy of educational objectivities: The classification of educational goals. Hand book I: Cognitive domain. New York: David McKay



7. Chidgupkar Purushottam D., Mangesh T. Karad (2004), "The Implementation of Vedic Algorithms in Digital Signal Processing of Eng. Educ", Global J. of Eng. Educ., Published in Australia Vol.8, No.2, pp.153-157
8. D.Rajasekar, E.Anbalagan (2016), "Design of High Speed Optimized Vedic Multiplication Techniques", Int. J. Chem. Sci.: 14(4).
9. Elakkiya J and Mathan.N, (2015) "Survey on Performance of Vedic Multiplier", International Journal of Advanced Research in Computer and Communication Engineering, Vol: 4, Issue: 2, pp:417-419
10. Frits Staal (2009), Discovering the Vedas: Origins, Mantras, Rituals, Insights, Penguin, ISBN 978-0-14-309986-4, pp. 136–137
11. Frits Staal (2009), Discovering the Vedas: Origins, Mantras, Rituals, Insights, Penguin, ISBN 978-0-14-309986-4, p. 135
12. Gannod (2008) Using the inverted classroom to teach software engineering. Proceedings of the 30th international conference on software engineering, Leipzig, Germany.
13. Garrett H.E. (1985) : Statistics in Psychology and Education, Bombay, Valuls Faffers and Simsons Ltd.
14. Glover James (Oct 2013) "Extending the application of Vedic Mathematics Sūtras" FIMA, <http://www.vedicmaths.org>
15. Good, C.V. (1959). Dictionary of Education. McGraw-Hill Book Company Inc, New Delhi.
16. Goyel Pankhuri et al. (2015), "High Speed Design of Ekanyūnena Pūrve a Vedic ṅ Multiplier" Proceeding of 9th International conference, 12th April, Goa, India. ISBN: 978-93- 82702-93-1
17. Gupta V.K. (2015), "Vedic Mathematics and Maths of Vedic Period -An analysis and Application", 'Veda- Vidya' An International Refereed Research Journal, vol. - 26, pp.193-208
18. Gurjit Kaur, Kaur Harsimranjit (2012) "Effect Of Vedic Mathematics on Achievement In Mathematics Among Fifth Grade Students", International Journal Of Research In Education Methodology Council For Innovative Research, Vol:1,No.3, pp:66-68,<http://www.sinhgad.edu/ijcsa-2012/pdfpapers11/4pdf>
19. John Dewey. (1926). Democracy and Education. The Macmillan Company, New York..
20. John W. Best & James V. Kahn (2001) Research in Education. New Delhi: Prentice-Hall of India. pp. 13, 107.
21. Kharel Anshul, Yadav V N, Shikarwar Vandana (2014), "ALU using Area Efficient Hardware Multiplier (Using Vedic Algorithm)" 5th National Conference on Electronic Technologies, pp. 48-51
22. Koop, Gary (2000): Analysis of Economic Data, John Wiley & Sons Ltd, New York.
23. Kothari, C.R. (2004) Research Methodology: Methods and Techniques. 2nd Edition, New Age International Publishers, New Delhi.
24. Kothari. C. R. (1990), Research Methodology: Methods and Techniques, Wiley Eastern Limited, New Delhi.
25. Kuldeep Singh, Rajiv Mahajan, Piyush Gupta., & Tejinder Singh. (2015). Flipped Classroom: A Concept for Engaging Medical Students in Learning. Indian Pediatrics, 55, 507-513.
26. Kumari Sharmila (2014) "Advantages and benefits of Vedic Mathematics", IRJMSH Vol. 5, Issue 9
27. Lal, J. N. (1987) Psychology and Statistics Education, Radha Publications, New Delhi.
28. Lokesh Koul (1984), Methodology of Educational Research, Third Revised Edition, Vikas Publishing house Private Limited, New Delhi.
29. Maheshwari Mahesh (2007), "Vedic Mathematics: Easiest and Fastest way of Calculations" Taxmann Allied Services (p.) Ltd.
30. Nataraj Mala Sarwathy , Thomas Michel (2012), "Expansion of binomials and Factorization of Quadratic expressions" Australian Senior Mathematics Journal 20(2), pp:8-17
31. Paul Deussen, Sixty Upanishads of the Veda, Volume 1, Motilal Banarsidass, ISBN 97881-208-1468-4, pp. 217–219



ATTITUDE OF HIGH SCHOOL STUDENTS TOWARDS SOCIAL REINFORCEMENT AND MATERIAL REWARDS

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Abstract: Social reinforcement is the feedback in the form of actions such as smiles, praise, etc that we receive from other people in response to the activity we do. Material rewards are compensation for good behaviour. This study examined high school students' attitudes towards social reinforcement and material rewards based on gender. The study collected data from 120 High school students of N. S. V. V. Matriculation Higher Secondary School at Pattiveeranpatti. The results showed that the students had moderately positive attitudes towards social reinforcement and material rewards. A comparison between boys and girls students revealed that there is no significant difference in the attitude of the high school students towards social reinforcement and material rewards based on gender. The present study concluded that the attitude of high school students towards social reinforcement and material rewards based on their gender is reliable. Proper reinforcement is needed for the students to develop in all aspects.

Key Words: attitude, reinforcement, material rewards, positive reinforcement, , attitudes toward rewards, motivation.

INTRODUCTION:

“All human beings are born with the natural intrinsic motivation to learn and grow”

~ Brandt, 1992

Motivation is much needed in many cases. Even in education motivation plays a vital role. Sometimes it can also be done by giving some rewards and reinforcements. Rewards includes material rewards, cash prizes, books, pen, pencil etc., reinforcements include head nods, smile, clapping etc.,

Reinforcement Learning is an aspect of Machine learning where an agent learns to behave in an environment, by performing certain actions and observing the rewards/results which it gets from those actions. It's about taking the best possible action or path to gain maximum rewards and minimum punishment through observations in a specific situation. It acts as a signal to positive and negative behaviors. Essentially an agent (or several) is built that can perceive and interpret the environment in which is placed, furthermore, it can take actions and interact with it.

LITERATURE REVIEW:

Erdem and Keklik (2020) studied that Reinforcement of Rewards as Motivation for Students in Art Learning: A Case Study at a Local University Junita Shariza Mohd Nasir Faculty of Creative Multimedia, Multimedia University. This study aims to look into the necessity of rewarding students, and how effective the usage of rewards reinforcement in motivating students towards learning art



subject in universities. Positive reinforcement is essential in education as it strengthens their behaviour by presenting a desired stimulus (rewards). Educators normally select materials, conduct activities, relay information, impart knowledge, provide guidance, evaluate students, motivate and encourage learners. The intended research is designed specifically to see whether the act of giving rewards as a mean of recognition of good work and progress will increase learners' level of motivation towards learning art. Arts in education is generally perceived as the less important subject in universities. This study is hoped to uplift the art education in universities and curriculum design such as Outcome Based Education (OBE) expert as to the importance of Art education, hence upgrades the quality, performance and motivation of students towards Art education.

Karl Sigmund, Christoph Hauert, Martin A Nowak 2001, et al studied that Minigames capturing the essence of Public Goods experiments show that even in the absence of rationality assumptions, both punishment and reward will fail to bring about prosocial behavior. This result holds in particular for the well-known Ultimatum Game, which emerges as a special case. But reputation can induce fairness and cooperation in populations adapting through learning or imitation. Indeed, the inclusion of reputation effects in the corresponding dynamical models leads to the evolution of economically productive behavior, with agents contributing to the public good and either punishing those who do not or rewarding those who do. Reward and punishment correspond to two types of bifurcation with intriguing complementarity. The analysis suggests that reputation is essential for fostering social behavior among selfish agents, and that it is considerably more effective with punishment than with reward.

Neir Eshel, Jonathan P Roiser 2010, et al studied that Depression is a complex and heterogeneous disorder whose cause is poorly understood. Theories on the mechanisms of the disease have often focused on either its neurobiology or its cognitive and behavioral manifestations. Recently, studies exploring how depressed patients process reward and punishment have linked these two facets together. It has been suggested that individuals with a dysfunction in a specialized network of brain regions are unable to exploit affective information to guide behavior.

Marc Guitart-Masip, Quentin JM Huys, Lluís Fuentemilla, Peter Dayan, Emrah Duzel, Raymond J Dolan 2012, et al have presented that Neurobiological accounts of the dopaminergic reward system and psychophysiological explanations of the error-related negativity (ERN) both emphasize the comparison of expected versus actual outcome for voluntary actions. The stimulus-preceding negativity (SPN) constitutes a valuable index of that expectation, in that it has high temporal resolution and its anatomical, cognitive and affective correlates have been reasonably well characterized. This review links established findings regarding the SPN to current research on the dorsal and ventral attention systems, somatic marker hypothesis, ERN, the reward system and relevant neurological and psychiatric findings. Special emphasis is given to the pre-feedback SPN and its origin within anterior insular cortex.

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Amy Harrison, Niamh O'Brien, Carolina Lopez, Janet Treasure 2010 et al studied that The aim of this review was to collate and summarise the self-report data regarding anomalies in sensitivity to reward and punishment in eating disorders (ED) with use of a meta-analysis where possible. Electronic databases were searched to December 2008. Studies were required to have a non-eating disorder healthy



control group and include at least one self-report measure of sensitivity to reward or punishment in an eating disorder population. Findings were very heterogeneous and inconsistencies between studies and measures were highlighted. In general, patients with anorexia nervosa (restricting type) were less sensitive to reward than healthy controls, whereas patients with bulimia nervosa and anorexia nervosa (binge/purge) type were more sensitive. All ED groups report higher sensitivity to punishment than healthy controls. Individuals with eating disorders differ from healthy controls in measures of reward and punishment sensitivity as measured using the Temperament and Character Inventory, Tridimensional Personality Questionnaire and BIS/BAS scales, but further work is required as there is some heterogeneity in the data. Generating more research using behavioural measures may increase understanding of the findings.

Morten L Kringsbach, Edmund T Rolls, Julia Hornak, Caroline Andrews (2001), et al have stated that The orbitofrontal cortex (OFC) is implicated in emotion and emotion-related learning. Using event-related functional magnetic resonance imaging (fMRI), we measured brain activation in human subjects doing an emotion-related visual reversal-learning task in which choice of the correct stimulus led to a probabilistically determined monetary reward and choice of the incorrect stimulus led to a monetary loss. Distinct areas of the OFC were activated by monetary rewards and punishments. Moreover, in these areas, we found a correlation between the magnitude of the brain activation and the magnitude of the rewards and punishments received. These findings indicate that one emotional involvement of the human orbitofrontal cortex is its representation of the magnitudes of abstract rewards and punishments, such as receiving or losing money.

Mauricio R Delgado, Leigh E Nystrom, Catherine Fissell, DC Noll, Julie A Fiez 2000, et al said that Research suggests that the basal ganglia complex is a major component of the neural circuitry that mediates reward-related processing. However, human studies have not yet characterized the response of the basal ganglia to an isolated reward, as has been done in animals. We developed an event-related functional magnetic resonance imaging paradigm to identify brain areas that are activated after presentation of a reward. Subjects guessed whether the value of a card was higher or lower than the number 5, with monetary rewards as an incentive for correct guesses. They received reward, punishment, or neutral feedback on different trials. Regions in the dorsal and ventral striatum were activated by the paradigm, showing differential responses to reward and punishment. Activation was sustained following reward feedback, but decreased below baseline following punishment feedback.

Adish Singla, Anna N Rafferty, Goran Radanovic, Neil T Heffernan 2021, et al studied that This survey article has grown out of the RL4ED workshop organized by the authors at the Educational Data Mining (EDM) 2021 conference. We organized this workshop as part of a community-building effort to bring together researchers and practitioners interested in the broad areas of reinforcement learning (RL) and education (ED). This article aims to provide an overview of the workshop activities and summarize the main research directions in the area of RL for ED.

RESEARCH OBJECTIVES:

- To construct attitude scale for validating the behaviour of high school students
- To study the attitude of high school students towards social rewards.

RESEARCH METHOD:

Data gathering is a flexible and exciting process; especially when you use surveys. There are different survey methods that allow you to collect relevant information from research participants or the people who have access to the required data. A survey method is a process, tool, or technique that you can use to gather information in research by asking questions to a predefined group of people. Typically, it facilitates the exchange of information between the research participants and the person or organization carrying out the research. Surveys are used as a method of gathering data in many different fields. They are a good choice when you want to find out about the characteristics, preferences, opinions, or beliefs of a group of people. The term survey suggests the gathering of evidence relating to current conditions. The survey method is very helpful to get the data of from the sample. The investigator uses the survey method to study the influence of reinforcement and material rewards.

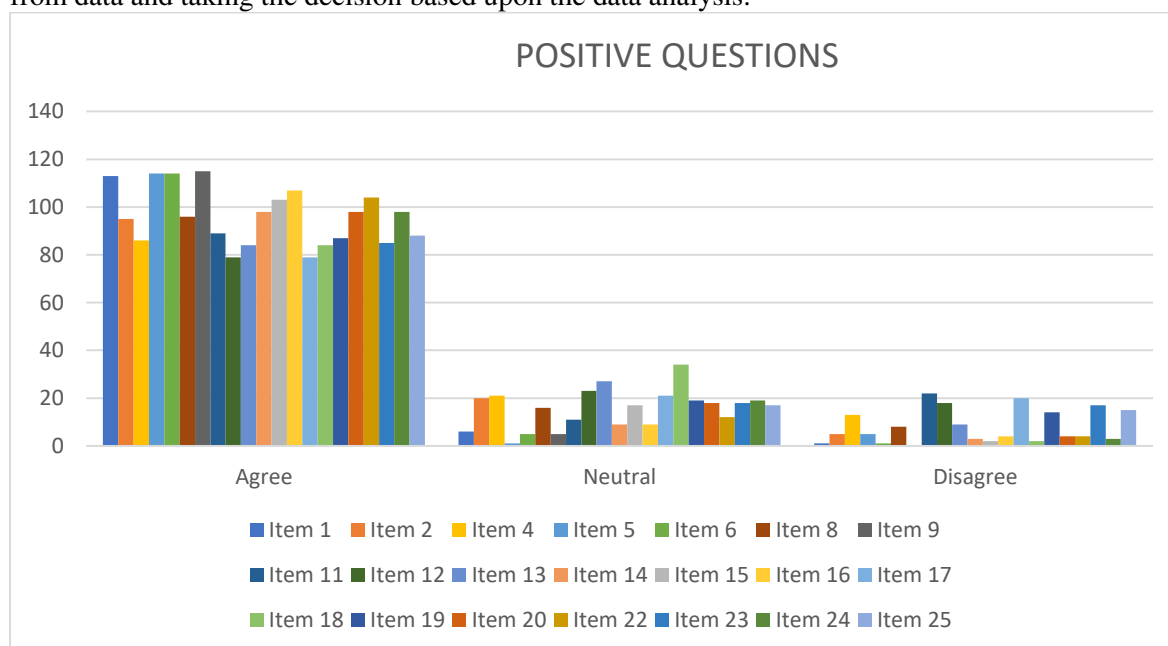


Survey method involves interpretation, comparison, measurement, classification and evaluation and aiming at a generalized solution to educational problems.

Study locality and sample: The present study was undertaken in N. S. V. V. Matriculation Higher Secondary School in a rural area Pattiveeranpatti. Among 1800 students from KG to XII standard students the investigator selected 120 students from class VIII. The class VIII is divided into four sections.

DISCUSSION AND ANALYSIS:

Analysis is defined as a process of cleaning, transforming, and modeling data to discover useful information for business decision making. The purpose of Data Analysis is to extract useful information from data and taking the decision based upon the data analysis.



Graph 4.1 Responses for positive questions

TEST

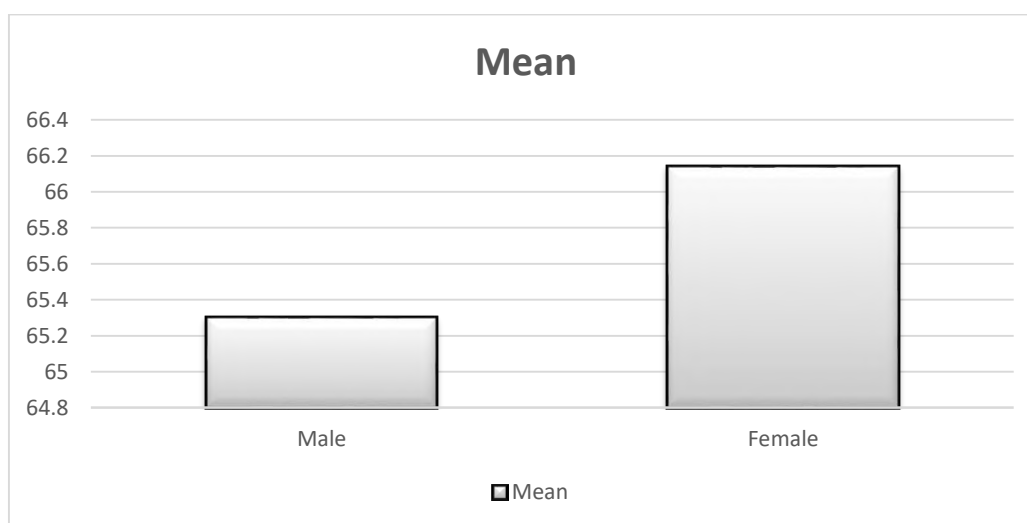
A t – test is a statistical test that is used to compare the means of two groups. It is often used in hypothesis testing to determine whether a process or treatment actually has an effect on the population of interest or whether two groups are different from one another. t – test is done and is shown in the Table 4.1 for finding whether there is any significant difference based on gender towards social reinforcement and material rewards

Variable	Gender				df	T
	Male (N=78)		Female (N=42)			
Social reinforcement and material rewards	M1	SD1	M2	SD2	118	1.0058
	65.3	4.55	66.14	3.99		

Table – 4.1

Note: M – Mean, SD – Standard Deviation, N – Number of students

From the Table – 4.1 it is evident that the calculated t value 1.0058 is not statistically significant. Hence the null hypothesis states that “There is no significant difference in the attitude of the high school students towards social reinforcement and material rewards based on gender” is accepted.



Graph 4.13 Mean value for male and female

RESULTS:

The present study concluded that the attitude of high school students towards social reinforcement and material rewards based on their gender is reliable. Proper reinforcement is needed for the students to develop in all aspects. From the Table – 4.1 it is evident that the calculated t value 1.0058 is not statistically significant. Hence the null hypothesis states that “There is no significant difference in the attitude of the high school students towards social reinforcement and material rewards based on gender” is accepted.

CONCLUSION:

Based on the questionnaire used it is found that students are motivated because of material rewards and reinforcement. They are ready to accept the social reinforcement which the teacher shows towards them. Few were at neutral state as they hesitate sometimes to expose in front of the class. More than social reinforcement students prefer material rewards. Students prefer trophies and medals as their material rewards other than anything. Material rewards attract the students and at the same time social reinforcement like mentioning the name, clapping the hands make them happier. Though it is social reinforcement or material rewards majority of the students were ready to accept it. Based on the t - test it is evident that $t = 1.0058$ is not statistically significant. Hence the null hypothesis that "There is no significant difference in the attitude of high school students towards social reinforcement and material rewards based on gender"

RECOMMENDATION:

Recommendation from the study

From the study few recommendations were brought out for the future research

- Teachers should motivate the students in every possible way
- Teachers should be aware of the student's doing in and around the classroom and give proper rewards and reinforcement to them
- School management should consider achievements of the students and ready to motivate them by honoring them publicly with rewards.

Suggestions for future research

- Studies can be conducted to primary schools and interrupt with the results and discussion
- Studies can be carried out between various types of schools.
- This study can be carried out in various standard of students and their attitude towards the reinforcement and material rewards.



REFERENCES:

1. Wong Hoy Kee, Ee Tiang Hong (1971). Education in Malaysia. Heinemann Educational Books (Asia)Ltd., Kuala Lumpur.
2. Curriculum Development Centre, (1967). Kementerian Pendidikan Malaysia.
3. Engelhardt R. A (2005). Educating for Creativity: Bringing the Arts and Culture into Asian Education UNESCO, Bangkok.
4. Harackiewicz, J. M., & Hidi, S. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research*, 70, 151-179.
5. Creswell, J.W, Poth C.N, (2018). *Qualitative Inquiry & Research Design Choosing Among Five Approaches* (4th ed.). California, USA: Sage Publications.
6. Sitwat Saeed, & David Zyngier. (2012). How Motivation Influences Student Engagement: A Qualitative Case Study. *Journal of Education and Learning*, Vol.1, No.2; 2012.
7. Baranek, L.K, "The Effect of Rewards and Motivation on Student Achievement" (1996).Masters Theses, 285.
8. Angela DiBello (2017). Agora Gallery, Advised from the NYC art experts New York.
9. Brophy, J. (2004). *Motivating students to learn* (2nd ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates Publishers
10. Avila C. Distinguishing BIS-mediated and BAS-mediated disinhibition mechanisms: A comparison of disinhibition models of Gray (1981, 1987) and of Patterson and Newman (1993) *Journal of Personality and Social Psychology*. 2001;80(2):311–324. [PubMed] [Google Scholar]



Impact of Technology-based Instruction and Assessment in Biology (Plant Physiology) among secondary school students in Nilgiris district

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Abstract: *Impact of Technology-based instruction and Assessment in biology (plant physiology) among secondary school students in Nilgiris district.*

Technology-based learning (TBL) uses electronic technologies such as the Internet, intranets, satellite broadcasts, audio and video conferencing, bulletin boards, chat rooms, webcasts, and CD-ROMs.

"Technology assessment is defined as a form of policy research that investigates the short-term and long-term implications of applying technology (social, economic, ethical, legal, Etc.)."

Technology helps educators create an integrated learning environment and leverage digital tools for formative and comprehensive Assessments to bring new models of learning and education into the classroom. The investigator has adopted survey method to study the impact of technology-based instruction and assessment in biology. The method adopted is Quasi-experimental method. An E-content material which is prepared using Canva E-content preparation application, connected to the chapter Plant Physiology is been provided for 3 modules of which 2 modules for instruction and 1 module for the assessment through google sheet which is been carried out for about 5 periods in 2 weeks. The sample of the present study consisted of 36 girls altogether from a Government, a government aided and a private school, kotagiri, The Nilgiris. The study has analyzed that there is no significant difference in Technology-based instruction and assessment in biology (plant physiology) among secondary school students in Nilgiris district with respect to Demographic variables. There exists a significant difference in Technology-based instruction and Assessment in biology (plant physiology) among secondary school students in Nilgiris district with respect to pre-test and post-test. There exists significant difference in the achievement test of ix standard students in Biology taught through Traditional method and Technology based instruction and assessment.

Key Words: *Technology-based, instruction, Assessment, E-content, Traditional-teaching.*

1. INTRODUCTION: EDUCATION:

According to Socrates, "Education means **bringing out the idea of universal validity latent in every man's mind.**"

According to Knowels (1995), education is the development of all those capabilities in which the individual enables him to control his environment and fulfillment his possibilities. It is a teaching, training, and learning process to improve knowledge and develop skills, especially in schools, colleges, or universities.



Technology-Based Instruction: It is an instructional technique that uses **technology** such as a computer, Internet, iPad, Smart Phones, and other electronic or digital products or systems in its delivery.

Technology may improve the quality of education by providing learners with additional practice opportunities. In many developing countries, lesson time is primarily devoted to lectures, in which the educator explains the topic and the learners passively copy explanations from the blackboard. This setup leaves little time for in-class practice. Consequently, learners who did not understand the explanation of the material during lectures struggle when they have to solve homework assignments on their own. The technology could potentially address this problem by allowing learners to review topics at their own pace. Another way in which technology may improve education is by increasing learners' engagement with the material. In many school systems, regular "chalk and talk" instruction prioritizes time for educators' exposition over opportunities for learners to ask clarifying questions and contribute to class discussions. The technology could address these challenges by (a) using video tutorials for self-paced learning and (b) presenting exercises as games and gamifying practice.

ASSESSMENT:

Evangeline Harris Stefanakis (2002) states, "The word *assess* comes from the Latin *assidere*, which means *to sit beside*. Then, *to assess* means to *sit beside the learner*."

According to Fenton (1996), "*Assessment* is the collection of relevant information that may be relied on for making decisions.

Assessment refers to the wide variety of methods or tools educators use to evaluate, measure, and document students' academic readiness, learning progress, skill acquisition, or educational needs.

Assessments also are used to identify individual student weaknesses and strengths so that educators can provide specialized academic support, educational programming, or social services. In addition, assessments were developed by a wide array of groups and individuals, including teachers, district administrators, universities, private companies, state departments of education, and groups that include these individuals and institutions. In addition, assessments have been developed by various groups and individuals, including teachers, district managers, universities, private companies, the Ministry of Government Education, and the groups to which these individuals and institutions belong. Assessment can take many forms, but the following description provides a representative overview of some primary forms of educational evaluation.

Assessments are used for:

Assessments are used for a wide variety of purposes in schools and education systems:

- **High-stakes assessment is a standardized test** typically used for **accountability purposes**. **i.e.**, any federal, state or local government attempt to ensure that students are enrolled in effective schools and taught by effective teachers. "**High stakes**" **generally** mean that important decisions about a student, teacher, school, or district are based on the **student's score** on the high-stakes test. These achievements can be penalties (sanctions, penalties, deprivation of **money**, unfavorable **promotion**, **refusal to promote** to the next class, **failure to graduate**) or awards (**honor**, public **celebration**, positive **promotion**, bonuses). **There may be a Transfer** of grades, diploma.
- **Pre-assessment is conducted** before a **student begins** a lesson, unit, course, or academic program. Students **may not be aware of most** of the **materials** evaluated **through pre-assessment and commonly** used by (1) **educators to** establish a baseline **for measuring** learning progress throughout a program, course, or **class time**. 2) **Determine the overall academic preparation** for the course, program, grade level, or new academic program that the student may **transfer**.
- **Formative Assessment is a continuous assessment** of a **student's learning and is usually done** multiple times during a unit, course, or academic program. The general purpose of formative **assessment** is to **provide** educators **with feedback on** what students are learning **and what they are** not learning **during the process and change educational** approaches, materials, and academic support **accordingly**. **Is to be able to do it**. Formative assessments are usually



not **graded** or graded. They **can** take **various** forms, from more formal **tests** and assignments to informal questioning techniques and **classroom** discussions with students.

- **Summative Assessment** assesses a **student's learning**, usually at the end of a unit, course, semester, program, or **grade after teaching for a specified period**. A **summative assessment is a step-by-step test, assignment, or project that is typically** used to determine **if students have learned** what they **are supposed** to learn during **their allotted class time**.
- **Mid-term assessments** - **assess student** learning progress and whether they **will work well in** future assessments, such as standardized tests, **end-of-course** exams, and other **"total"** assessments. **It will be used**. **Mid-term assessments** are usually **conducted regularly throughout the** course or **academic year** (for example, every **6** or **8** weeks). They are **separate** from the **student's educational** process (formative **Assessment built** into the **teaching methodology**).
- **Placement assessments** are used to "place" students into a course, course level, or academic program. For example, the investigator **can use assessments** to determine **if** a student is ready for a **higher algebraic** course, such as an **algebraic one or honor level** course. For this reason, placement **tests** are **conducted prior to the start of** a course or program. The **primary purpose** is to **provide** students with an appropriate learning **experience** that **meets** their **diverse** learning needs.
- **The screening assessment** determines **if a student needs special** assistance or **services**, or is ready to **start** a course, **grade**, or academic program. Screening assessments **can take many** forms in **the classroom** and **can** be developmental, physical, cognitive, or intellectual. **For example, a** preschool screening **test can** determine **if a toddler** is physically, emotionally, socially, and intellectually ready **for** preschool. In contrast, other screening tests **can assess student** health, potential learning disabilities, and other **characteristics**.

Assessments are designed in **different** ways for different **purposes**:

- **Standardized assessments** are designed, managed, and graded in a standardized way. Often, a multiple-choice format is used, but some contain free-form questions with short answers. Previously, standardized tests consisted of columns of ellipses filled by students with a second pen but are becoming more and more computer-based. Standardized tests can be performed on large groups of students of the same age or grade level in a state, region, or country. Results can be compared between individuals and groups of students.
- **Standard-related or standards-based assessments** - measure how well a student has acquired the specific knowledge and skills described in local, state, or national learning standards. Standardized high-stakes tests may or may not be based on specific learning standards, and individual schools and teachers may develop standard references or standards-based assessments.
- **Portfolio-based assessments** are a collection of academic studies such as assignments, lab results, writing samples, speeches, student-produced films, art projects, Etc., organized by students and inconsistently assessed by teachers. Portfolio-based valuation is often used to evaluate the "body of knowledge."

Purpose of an Assessment:

The purpose of an assessment generally **determines how** it is **designed**, and there are many ways in which an **assessment** can be used. **Standardized assessments can be**, for example, **high-stakes assessments and** other forms of **assessments that** are not standardized tests. A portfolio of student **works** can be used as both "formative" and **"general"** **Assessment formats** and rarely **become "high stakes."** Universities can create screening assessments that have researched specific **areas** of child development, such as **tasks** that **show** that a child has a **specific** learning disability. **That is, reviews** are usually created for highly specialized purposes.



Need and Importance of the study:

Technology is transforming education, transforming the **way** and **places** students learn, and empowering **students** at every stage of their journey. On the road to the personalization of learning, technology empowers students by **taking** ownership of learning methods, providing education related to digital life, and preparing for the future. Access to technology and resources **between classes** encourages students to become problem solvers, critical thinkers, collaborators, and creators. **When** technology is well integrated into the classroom, students develop a love for lifelong learning. Educators are constantly striving to personalize their **students'** learning. Technology helps teachers reach new levels by accessing **real-time** student data, longitudinal information, content, apps, Etc. Technology helps educators create an integrated learning environment and leverage digital tools for formative and comprehensive **Assessments to bring** new models of learning and education **into** the classroom.

Statement of the Problem

Impact of Technology-based Instruction and Assessment in Biology (Plant Physiology) among secondary school students in Nilgiris district

Operational definition of Key terms

Technology-based instruction

Technology-based learning (TBL) uses electronic technologies such as the Internet, intranets, satellite broadcasts, audio and video conferencing, bulletin boards, chat rooms, webcasts, and **CD-ROMs**.

The TBL also **includes** related **terms** such as online learning, **including** education **only on the Internet, web-based learning, and computer-based learning that is limited to computer-based learning.**

E-learning is synonymous with TBL and is **primarily** replaced by the term of **choice in academia and industry.**

Assessment

Assessment can be **viewed as a** systematic collection, review, and information about educational programs and services **implemented** for quality improvement, planning, and **decision-making purposes.**

Technology-based assessment:

"Technology Assessment" (TA) refers to the early **detection** and assessment of **the potential impact of technology changes** and applications as a service to **broader policy-making and decision-making.**

"Technology assessment is defined as a form of policy research that investigates the short-term and long-term implications of applying technology (social, economic, ethical, legal, Etc.)."

"Technology-based assessment refers to the learning situation in which students interact with technology and are guided by technology through learning courses to achieve specific educational goals with the teacher as a trainer."

Objectives of the study:

- To find the impact of technology-based instruction on achievement in biology among grade ix students.
- To find out the impact of age, gender, locality, and type of school on the effectiveness of technology-based instruction.
- To find the impact of technology-based Assessment on achievement in biology among grade ix students.
- To find out the impact of age, gender, locality, and type of school on the effectiveness of the technology-based Assessment.

Hypotheses:

- There is no significant mean score difference in the pre-test of technology-based instruction based on age.
- There is no significant mean score difference in the pre-test of technology-based instruction based on locality.



- There is no significant mean score difference in the pre-test of technology-based instruction based on family type.
- There is no significant mean score difference in the pre-test of technology-based instruction based on the type of the school.
- There is no significant mean score difference in the Pre-test of technology-based instruction and the Post-test of technology-based Assessment.

LIMITATIONS OF THE STUDY:

The study's limitations are those characteristics of design or methodology that impacted or influenced the interpretation of the findings from the research. *Study limitations* are the constraints placed on the ability to generalize from the results, to describe applications further to practice, and related to the utility of findings that are the result of how the investigator initially chose to design the study or the method used to establish internal and external validity of the outcome of unanticipated challenges that emerged during the study.

However, the following limitations were noticed while conducting the present study.

- Being of an experimental nature, the present study was confined to selected schools in the Nilgiris district.
- A Government school, a government-aided school, and a private school were selected for the study.

Despite the above-cited limitations, adequate care was taken to select the samples, construct the tools, gather reliable data, and apply analysis and interpretations.

LITERATURE REVIEW:

INTRODUCTION:

A literature review is a comprehensive summary of previous research on a topic. The literature review surveys scholarly articles, books, and other sources relevant to a particular area of research.

The review should enumerate, describe, summarize, objectively evaluate and clarify this previous research. It should give a theoretical base for the research and help you (the author) determine the nature of your research. The literature review acknowledges the work of previous researchers, and in so doing, assures the reader that your work has been well conceived. It is assumed that by mentioning a previous work in the field of study, that the author has read, evaluated, and assimilated that work into the work at hand.

A literature review creates a "landscape" for the reader, giving her or him a full understanding of the developments in the field. This landscape informs the reader that the author has indeed assimilated all (or the vast majority of) previous, significant works in the field into her or his research.

Purpose of a literature review:

There are several reasons to conduct a literature review at the beginning of a research project:

- To familiarize yourself with the current state of knowledge on your topic
- To ensure that you're not just repeating what others have already done
- To identify gaps in knowledge and unresolved problems that your research can address
- To develop your theoretical framework and methodology
- To provide an overview of the key findings and debates on the topic

Writing the literature review shows your reader how your work relates to existing research and what new insights it will contribute.

The literature pertaining to the study on **“Impact of Technology-based Instruction and assessment in Biology (Plant Physiology) among secondary school students in Nilgiris district”** is reviewed in this chapter under the following headings:

- Recent developments in Educational Technology
- Studies conducted in Technology- Based Instruction
- Studies conducted in Technology- Based Assessment



Recent developments in Educational Technology

Girish & Sureshkumar (2017) in their study “ICT in Teaching-Learning Process for Higher Education: Challenges and Opportunities” focused on the challenges and opportunities for implementing ICT in the classroom for teaching and learning process. They also concentrated on the circumstances which are needed to be converted in order to achieve the full potential of ICT programs for better teaching-learning. They found various challenges such as expensive cost, lack of essential infrastructure required for the complex operation of ICT enabled tools for learning, and unfulfillment of basic needs like electric supply, etc. But ultimately there are opportunities for implementation of ICTs as the learning outcomes with their help have improved significantly.

Kaur Navpreet and Aggarwal Sangeeta(2017): Researcher have explained in their paper the ICT scenario in Indian Education System. For successful implementation of ICT in education, government of India have made ICT in school as a component of Rashtriya Madhyamik Shiksha Abhiyan (RMSA) under which aid will be provided to government and government aided secondary and high school. Financial assistance also given to CIET and SIETs, establishment of smart school and giving National ICT award for innovative ICT used in Education. Another scheme was National Mission on Education through Information and Communication Technology. It deals with e content development and various other project like virtual lab, talk to a teach, e- Yantra, E-Kalpa (SWAYAM) Study Webs of Active Learning for Young Aspiring Minds. National Digital Library etc. Despite of so much of efforts given by government the result was not as per expectation because funds are not properly utilized lack of teacher's attitude towards ICT because of poor infrastructure no proper training. For effective implementation of ICT in education, there is need to come out of these challenges.

Cherian M. &Thampy K.(2016): Today ICT is widely used in every sector so education sector has also started using the potential of ICT to bring changes in teaching-learning process. In this research paper researcher studied the penetration of ICT enabled teaching-learning among college teachers and also studied the relationship between demographic factor that affect the penetration of ICT in teaching-learning process. The demographic factors studied were designation of teacher, location of college, qualification of teacher, location of college, qualification of teacher. Result showed that colleges which are in cities, there is maximum use of ICT because of better infrastructure and availability of material. Regarding Designation Associate Professor were using ICT in a more effective way.

Gisela C. & Siapno (2016): In their research work they studied the competency level of teachers and how it is related with demographic variable like sex, educational qualification, teaching experience and age. They also studied the correlation between competency level and integration of ICT for instructional process. The result showed that teachers were moderately competent regarding ICT usage for teaching learning process. It is positively correlated with their integration of ICT for teaching process. Regarding the demographic variable, it was found that educational qualification, sex, teaching discipline were not associated with the level of ICT competency whereas age and teaching experience found to be inversely proportional to ICT competency level. Researchers focussed that to make faculty ICT competent an action plan is required along with that infrastructure should be proper and well maintained.

Abraham Jessy (2016): In the present research article researcher had discussed about the trends and challenges in e-learning education scenario in India. India has taken many steps in field of e-learning like Digital India, ICT policy for school education etc. In this paper researcher told about the different features of phone through teaching learning get enhanced like voice, SMS, graphics, display, downloadable programs, Mobile Internet Browsers. Along with implementation of various programmes software application and equipment there are challenges to E-learning which include lack of technical support, lack of training regarding the handling of equipment. Mindset should get change people should get ware about the positive effect of e-learning. Government should improve the cost effectiveness of technology by involving all stakeholders. Universities should make good public facilities to develop vocational skills for unprivileged and unreached people to provide them equitable environment. Technology has the potential it can change the good into better.



Chandha (2015) in her study titled “ICT & Present Classroom Scenario” presented her opinion on technological learning tools for learning. She described various ways to incorporate ICTs to the mainstream of classroom teaching and tried to ensure a positive approach towards the successful implementation of ICTs and suggested practical ideas to do so. **Kaur (2015)** in her study titled “ICT Culture in Teacher Education” found that the transformation to technology embedded classrooms requires the transformation of teacher-training. Making student-educators aware of ICTs and assure their compatibility to innovative technologies, she suggested various types of inputs in teacher training such as knowledge of basic hard drive skills, understanding system software, using multimedia, introduction to open-source software, and social, legal, ethical and health issues etc. which worth implementation in teacher-training programs.

Sandhu (2015) in her study titled “Integration of ICT in Teacher Education” focused on the issues and concerns related to the integration of ICT in teacher education program. She arose a major issue that making teachers comfortable with innovative technologies is one of the major concerns to be considered as their comfortability will help integrate ICTs to the classroom teaching. For this purpose, teacher education should be transformed in order to prepare the teachers for changing scenarios.

Studies conducted in Technology- Based Instruction:

Deol (2015) in his research work on “Effectiveness of CAI Programs on the Achievement in Teaching of Social Studies” tried to find out the effectiveness of Computer Assisted Instruction (CAI) programs on the achievement in the teaching of social studies. He took a sample of 50 students (both male and female) of 9th class of Sant Sundar Singh Public School of district Ludhiana (Punjab). He finalized the sample by conducting the Standard Progressive Matrices Test (developed by Raven) and the students whose scores were falling on average were taken. Then he randomly selected 14 students in the control and experimental group each and then conducted his research. He found that after the treatment of the CAI program to the experimental group, achievements of the experimental group were higher as compared to the control group. This implies that ICT programs had helped in better understanding of the content.

Uzma Siddiqui and Tahira Khatoon (2013) has focused on the, “Teaching Physical Science: Should we Implement Teacher-Centered Computer Assisted Learning or Student Centered Computer Assisted Instruction at Secondary School Level in India? This study investigated the effects of traditional instruction, teacher-centered computer assisted instruction and student-centered computer assisted instruction on secondary school students’ achievement in Physical Science. An analysis of covariance on the Physical Science Achievement Test posttest scores with students’ pretest scores as the covariate showed that the teacher-centered Computer Assisted Instruction approach was more effective in enhancing the students’ achievement in Physical Science than traditional instruction and student-centered Computer Assisted Instruction method. It is, therefore, suggested teacher-centered Computer Assisted Instruction method is a good alternative for teaching Physical Science at secondary school level in India.

Rabia Tabassum, and Rehmat Ali Farooq. (2011) has explained in their study on the, “Effect of Computer Assisted Instruction (CAI) on Secondary School Students’ Achievement in Science” to see the effect of computer-assisted instruction as a supplementing strategy on the academic achievement of secondary school students in the subject of science. Analysis of data reveals that the students taught through computer-assisted instruction as supplementary strategy perform significantly better. Computer-Assisted Instruction is found equally effective for both male and female students.

Mr.A.Tholappan and Dr.R.Krishnakumar (2011) has made an effort to find out the, “Attitude of Higher Secondary Students Towards Computer Assisted Instruction” and to find out the level of attitude of higher secondary students towards Computer Assisted Instruction (CAI). According to them nearly 16% of students are having high level attitudes towards Computer Assisted Instruction and the attitude of students with computer Knowledge is found to be higher than the students who are not having computer knowledge. In order to bring adequate attitude among higher secondary students towards CAI, it is important to take necessary steps to implement various activities related to CAI. Both male and female students are having equal attitude towards CAI. The attitude of students towards



CAI who belong to Urban residential background is found to be higher than the students with Rural background. The students belong to Urban are having more opportunity to avail the computer facility within their own place than the students belong to rural. The attitude of students with computer knowledge is found to be higher than the students who are not having computer knowledge. The attitude of students towards CAI from Government schools is found to be higher than the students from Aided schools. It shows that the measures are taken by the government to provide computers to the government school and to promote the activities related to the computers and its applications. The attitude of students with high Parental Educational Qualification is found to be higher than the students with low level parent Educational Qualification next to high Parent Educational Qualification. It indicates that the higher Parent Educational qualifications enhances and help the students to raise the level of the attitude of students towards CAI.

Dr.S.P.Denisia (2010) has explained the study on, “Effectiveness of Computer Aided Learning in Teaching Science Concepts”. It is found out that there is no significant difference between the pre-test mean scores of the Control group and the Experimental group in all the units. There is significant difference between the pre- test performance and the post-test performance unit wise as well as for all the units of the Control group. There is a significant difference between the pre-test performance and the post-test performance of the Experimental group. There is significant difference between the post-test mean scores of the Control Group and Experimental Group in the unit test as in the global. Achievement in Science concept has low positive relationship with Achievement in science in the control group. Achievement in Science concept has very high positive relationship with Achievement in science in the experimental group. The relationship study reveals that the Computer Aided Learning is more effective than the traditional method of teaching.

Dr. D.Ushalaya Raj (2010) in her study focuses on the, “Effectiveness of Computer Assisted Learning Multimedia on Science Achievement”. At the Post-test level the mean values of achievement differs significantly from the pre-test for Experimental group for which the learning- experiences have been provided by incorporating the Computer assisted learning with Multimedia presentation. The results of the study show that the Computer assisted learning strategy has positive influence on the learner’s achievement. There is a significant difference in the mean values of achievement, of control and experimental group after experimentation. This shows that Computer Assisted Learning multimedia strategy has facilitated the students to score better compared to that of traditional method. The mean gain scores of achievement differ significantly between High Achievers and Low Achievers of Experimental group. The low-achievers mean gain score is much higher than high achievers.

In the opinion of **Dr. Vadiraj Udupa .V, Dr Prasanna T.R, Dr Sandeep Madhukar, Dr Sridharan .K, (2010)** in “Evaluating Effectiveness of Traditional Learning Versus Computer Assisted Learning in Orthodontics”, there is a significant improvement in the knowledge gained in both groups however difference between the two groups are statistically insignificant immediately after the teaching process. After retention period it is observed that the Computer Assisted Learning (CAL) group retains the knowledge significantly better than the traditional lecture group. There is no significant difference in prior knowledge level between students in the two groups at baseline. Analysis of the data reveals that in both the groups students score significantly higher in the immediate post-test as compared to pre-test and there are no statistical differences in acquiring knowledge, understanding the instructional content and application of the learned matter between the lecture versus the CAL module groups. Post retention test scores of the CAL group are significantly better than those of the lecture group. Computer aided learning may be a new cost effective way of conveying knowledge specially when shortage of academic staff is becoming an issue. This approach provides a flexible means of learning and can free staff student contact time while providing the student with an effective teaching medium provided they are based on a didactic and guided approach. Although CAL proves to be superior in retaining the knowledge as compared to the standard lecture the difference is little, leaving space for further improvement in the CAL design and modes of implementation. Care should be taken not to use CAL exclusively and should be seen as complimentary to other contact teaching methods more suited for clinical skills and attitudes. It is concluded that Computer Assisted Learning can be effective teaching aid and should be seen as complimentary to other contact teaching methods.



Dr.Satvinderpal Kaur (2010) made an effort in the study to find out the, “Effectiveness of Computer Assisted Instructions in Teaching of Chemistry at Secondary Level”. The study reveals that there is no significant difference between experimental and control group in the pre test of achievement. Both the groups have nearly the same score in the pre-test. It can be concluded that experimental group has achieved significantly higher score in the post test of achievement. This is evidently the positive impact of Computer Assisted Instruction on achievement. The experimental and the control group differ significantly in the post test and the difference is in favour of experimental group. Conclusions is evident that the students who are taught with traditional method of teaching has a lesser impact. This is due to the favourable impact of Computer Assisted Instruction in the achievement of the students. The results of the present study clearly points out that significant increase in the mean gain scores has been found in the post test scores of the experimental group. Significant differences have been found between the control group and experimental group on post test gain scores. The experimental group, which is taught by the Computer Assisted Instruction shows better, learning. The conclusion is evident that the Computer Assisted Instruction is an effective media of instruction for teaching of chemistry at secondary level.

Maya.S (2007) in her study focused on, “Computer Assisted Instruction in Genetics at Higher Secondary School Level”. The study is intended to develop Computer Assisted Instruction in the modes of Drill and practice, Tutorial and Simulation in Genetics at higher secondary level and to compare their effectiveness. The analysis reveals that there is significant difference between the three treatment groups in terms of achievement scores. It can be concluded that the three „treatment groups“ are more or less equal with regard to pre test achievement scores. It can be concluded that Simulation Learning is significantly superior to Tutorial Learning, and that Tutorial Learning is superior to Drill and Practice with regard to achievement scores. Hence it can be concluded that the Simulation model is significantly superior to the Tutorial and the Drill and practice mode with regard to achievement scores.

Studies conducted in Technology- Based Assessment:

Uday Kumar , et.al (2011) presents the system architecture for applying illetelligent methodologies to online assessment that adapts to examinee’s ability level.

Ranganathan, et.al (2010) proposes an assessment test called Bloom’s Online Assessment Test (BOAT) for a distance education course on the basis of Bloom’s cognitive learning based of Bloom’s Taxonomy.

Hatzilygeroudis , Ioannis , et.al (2006) present ana daptive and intelligence web-based instructional educational system that uses AI techniques for personalized assessment of the learner.

CONCLUSION:

The above studies were analysed in different subjects. It was found that more studies were on mathematics, on Language, on Social science and other general discipline. There were not much studies in specific needed areas. Assistance is required teachers and students in difficult areas to make teaching, learning and assessment process easier and that too in Biology. To fill this gap the present study **Impact of Technology-based Instruction and Assessment in Biology (Plant Physiology) among secondary school students in Nilgiris district** was undertaken by the researcher.

ANALYSIS AND INTERPRETATION :

Introduction

The most important part of the investigation is the analysis and interpretation of data. This is studying the tabulated material in order to determine in its meaning. It involves breaking with complex factors of simple parts together in new arrangements for the purpose of interpretation.

This serves the following functions:

- To make raw data meaningful.
- To test the hypothesis



- To obtain significant results.

The present study is aimed at the **Impact of Technology-based Instruction and Assessment in Biology (Plant Physiology) among secondary school students in Nilgiris district**

The investigator collected the data using “Likert Scale”. The investigator analysed data with the help of appropriate statistical techniques and the analysed data were given in form with interpretation.

According to Koul, L.(2006) “ Analysis of data means studying the organized material in order to discover the inherent facts. These data are studied from as many angles as possible either to explore the new facts or interpret already known existing facts.”

The Differential Statistical Procedures adopted are given in the following

- Descriptive analysis
- Differential analysis

Descriptive analysis

The scores of the girl students of grade 9 in Nilgiris district from government, government –aided and private schools were classified and analysed to study Impact of Technology-based Instruction and Assessment in Biology (Plant Physiology) among secondary school students in Nilgiris district

TABLE No 1

DESCRIPTIVE ANALYSIS:

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARYSCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO AGE, TYPE OF SCHOOL, LOCALITY, TYPE OF FAMILY.

Variables	Subgroup	Mean	Std.Dev
Age	14	80.21	0.97
	15	98.77	7.28
Type of School	Government	80.41	1.31
	Government- aided	80.00	0.66
	Private	89.40	10.37
Locality	Rural	71.00	97.30
	Urban	1.00	35.39
Type of family	Nuclear	80.42	1.13
	Joint	82.00	4.37

DIFFERENTIAL ANALYSIS :

Differential analysis was used to find out whether “Technology based instruction and assessment among secondary school students in Biology" has significant difference with respect to variables namely gender, age, type of school, family type, locality.

TABLE No : 2

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO AGE

Age	Number	Mean	Std.dev	df	‘t’-value	Sig
14	14	80.41	0.97	30	9.552	Sig**
15	15	98.77	7.28			

S**- Significant

From the above table, it is evident that the calculated ‘t’- value is 9.552 which is found to be significant at 0.05 percent level. It is clear that there is a significant difference in *impact of technology based instruction and assessment among secondary school students in biology with respect to age*. Hence the hypothesis *impact of technology based instruction and assessment among secondary school*



students in biology with respect to age is rejected. It infers that both age group 14 and 15 do not possess equal knowledge about technology usage.

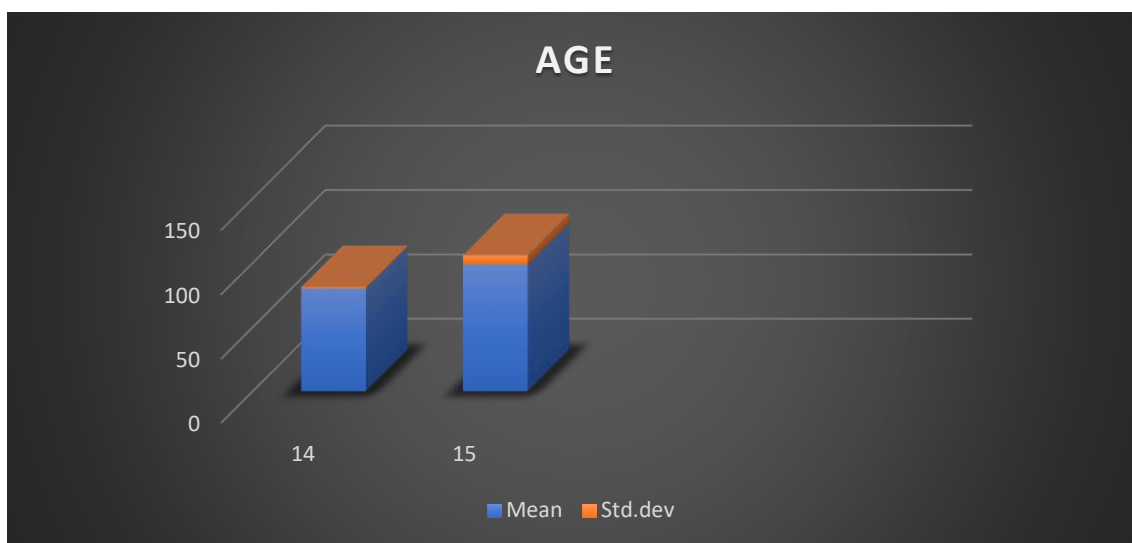


FIGURE No : 1

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO AGE

TABLE No : 3

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO TYPE OF SCHOOL

TYPE OF SCHOOL	NUMBER	TEST	MEAN	STANDARD DEVIATION	df	't' Value	Sig
Government	12	Pre test	80.27	1.08	21	41.683	Sig**
		Post test	1.36	6.64			
Government Aided	10	Pre test	86.86	6.77	21	23.105	Sig**
		Post test	1.26	7.15			
Private	14	Pre test	97.25	8.98	31	21.627	Sig**
		Post test	1.32	0.29			

**Sig: Significance

From the above table, it is evident that the obtained 't'- values which are found to be significant at 0.05 percent level. It is clear that there is no significant difference in technology based instruction and assessment among secondary school students in biology with respect to type of school. Hence the hypothesis "*impact of technology based instruction and assessment among secondary school students in biology with respect to type of school*" is accepted. It infers that students of all types of school equally possess knowledge about technology usage.

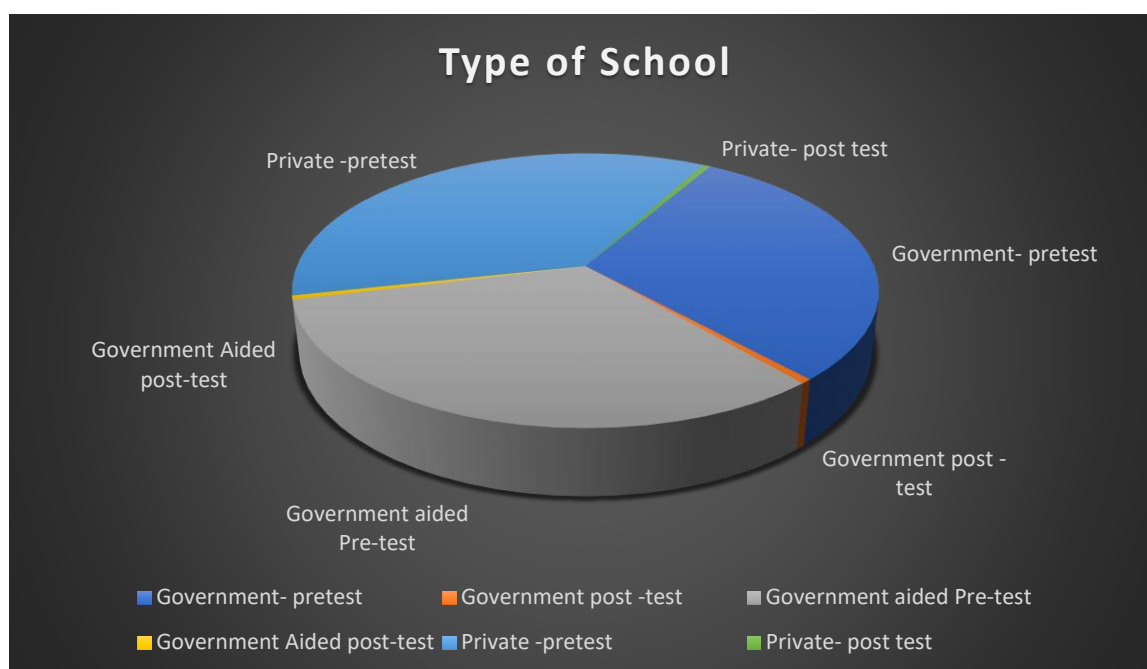


FIGURE No : 2

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO TYPE OF SCHOOL

TABLE No : 4

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO LOCALITY

Locality	Number	Mean	Std.dev	Df	't'- value	Sig
Rural	10	71.00	1.00	34	2.422	Sig**
Urban	26	97.30	35.31			

S**- Significant

From the above table, it is evident that the calculated 't'- value is 0.6371 which is found to be significant at 0.05 percent level. It is clear that there is a significant difference in impact of technology based instruction and assessment among secondary school students in biology with respect to locality. Hence the hypothesis *impact of technology based instruction and assessment among secondary school students in biology with respect to locality* is accepted. It infers that students who lives in rural possess lower level of knowledge about technology usage than the students who lives in urban area.

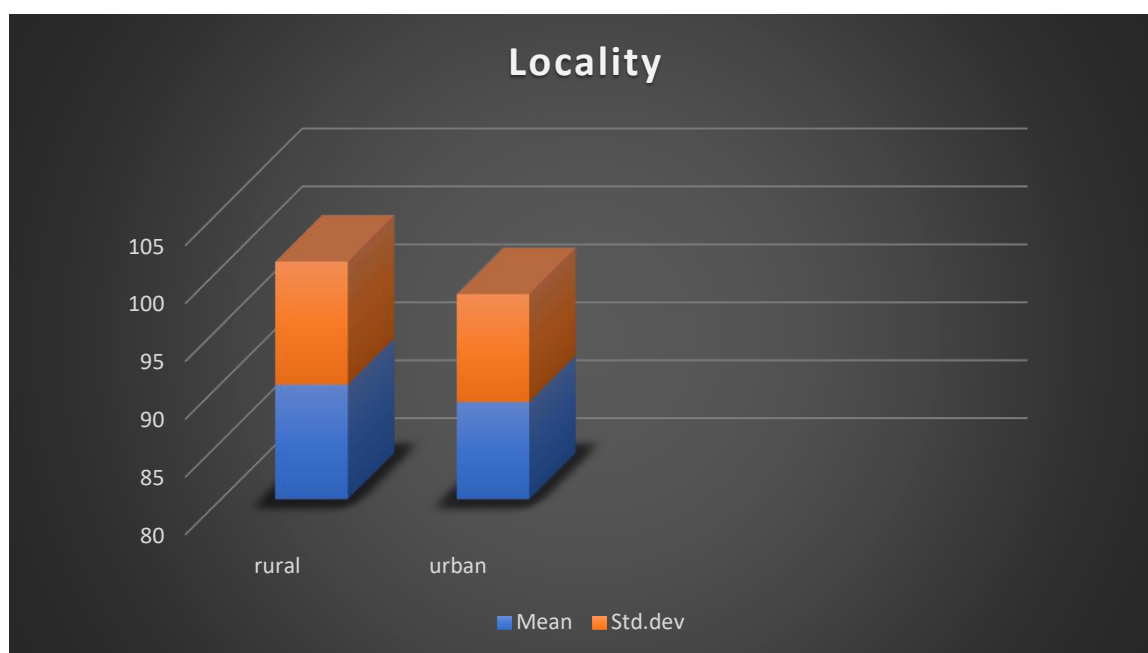


FIGURE NO : 3

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO LOCALITY

TABLE No : 5

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO TYPE OF FAMILY

Type of family	Number	Mean	Std.dev	df	't'- value	Sig
Joint	11	80.42	1.13	34	0.936	NS**
Nuclear	25	82.00	4.37			

NS**- Not significant

From the above table, it is evident that the calculated 't'- value is 0.936 which is found to be significant at 0.05 percent level. It is clear that there is no significant difference in impact of technology based instruction and assessment among secondary school students in biology with respect to type of family. Hence the hypothesis *impact of technology based instruction and assessment among secondary school students in biology with respect to type of family* is accepted. It infers that students belonging to both joint and nuclear family type equally possess knowledge about technology usage.

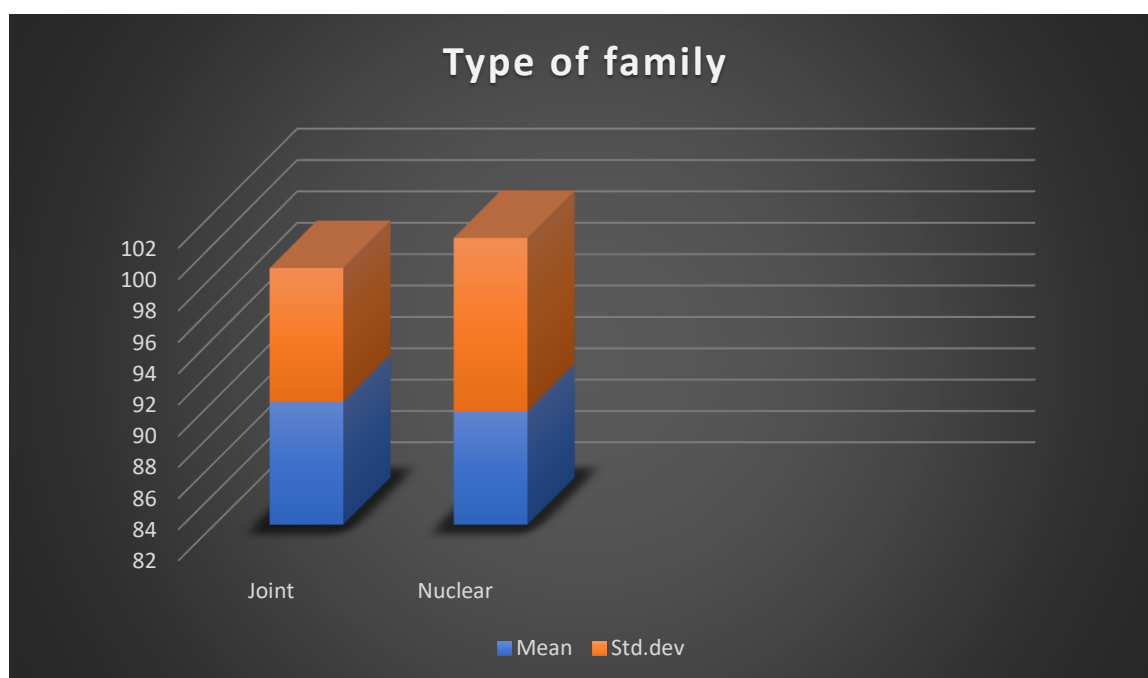


FIGURE No :4

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO LOCALITY

TABLE No : 6

TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO PRE-TEST OF TECHNOLOGY-BASED INSTRUCTION AND THE POST-TEST OF TECHNOLOGY-BASED ASSESSMENT.

Type of test	Number	Mean	Std.dev	Df	't'- value	Sig
Pre- test	36	89.5395	10.04	34	30.876	Sig**
Post-test	36	131.906	0.296			

Sig** - Significant

From the above table, it is evident that the calculated 't'- value is 30.876 which is found to be significant at 0.05 percent level. It is clear that there is a significant difference in technology based instruction and assessment among secondary school students in biology with respect to pre-test of technology-based instruction and the post-test of technology-based assessment. Hence the hypothesis *technology based instruction and assessment among secondary school students in biology with respect pre-test of technology-based instruction and the post-test of technology-based assessment* is rejected. It infers that students encounter pre-test of technology-based instruction and the post-test of technology-based assessment do not equally possess knowledge about technology usage.

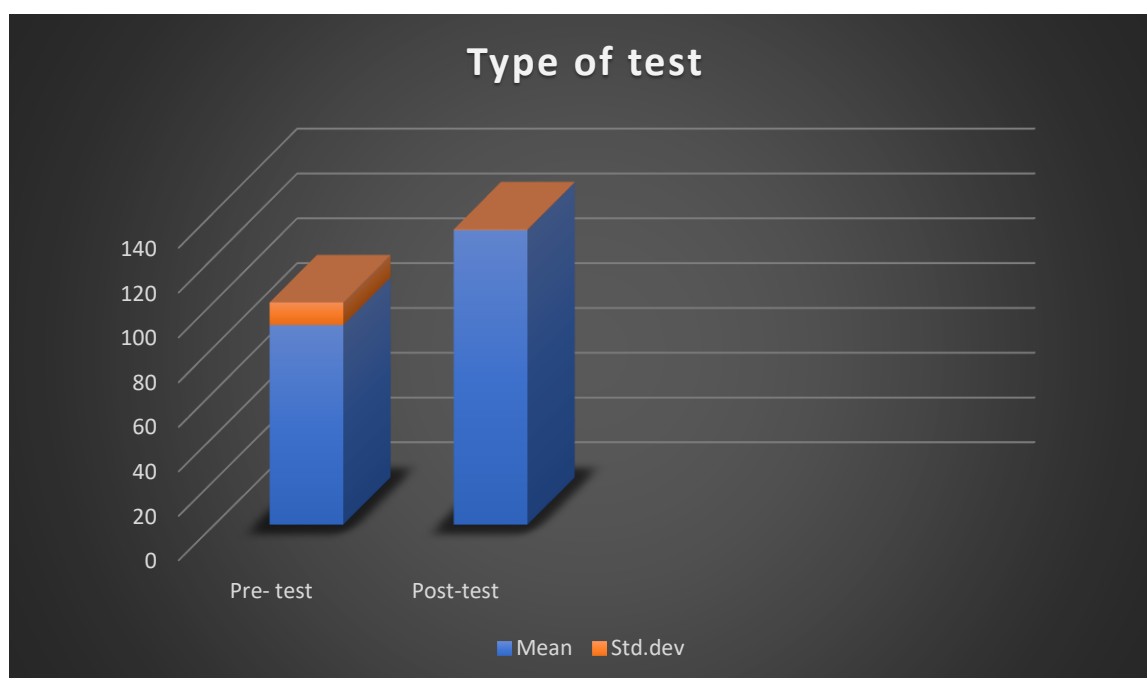


FIGURE No : 5

IMPACT OF TECHNOLOGY BASED INSTRUCTION AND ASSESSMENT AMONG SECONDARY SCHOOL STUDENTS IN BIOLOGY WITH RESPECT TO PRE-TEST OF TECHNOLOGY-BASED INSTRUCTION AND THE POST-TEST OF TECHNOLOGY-BASED ASSESSMENT.

Conclusion

The detailed analysis and interpretation of the data collected along with the pictorial representation is presented in this chapter. A summary of the Findings, Recommendations, Educational Implications and Conclusion are presented in the next chapter.

SUMMARY OF THE FINDINGS :

The researcher selected 36 samples from three schools in Nilgiris district. The investigator have chosen one government school , one government- aided school and one private school and used the random sampling method was used for the collection of data.

Standardized tool was used for analyzing Technology based Knowledge of the students. Personal data sheet with required details were also used. The data were analyzed and hence forth the conclusions were drawn.

- There exists a significant difference in impact of Technology-based instruction and Assessment in biology (organization of tissues\plant physiology) among secondary school students in Nilgiris district with respect to Age.
- There exists a significant difference in impact of Technology-based instruction and Assessment in biology (organization of tissues\plant physiology) among secondary school students in Nilgiris district with respect to Type of School either Government or Government-aided or Private.
- There is no significant difference in impact of Technology-based instruction and Assessment in biology (organization of tissues\plant physiology) among secondary school students in Nilgiris district with respect to Type of Family either Joint or Nuclear.



- There exists a significant difference in impact of Technology-based instruction and Assessment in biology (organization of tissues\plant physiology) among secondary school students in Nilgiris district with respect to Locality either Rural or Urban.
- There exists a significant difference in Impact of Technology-based instruction and Assessment in biology (organization of tissues\plant physiology) among secondary school students in Nilgiris district with respect to pre-test and post-test.

Educational Implications

- ❖ The present study has substantially established that, Technology based Instruction & Assessment significantly improves the performance and learning of the students in biology. In the present curriculum the computer education has been introduced at the school level. Teachers should use computers as media of instructions in the classroom.
- ❖ Technology- based Instruction method can be used in classrooms, as it provides maximum amount of clarity and flexibility. Biology teacher should be acquainted with the use of variety of methods and procedures for teaching. Teachers should be provided with proper training.
- ❖ Technology –based Instruction and Assessment can be used by the students as a self-learning package to learn the school syllabus. It exposes the students to a new atmosphere in which they can interact with the Technology Based Instruction Assisted material by learning on their own pace.
- ❖ In order to make the students enjoy learning, specific audio, videos and animations could be added to the Technology Based Instruction Assisted material which provides education to a larger group at a time in a higher personalized manner.
- ❖ Technology Based Instruction Assisted material provides multi-sensory experiences and also different type of learning environment to the students.
- ❖ Technology Based Assessment reduces the time taken for manual question paper setting and Evaluation for the teachers.
- ❖ Technology Based Assessment reduces the mental pressure undergone student preparing during examination.

SUGGESTIONS :

A study would be incomplete if it provides necessary guiding as well as potential research topics for further exploration. In the present study, an attempt was made to find the Impact of Technology-based instruction and Assessment in biology (organization of tissues\plant physiology) among secondary school students in Nilgiris district. The following suggestions are made for the further research in this area.

- ❖ This study was conducted in only one district, it can be extended to other districts.
- ❖ The present study has been conducted only for IX th standard girl students, it can be extended to other standard students as well as students of arts and science college.
- ❖ A similar study could be carried out to large sample.
- ❖ Technical difficulties faced by Teachers while adapting technology based approach can be studied.
- ❖ Technical difficulties faced by students while adapting technology based approach can be studied.

CONCLUSION :

This study shows that there is exist a significant difference in Impact of Technology-based instruction and Assessment in biology (plant physiology) among secondary school students in Nilgiris district with respect to age, locality and type of school in pre and post -test achievement scores of the students. It was understood that the factor like Type of family, does not have any significant difference in Impact of Technology-based instruction and Assessment in biology (organization of tissues\plant physiology) among secondary school students in Nilgiris district. Hence the investigator hopes that the findings will help both the teachers and students to analyze the technology based approach.



REFERENCES:

1. Abraham Jessy (2016): "The trends and challenges in e-learning education scenario in India".
2. Chandra, S., (2015). "ICT & Present Classroom Scenario"
3. Deol (2015). "Effectiveness of CAI Programs on the Achievement in Teaching of Social Studies"
4. Donald, Ana. (2001). Biology Exploration Through Technology: taking the leap from theory to practice. Tech Trends. V.45 no. 5 p. 27-34.
5. Girish & Sureshkumar (2017) in their study "ICT in Teaching-Learning Process for Higher Education: Challenges and Opportunities"
6. Gisela C. & Siapno (2016): correlation between competency level and integration of ICT for instructional process.
7. Jaspers, Fons; Ji- Ping, Zhang (1991), Interactive audio for Computer Assisted Learning . Journal of Educational Technology system .V19 M1 P59-74.
8. Kaur Navpreet and Aggarwal Sangeeta(2017): Researcher have explained in their paper the ICT scenario in Indian Education System.
9. M. & Thampy K.(2016). "Technological Influence on Education".
10. Noushad Husain.(2010) Computer-Based Instructional stimulations in Education: Why and How? Vol.10, No.3, Nov.2010, Edutrack pp.22- 26.
11. Onyegebu N (2001) Provision of facilities in biology classroom: New direction and challenges. Inter. J. Educ. Research. 5: 70-75. Purnell WC (2004)
12. Pollard, T.D.; Earnshaw, W.C. (2002). Cell Biology. Philadelphia
13. Pollard, T.D. (2002). Earnshaw, W.C. Electronic Image Collection for Cell Biology. Philadelphia: W.B Saunders.
14. Ponraj, P., R.Sivakumar, "Computer Assisted Instruction in Zoology in relation to Learner's personality, Vol.9, No.6, February 2010, pp.34-37, Edutrack.
15. Sandhu (2015)- "Integration of ICT in Teacher Education"
16. Singha (2002) .Two strategies of Computer Assisted Instruction in Chemistry Educational Technology , December 2002.
17. Sibichen, K.K. Annaraja, P. "Teacher Trainees Computer Competency enhances their technology use in classroom Teaching. Vol.10, No.4, Dec.2010, Edutrack. Pp.33-37.
18. Srinivasan, P., R.Muthumanicam, "An Innovative Computer Assisted Instructional Programme. Vol.9, No.12, August, 2010 Edutrack. Pp.33-41.
19. Seema Rajeev. (July 2010). Computer Based Lecture Pedagogical Skill Development, Vol.9, No.11, pp.17-20.
20. Walter, P.; Theriot, J.; (2002). Morales, M. Cell Biology Interactive. New York: Garland Science.
21. Williams V.M., Abraham M.R.(1995). The effects of computer animation on the particulate mental models of college chemistry students. J Res Sci Teach. 32:521-534.



The Crucial Role of Online Grocery Shopping in India' startup Growth: Scope and Challenges

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Abstract: The feature of online grocery shopping is by simply clicking the mouse button for the required items. Consumers purchase groceries produced through retailers' and the subsequent delivery of those ordered groceries at home despite the ever-increasing popularity of the web-based purchasing trends, concerns have been addressed as to whether Internet is a suitable purchasing tool for all kinds of products. Grocery shopping is defined as routine buying behaviors because the decisions are made at regular intervals. Internet Grocery purchases are still very less as compared to the overall online sales. There are various factors responsible for triggering the vital for the strategic management of this online grocery shopping sector. Lack of consumer trust in the service and product quality provided by e-grocery retailers is responsible for low intake of the Internet Grocery. When e-commerce was first recognized business, many companies tried to enter into the business of online grocery. Online grocery sales have grown much slower than the overall e-commerce market. Online Shopping is rather gaining popularity and OGS has also created some space in the online retailing industry in the west and southern part of India due to the ongoing development of the internet, mobile communications, rising disposable income, working culture etc. But consumer uptake of Online Grocery Shopping is slower than expected. Success will be dependent on meeting expectations of greater choice, consistent quality, convenience and more effective direct engagement in retail-consumer relationships. Due to Covid-19 the online grocery market in India has attracted lots of market segment over the past few months in grocery chains expanding to the digital platform This paper will discuss Scope and Challenges faced by online grocery shopping in India. few brands are successfully building their corporate brand through effective relationship building. The future for online Grocery market seems to be very bright as lot of established players are entering in the space and domestic and foreign investors are also very optimistic.

Key Words: Online grocery, Internet, convenience, Payment security. Anytime anywhere.

INTRODUCTION:

The Indian retail industry's foundation is made up of food and grocery stores. With a projected market value of US\$ 320 billion (Rs. 20,000 billion), this category represents almost 57% of the entire retail market. In India, there are reportedly 8–9 million food and grocery stores (including neighborhood kirana shops, hawkers, etc.). Food and grocery retail is therefore anticipated to rule the industry for the foreseeable future, accounting for more than 50% of the total retail sector. By 2025, the food and grocery retail business is anticipated to grow by more than 3.5 times and reach US\$ 1,150 billion (about Rs. 71,000 billion). The majority of this expansion will be fueled by an inflationary price increase, with the remaining percentage being driven by rising demand, which will be fueled by population growth, rising earnings, which will raise food expenditures, and finally, urbanization, which will change eating habits. India's online grocery business, which was estimated to be worth USD 2.9 billion in 2020, is anticipated to increase at a CAGR of 37.1% from 2021 to 2028. The market has experienced tremendous



growth over the past few months as a result of changing consumer lifestyles, increasing urbanization, and the tech-savvy youth that favors online shopping. People are increasingly using customized and practical online platforms for food shopping rather than going to their local vendors as a result of growing disposable incomes and hectic lifestyles. Following the COVID-19 epidemic, the inclination for supermarket product delivery via the internet became more obvious. Consumers are shifting their attention to online grocery shopping due to the social distancing standards because it is not only handy but also a safer option. Today's leading grocery chains have all survived numerous assaults from new rivals and new forms, and they are constantly on the lookout for the next threat.

Objectives of the research

- To analyze the Indian online grocery market
- To research the various online competitors in the Indian grocery market
- To analyze consumer and player challenges for online groceries
- To predict the future potential of the online grocery market.

RESEARCH TECHNIQUES:

The study is based on secondary data that was gathered from a variety of sources, including reputable journals and websites.

REVIEW OF THE LITERATURE:

According to Hairong Le, Cheng Kuo, and Maratha G. Russel's article from 1999 titled "The Impact of Perceived Channel Utilities, Shopping Orientations, and Demographics on the Consumer's Online Buying Behavior," demographics, channel knowledge, perceived channel utilities, and shopping orientations all have an impact on consumers' online purchasing decisions. The study discovered that online buying status (frequent online buyer, occasional online buyer, or non-online buyer) of Internet users can be accurately predicted by factors such as education, convenience orientation, experience orientation, channel knowledge, perceived distribution utility, and perceived accessibility.

Online customers are more impulsive than regular shoppers, according to a 1999 survey by Donthu and Garcia.

The interactive nature of the Internet and the web offer numerous opportunities to increase the efficiency of Internet shopping behavior by improving the availability of product information, enabling direct multi-attribute comparisons, and lowering buyer search costs, according to (Alba et al. 1997) in their article titled "The influence of online product recommendations on consumers online choices." Harris Interactive Inc. (2001) estimates that about

Because hacking, fraud, spam, and online scams routinely raise security concerns, skepticism, and mistrust, 70% of US web users are extremely concerned about the safety of their personal information, transaction security, and misuse of private consumer data. The consumers' uneasiness and perceptions of danger are further exacerbated by the physical distance, lack of personal touch, and anonymity of the Internet. Online trust is a complex topic since it has many different aspects, and despite significant academic interest, many of these aspects have received little or no investigation.

Grabner-Krauter and Kaluscha's 2003 study examines idea complexity. They discovered constructs of trust that "... represent both institutional phenomena (system trust) and personal and interpersonal forms of trust (dispositional trust, trusting beliefs, trusting intents, and trust-related behaviors...



PURCHASING GROCERIES ONLINE: GLOBAL SCENARIO:

Online grocery shopping poses a threat to traditional brick and mortar merchants in a number of industries, though it has less of an effect on the food retail industry. However, this is altering as internet grocery stores mature. Online offerings from the major bricks-and-mortar competitors as well as a developing product from online-only player Ocado have helped online grocers acquire 6% of the market share in the UK. Additionally, online grocers in Germany and the United States have a smaller share and a potential for steady growth. Additionally, large businesses like Walmart and Amazon Fresh are prepared to make quick investments to hasten this growth. According to a recent Nielsen Global E-commerce and the New Retail Survey, 25% of respondents from around the world have already ordered groceries online for delivery to their homes, and more than half (55%) plan to do so in the future. Online grocery purchasing is starting to increase: The current companies will need to increase their "click" sales and make use of their networks for delivery as a result of Amazon's debut of Amazon Fresh, which will challenge the viability of current supermarket models. and businesses' ingenuity in some e-commerce models makes it simple for time-pressed, tech-savvy customers to buy the goods they want.

Two of these effective models are:

Click and Collect: Although not the first to do so, Walmart launched its Walmart Pickup - Grocery service in early 2017. Customers can place their orders online any time, up to three weeks in advance, and pick them up for free from a Walmart store, a neighborhood market, or a specific FedEx Office site. About 10,000 items total, including dairy, meat, fruit, and other everyday staples, are included in the assortment. Tesco also opened its drive-through supermarkets as an addition to a few of its current locations. Customers place an online order, set a pickup time, and then pick up their item from a predetermined location outside the business. Consumers can make their order list online and choose the subscription services they want to use.

Replenishing cycle frequency: Orders will be delivered at the agreed-upon frequency without any additional fees. Nowadays, almost all brick and mortar stores and internet businesses provide subscription services. The most prosperous shops will be at the nexus of the physical and digital worlds, utilizing technology to satiate customers through anytime, anyplace shopping. This online-offline play will drive the industry in a new direction. Smartphones are the major industry game-changer: The first virtual supermarket was created by Tesco (Home plus) on a South Korean subway system in 2011, and the concept has since extended to numerous other markets. In essence, "virtual storefronts" are just digital product displays on the walls of bus and metro stops. While they wait for their trains or buses, commuters can place their orders by scanning the QR codes with their smartphones to view the merchandise. Deliveries frequently take place before the customer arrives at their chosen location or at home. Using a smartphone will significantly alter supermarket shopping. Apps have been created to increase in-store foot traffic as well as brand engagement and loyalty. Additionally, the smartphone may influence shoppers by offering useful information as they browse aisles and prepare to make a purchase. Currently, supermarkets use smartphones to:

- Provide nutritional data about food goods by scanning the QR code
- Provide deals and discount information for items in the aisles
- Make it possible for customers to scan product barcodes, create shopping lists, and reorder items.

In India's past, grocery shopping has, previously, there were just mom-and-pop shops, street vendors, and street hawkers from whom consumers purchased their food and groceries depending on their demographic profiles. This sector, known as the unorganized sector, accounts for around 97 percent of all retail sales in India. Later, as a result of retail sector liberalization and foreign direct investment in India, organized retail formats that emphasize service orientation and a wide range of



commodities and products began to emerge in the food and grocery retail sector. These formats also place a strong emphasis on certain physical characteristics of retail stores, such as ambiance and better services. Different retail establishments, such as hypermarkets, super markets, malls, discount stores, and malls, have appeared to provide customers with a pleasurable experience or a fun-filled family outing as opposed to simply entering a store, receiving what you need, and leaving. Because of this, the majority of merchants are working to make customers' visits to organized retail stores delightful and personalized by assisting them in time and money savings. Later, the idea of online grocery shopping emerged with the first businesses that were established in Grocery e-stores in India certainly have promise due to the growth of Internet connectivity (including the rise in smartphone users), the appeal of mobile shopping, and the fact that they deal in goods for daily consumption.

INDIAN ONLINE GROCERY MARKET:

The advent of numerous first-generation start-ups and established traditional grocery chains extending to the digital platform has helped the online grocery business in India acquire significant traction over the past few months. The online grocery market in India is predicted to expand at a compound annual growth rate of 62% between 2016 and 2022. Despite the fact that online grocery shopping is still in its infancy, the Indian grocery market as a whole is already over US\$ 360 billion (Rs 21,60,000 crore) and is projected to reach US\$ 1 trillion by 2020. Additionally, sales are anticipated to reach 2% of total sales, which would result in a potential market size of US\$ 10 billion (Rs 60,000 crore) after the explosion in the number of players operating in the sector. The next great opportunity in the e-tailing industry appears to be online grocery stores. Additionally, every week, a large number of online grocers emerge. Online would take a small but considerable market share based on the expansion of global e-grocers and e-commerce in the Indian market. Because of this, organized and online players will become increasingly prominent over the next ten years. From keeping restaurant menus in our living room drawers to pressing a few buttons on the phone to have the most lavish meal delivered to our home, it only took us less than ten years. That is how the internet revolution works. A consumer in India may now receive anything from a packet of milk to diced chicken faster than it takes to reply to an email thanks to the growing 10-minute grocery delivery market. Customers no longer require extensive previous planning, and there is now virtually no delay between desire, action, and pleasure. Faster delivery times put more strain on the employees of these businesses, and many are

wondering if we've gone too far.



Shop to door: Prediction and Dark Stores models retail spaces speed up deliveries



It would be an understatement to say that Deepinder Goyal, the founder of Zomato, received negative feedback when he announced that the company will now deliver food in just 10 minutes in a few locations. Some people questioned the 'need' for such a solution in the first place, while others expressed deeper concerns about the strain on delivery executives and their safety. Goyal quickly clarified the safety precautions required to make it operate, but insisted that it would only be available for quick-service items like tea, momos, poha, and biryani. Even Blinkit (Previously known as Grofers), which guarantees grocery delivery in 10 minutes across dozens of cities, received a recent million-dollar financing from it. Dunzo, Swiggy, Instamart, and Zepto all guarantee delivery times of between 10 and 20 minutes for the majority of items.

THE GLOBE IS GETTING SMALLER BECAUSE OF TECHNOLOGY:

The last-mile hubs that have cropped up around high-order density locations, including large townships, have also greatly decreased the travel distance to the client. These hubs reduce the distance from the storefront to the door to less than 1-2 km. The fact that Domino's, which has long claimed a 30-minute-or-free guarantee, was one of the pioneers of fast-food delivery, merits note in this context. The company's legal experiences have been conflicted as a result of claims of accidents in the US, but in India, it is attempting to cut delivery times even more, to just 20 minutes for a few specific regions. Domino's delivery flow optimization offers hints as to how other players may make this work. For instance, Domino's can safely forecast the fulfilment of orders for specific clients thanks to its strong predictive capabilities. As a result, pizza preparation begins before the buyer has even finished making payment. Similar to this, many firms offering rapid delivery are said to begin packing things even before an order is placed. In order to control expenses and inventories, they also employ analytics and prediction models. Even with all of this, the path to 10-minute delivery is far from straightforward. **One**, there is still a risk to driver safety. Even though firms like Zomato assert that they don't reward or penalize drivers for their travel time, the reality is that the majority of delivery partners frequently speed to maximize their earnings. Furthermore, a 10-minute delivery for low-value goods can make things worse. With the exception of if the companies ensure minimum wages substantial enough to lessen incentives for delivery staff to drive recklessly.

Second, the model is expensive. Instant delivery will continue to drain investors' funds unless it gains enough traction for a participant to begin adding a premium to each delivery.

Third, because the majority of delivery partners are not covered by social security, there is concern about how regulations will affect these models as well as the applicable labor welfare measures. In spite of this, the 10-minute delivery paradigm appears to be here to stay, at least for the time being. Smaller rivals can enter the game as well. Companies will be working to refine the idea until it is scalable and financially sustainable while investor money is burning.

Before we get there, customers might end up creating demand to address a problem that, in some ways, didn't exist until last year. The younger, more enthusiastic digital customers who are also the fastest adopters of new technology also speed the growth of online grocery shopping.

MARKET SHARE INSIGHTS FOR KEY COMPANIES:

Due to fierce competition between the firms, the market is fragmented. Key firms are putting their efforts into expanding their geographic reach, partnering with other companies, merging and acquiring businesses, and increasing their market presence. The market participants can improve their products on both the domestic and foreign marketplaces and extend their enterprises geographically with the aid of these techniques. For instance, in November 2020, Amazon India Pvt. Ltd. started running its online grocery store Amazon Fresh in four more cities: Pune, Ahmedabad, Kolkata, and Chennai. The business claimed that the service was launched in these locations as a result of the growth of its specialized geographic network, which makes it possible to provide ultra-quick delivery services for groceries and daily necessities through the Amazon Fresh Store on Amazon.in. Some prominent players in the Indian online grocery market include:

- Amazon India Pvt. Ltd.



- Godrej Nature's Basket Ltd.
- Grofers India Pvt. Ltd.
- Paytm E-Commerce Pvt. Ltd. (Paytm Mall)
- Reliance Retail Ltd. (Reliance Fresh)
- Spencer's Retail
- Supermarket Grocery Supplies Pvt. Ltd. (Big Basket)
- UrDoorstep eRetail Pvt. Ltd.

India Online Grocery Market Report Scope

Report Attribute	Details
Market size value in 2021	USD 4.3 billion
Revenue forecast in 2028	USD 38.9 billion
Growth Rate	CAGR of 37.1% from 2021 to 2028
Base year for estimation	2020
Historical data	2017 – 2019
Forecast period	2021 – 2028
Quantitative value	Revenue in USD million/billion and CAGR from 2021 to 2028
Report coverage	Revenue forecast, company ranking, competitive landscape, growth factors, and trends
Segments covered	Product type, payment method, region
Regional Scope	South India; North India; West India; East India
Country Scope	India
Key companies profiled	Amazon India Pvt. Ltd.; Godrej Nature's Basket Ltd.; Grofers India Pvt. Ltd.; Paytm E-Commerce Pvt. Ltd. (Paytm Mall); Reliance Retail Ltd. (Reliance Fresh); Spencer's Retail; Supermarket Grocery Supplies Pvt. Ltd. (Big Basket); UrDoorstep eRetail Pvt. Ltd.
Customization scope	Free report customization (equivalent up to 8 analysts working days) with purchase. Addition or alteration to country, regional & segment scope.
Pricing and purchase options	Avail customized purchase options to meet your exact research needs. Explore purchase options

The Online Grocery Boom: Will India's New Players Shine and Sustain?

In order to facilitate the operation of their delivery partners on the ground, online food delivery businesses are collaborating with state governments. Only a small number of enterprises are anticipated to prosper as the pandemic confines us all to our homes, with grocery delivery being one of them, at least in terms of the Indian market.



How India's Leading Grocery Players Stocked Up For The Lockdown

	Key Initiatives	Operations
	Partnered with National Restaurants Association, Uber, Rapido; Looking to ramp up infrastructure	Over 24 Cities
	Enabled bulk deliveries In societies; Fast-tracked delivery of orders; Began 24/7 operations in some cities; Added tipping feature for delivery executives	27 Cities
	Partnered with national brands such as HUL, P&G, Godrej, Dabur, Marico, Vishal Mega Mart, Adani Wilmers, Cipla and other city-specific stores; Expanded hyperlocal services and grocery delivery	125 Cities
	Tied-up with Uber, Spencer's Retail; Signed partnerships With brick-and-mortar retailers, FMCG companies	Mumbai, Chennai, Bengaluru, Hyderabad, Delhi
	Infused INR 284 Cr in India business to strengthen grocery delivery operations	40 Cities
	Partnered with Britannia for home deliveries	9 Cities
	Received official permission from state administration to operate, Extended support to over 10K retail and kirana stores	Rajasthan, Gujarat, Maharashtra

Inc42

Pre-coronavirus predictions predicted that by 2023, online sales of food and groceries would reach \$10.5 billion, or 1.2 percent of the whole retail market, up from their present 0.2 percent share of the overall retail market. However, as many VC companies and industry executives expected, the numbers in grocery retail may increase. Higher faith in home-cooked meals is a key factor. On a lighter note, there is no doubt about this, as seen by the rise in culinary recipe searches online. Today, and possibly for some time to come, there is a lot of concern about delivery workers spreading the illness. The food delivery platforms are being seen as the saviors as supermarkets close and kirana outlets struggle to deliver and meet demand. As a result, numerous new firms have entered the market. In addition to a few others, Snapdeal, Zomato, Uber, Dominos, Paytm Mall, Perpule, and Shopclues have entered the market for grocery delivery. Can they, however, recreate the model that well-known companies like Bengaluru's BigBasket, Gurugram's Grofers, which took years to develop, and e-commerce giants Flipkart and Amazon are still working to improve? Can they handle the present rise in demand when others are still in question?

NEW PLAYERS JOIN THE BANDWAGON

To supply consumers with necessities, Zomato has partnered with governmental agencies, grocers, retail chains, and FMCG companies. It states that it currently delivers groceries to 50 lakh households across 150 cities and collects them straight from retailers. By collaborating with a number of companies like ITC, HUL, P&G, Godrej, Dabur, Marico, Adani Wilmer's, Cipla, and large format shops, Swiggy has lately increased the distribution of groceries and household supplies to over 125



cities. Neighborhood shops and the distribution hubs of major companies facilitate the service. Customers can view the grocery stores in their area directly through the app's "Grocery" category, add items to their cart for payment, and choose "No-contact" delivery for pre-paid orders. The business added that it has updated its "Swiggy Go" offering by introducing the hyperlocal delivery service "Genie" in more than 15 cities. By 2023, the online grocery sector might be worth \$10 billion, but even then, just 1 in 100 Indians will use it. According to a Red Seer and Big Basket research, the online grocery segment would increase by 55% to account for 1.2 percent of the industry by 2023.

Today, firms in the online grocery sector receive 40% of all e-commerce funding in India. Online grocery startup companies have so far raised \$665.70 million in investment in 2019. The online grocery market in India is expanding quickly. With a penetration rate of just 0.2%, online food and grocery sales currently make up a very small portion of online retail. According to a survey by Red Seer and Big Basket, however, it is expected to increase by 55 percent to capture 1.2 percent of the market by 2023. According to the estimate, this segment's market will grow to \$10.5 billion. According to the report, this sector's expansion would be fueled by consumers' increased confidence in online buying as well as the growing number of e-grocery players. According to Hari Menon, co-founder and CEO of big basket, "the online grocery segment has been one of the fastest-growing e-commerce verticals in India and will continue to prosper in both metro and non-metro cities in the years to come."

What then caused this growth?

The growth of smartphone use, more customer comfort and trust in e-tailing, and greater value for money for customers in online vs. offline stores are all contributing factors to the acceleration of the online grocery market in India. Albinder Dhindsa, co-founder of Grofers, added that the availability of affordable products, superior discounts compared to offline outlets, and rewards driven by subscription-based programmes further ensure affordable pricing and scheduled delivery to make this market attractive. With Big basket becoming a unicorn, startups in the online grocery space have so far earned \$665.7 million in funding in 2019. With the help of a \$200 million fundraising round lead by Softbank, the soonicorn (soon to be unicorn) Grofers made a comeback. Cities in Tiers 2 and 3 will head up the upcoming e-grocery phase. The goal of online groceries to reach \$10.5 billion by 2023 won't be driven only by urban development. Cities in Tiers 2 and 3 will contribute a sizable portion of this. According to Dhindsa, a co-founder of Grofers, greater e-commerce penetration in tier-2 markets and among lower SECs (socio-economic classification) in metro areas will be the next big thing in e-grocery. "E-grocery will attract more customers to online shopping overall, and 15 percent of our new users each month are doing it for the first time. The deployment of 4G and the rise in consumer disposable income in Tier II markets have already created a solid base for the next expansion of e-commerce the expert claimed. Even the digital payments service **BharatPe** and the social e-commerce website **Meesho** have made the transition. This is not just true of the unicorns of Indian food-tech. Both have entered the market for grocery delivery services to broaden the customer base for businesses selling necessities and to guarantee a steady supply chain. BharatPe, which operates a network of 2 million local grocery, dairy, and drug stores, will be able to connect them with potential customers, the company claims.



New Players Added To India's Grocery Cart

	Key Initiatives	Available In
	Tied up with local grocers, wholesalers, farmers' markets in metros	96 Cities
	Formed alliance with grocery stores, retail chains and FMCG companies as well as platforms such as Grofers	150+ Cities
	Partnered with Walmart-owned Flipkart; Tied up with BigBasket and Spencer's Retail	Delhi, Mumbai, Bengaluru
	Partnered with ITC Foods	Bengaluru, Noida, Mumbai, Kolkata, Chennai, Hyderabad
	Signed up retail merchants; Tied up with Snapdeal, DealShare, and other retailers	10-12 Cities
	Launched new platform for grocery ordering; Partnered with grocery retailers such as MORE, Vishal Megamart, Metro	Bengaluru
	Launched two-day delivery for essential items	Delhi, Gurugram
	Delivering groceries for bulk orders to housing complexes using B2B supply chain	Bengaluru, Delhi, Hyderabad, Mumbai, and Pune.
	Tied up With Ninjacart, Vishal Megamart	NA
	Introduces online listing platform that allows users to find the stores that are open nearby	23 Cities
	Launched feature to allow users to identify nearby stores and place orders on WhatsApp	2 Mn Stores
	Enabled orders for groceries and essentials from Reliance Retail	Over 173 Cities
	Launched 'Zaroori' app for retailers to place orders online; Received license from Madhya Pradesh government for online orders and delivery	30 Cities

Inc42

In order to accommodate the expanding demand from customers for access to daily necessities, Big Basket has signed on as Uber's first client and the company has also unveiled a new last-mile delivery service. To help Big Basket deliver necessary supplies, the platform has implemented a combination of Uber Go, Uber XL, and Uber MOTO. It is also sharing its technology and its network of delivery partners with Big Basket. Jumbo tail and Shopkirana, two B2B supply chain firms, have additionally joined. While ShopKirana has been providing services to houses and apartment complexes



through its stores, Jumbo tail has begun providing services to apartment complexes through its J24 stores, which it introduced last year as an addition to its portfolio. In just 24 to 48 hours, a Jumbo tail representative said, "We can transform an empty space into a fully operational J24 Modern Convenience Retail store driven by our Goldeneye Retail Operating System." In order to enable kirana businesses to accept online orders, Limetray has built a new platform with cutting-edge technology. Due to the lack of reliance on third parties, the firm will be able to take online orders and payments from customers directly. Quikr, on the other hand, has created an online listing platform that enables consumers to locate the local establishments that are open.

CONCLUSION:

Future prospects: Online shopping portals offer goods and services at purchasing prices, but the rising cost of labor, transportation, and storage places a significant load on their expenses while maintaining the same level of income. It may not sound like a smart business plan for a competitive market sector when net inflow is smaller than net outflow, but for these entrepreneurs, making a profit is not their top concern right away. The truth is that these start-ups have been attracting a ton of funding from venture capitalists and equity firms. Right now, it's all about grabbing investors' attention and getting them on board. These funds assist the online grocery businesses in covering their operating expenses and expanding them. In the end, online grocery shopping appears to have a very bright future. The simplicity of use, comfort, smartphone penetration, and hassle-free shopping experiences of online grocery buyers are aspects that are allowing grocery platforms to grow. Shoppers will be able to maturity and saturation in the near future, but we can't envisage the emergence of grocery e-commerce models for a nation like India, for a disappearance of physical supermarkets, but reimagine the role of grocery store for the digital food industry.

REFERENCES :

1. Andrews, R.L. and Currim, I.S. (2004), "Behavioral differences between consumers attracted to shopping online versus traditional supermarkets: implications for enterprise design and marketing strategy", *International Journal of Internet Marketing and Advertising*, Vol. 1 No. 1, pp. 38-61.
2. Bandura, A. (1977), "Self-efficacy: toward a unifying theory of behavioral change", *Psychological Review*, Vol. 84 No. 2, pp. 191-215.
3. Barnes, S.J., Bauer, H.H., Neumann, M.M. and Huber, F. (2007), "Segmenting cyberspace: a customer typology of the internet", *European Journal of Marketing*, Vol. 41 No. 1/2, pp. 71-93.
4. BBC News (2008), "Christmas online sales 'rise 50%'", 18 January, available at: <http://newsvote.bbc.co.uk/mpapps/pagetools/print/news.bbc.co.uk/1/hi/business> (accessed 18 January 2008).
5. Brengman, M., Heuens, M., Weijters, B., Smith, S.M. and Swinyard, W.R. (2005), "Segmenting internet shoppers based on their web-usage related lifestyle: a cross cultural validation", *Journal of Business Research*, Vol. 58 No. 1, pp. 79-88.
6. Brown, M., Pope, N. and Voges, K. (2003), "Buying or browsing? An exploration of shopping orientations and online purchase intention", *European Journal of Marketing*, Vol. 37 No. 11/12, pp. 1666-84.
7. Bryman, A. and Bell, E. (2007), *Business Research Methods*, Oxford University Press, Oxford.
8. Childers, T.L., Carr, C.L., Peck, J. and Carson, S. (2001), "Hedonic and utilitarian motivations for online retail shopping behavior", *Journal of Retailing*, Vol. 77 No. 4, pp. 511-35.
9. Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, Lawrence Erlbaum Associates, Hillsdale, NJ.
10. Dabholkar, P.A. (1996), "Consumer evaluations of new technology-based self-service options: an investigation of alternative models of service quality", *International Journal of Research in Marketing*, Vol. 13 No. 1, pp. 29-51.
11. Dabholkar, P.A. and Bagozzi, R.P. (2002), "An attitudinal model of technology-based self-



- service: moderating effects of consumer traits and situational factors”, Journal of the Academy of Marketing Science, Vol. 30 No. 3, pp. 184-201.
13. Danaher, P.J., Wilson, I.W. and Davis, R.A. (2004), “A comparison of online and offline consumer brand loyalty”, Marketing Science, Vol. 22 No. 4, pp. 461-76.
 14. wazir.in/wp-content/uploads/2016/03/Wazir_Food- Grocery-Retail.pdf
 15. <http://www.iamwire.com/2015/11/grocery-startups-ecosystem-india-challenges-threats-competition/126>
 16. Nielsen global survey of e-commerce 2017
 17. <https://scholars.opb.msu.edu/.../the-impact-of-perceived-channel-utilities-shopping-orientation>.
 18. [https://www.researchgate.net/.../285670001 Determinants of Shopper Behaviour in E-tailing](https://www.researchgate.net/.../285670001-Determinants-of-Shopper-Behaviour-in-E-tailing).
 19. [http://www.scirp.org/\(S\(351jmbntvnsjt1aadkposzje\)\)/reference/ReferencesPapers.aspx?ReferenceID=1639602](http://www.scirp.org/(S(351jmbntvnsjt1aadkposzje))/reference/ReferencesPapers.aspx?ReferenceID=1639602)
 20. ses-perso.telecom-paristech.fr/survey/CanauxInformBienExpe/s_enecalnantel.pdf
 21. [harris-interactive.com/hillside.net/.../2003_KaluschaEtAl_PatternsForConsumerTrust In Electronic Commerce....](http://harris-interactive.com/hillside.net/.../2003_KaluschaEtAl_PatternsForConsumerTrustInElectronicCommerce...)
 22. <https://www.ibef.org>
 23. blog.grabon.in/7-best-sites-to-shop-groceries-online-in-india
 24. www.oliverwyman.com/.../global/.../OW_Future%20of%20Online%20Grocery_Final.



Mathematics Test Anxiety among Secondary School students during COVID

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Abstract: *Mathematical anxiety, also known as math phobia, is anxiety about one's ability to do mathematics. Mathematics test anxiety involves the feeling of tension and anxiety that interferes with the manipulation of numbers. Dyscalculia is a learning difference that affects math skills such as counting, recalling math facts, and understanding math concepts. Math anxiety is an emotional issue involving self-doubt and fear of failing. The study on mathematics test anxiety was conducted on 127 samples of IX standard students of the Palakkad district using a survey method. A standardized tool designed by Dr.Ayatolla Karimi and Prof.S.Venkatesan, and a personal data sheet was used for data collection. This study analyzed that there is no significant difference in mathematics test anxiety among secondary school students during COVID concerning the demographic variables, but a difference existed between mathematics test anxiety and numerical anxiety.*

Key words: *Mathematics, Test anxiety, Numerical anxiety, Secondary school students, Mathematics test anxiety.*

INTRODUCTION :

Mathematical test anxiety involves the feeling of tension and anxiety that interfere with the manipulation of numbers and solving mathematical problems. Mathematical test anxiety happens automatically when the child enters the regular school pattern after long days of online practice.

The causes of arithmetic anxiety can be environmental (bad experiences, bad teachers), personal (lack of confidence, low self-esteem), or cognitive (innate qualities, e.g., low intelligence or maybe just the obvious — not being naturally adept at math, which fuels a sense of inadequacy).

COVID pandemic and lockdown period may profoundly negatively affect education in secondary schools. The study's main aim was to investigate the effects of the COVID pandemic on anxiety levels in secondary schools.

Statement of the Problem

Mathematics Test Anxiety among Secondary School Students during COVID.

HYPOTHESIS OF THE STUDY

- ❖ There is no significant difference in the mathematics test anxiety among secondary school students with respect to the domains- Mathematics test anxiety and Numerical anxiety.

REVIEW OF LITERATURE :

Review of literature is an essential step in educational research. It helps in understanding the various aspects of research. Researcher can get the clear idea of the methodology, analysis and



interpretation of his study by seeing other related studies. Review of literature not only includes the related studies of other authors but also includes various theories, articles, journals related to our study. It contains the review of related study or calls the previous study.

“The literature in any field forms the foundation upon which all future work will be built the foundation of knowledge provided by the review of literature our work is likely to be shallow and naive and will often duplicate work that has already been done better by someone else.”

-Brog, W.R.

RELATED REVIEWS

Moliner, L; Alegre, F. conducted a study on **COVID -19 Restrictions and Its Influence on Students' Mathematics Achievement in Spain.** *Educ.Sci.2022*, the sample consisted of 368 students from 9th grade of age groups 14 and 15. The qualitative and quantitative research methods were adopted in this study. A statistically significant difference existed in comparing the mathematics achievement of pre covid 19 and post covid 19 students. The restrictions during this covid have substantially impacted students' mathematics achievement.

Darrah and Leppma (2022) studied **Self Efficacy, mindfulness, and self-compassion as predictors of math anxiety in undergraduate students.** The sample consisted of 345 students from the mathematics department at U.S University. Abbreviated Mathematics Anxiety Rating Scale (AMARS) with 5 points Likert scale was used for the study. The study showed a significant correlation but predictive relationship between mindfulness and math anxiety.

G.S .Prakasha et al.(2021) conducted a study "**Online test anxiety and exam performance of international baccalaureate diploma program students under E-protected exams amid COVID 19**". The sample included 200 students who have selected STEM-related subjects in their diploma degree. The researchers used a survey questionnaire for the data collection process. The research aimed to find the effect of online test anxiety on the academic performance of IBDP students in the subjects related to science, technology, engineering, and mathematics. The result was a statistically significant difference between the first and final-year students' online exam anxiety.

Derling Jose Mendoza Velazco et al. (2021) studied "**Mathematics anxiety and its effects on Engineering students' performance during the COVID 19 pandemic**". The study consisted of 120 samples studying mathematics at different levels. The methodology used is the quantitative paradigm of descriptive exploratory design. The researchers used the two-factor ANOVA method for the analysis of the results. There was a statistically significant difference in grasping the contents delivered by the teachers, which resulted in an increasing level of mathematics and exam anxiety.

Dilek Soysal et al. (2021) conducted a study on "**Analysis of anxiety, motivation, and confidence of STEM students during the COVID 19 pandemic**". The survey was done with 53 samples of STEM students from the mathematics department at the University of Missouri- Kansas City. A questionnaire is used for data collection. The COVID 19 pandemic has made a significant impact on the increase of mathematics anxiety levels among the students.

Rachel Ngan Yin Chan (2020) conducted a study on **Teasing apart the effects of mathematics anxiety and test anxiety on arithmetic performance.** Data were collected from 199 university students using Mathematics Anxiety Rating Scale . The study resulted that the university students with a high level of anxiety performed significantly poorer than those with medium or low math anxiety.

OBJECTIVES OF THE STUDY

1. The main objective of this study is to examine the mathematics test anxiety level of secondary school students after COVID.



2. The main aim of the study is to examine the mathematics test anxiety level of secondary school students after COVID with respect to the domains mathematics test anxiety and numerical anxiety.

RESEARCH METHODS

METHOD ADOPTED

The investigator adopted the survey method to study "Mathematics test Anxiety among Secondary School Students after COVID" among IX standards in the Palakkad district.

"A survey is an attempt to collect data from members of a population to determine the population's current status with respect to one or more variables."

Gupta (2000)

SAMPLING TECHNIQUE

The investigator adopted the random sampling method for the selection of the sample. The random sampling method is by which every item in the universe has the chance or probability of being chosen for a sample. Random sampling forms the basis of homogeneity amidst complexity. It ensures the possibility of representative selection and a detailed study with accuracy.

SAMPLE SELECTED FOR THE STUDY

TYPE OF THE SCHOOL	NAME OF THE SCHOOL	NO. OF STUDENTS		
		BOYS	GIRLS	TOTAL
Government School	Bagavathy Government Higher Secondary School, Vannamada.	42	32	74
Private School	Aiyappa Matriculation School, 5 th mile	26	27	53
Total				127

TOOLS USED IN THE STUDY

The investigator used a personal data sheet including basic information about the samples.

The investigator used a 5-point MATHEMATICS ANXIETY SCALE - INDIA (MAS-I) designed by Dr.AyatollaKarimi and Prof.S.Venkatesan for testing mathematics test anxiety.

STATISTICAL TECHNIQUES USED FOR THE STUDY

The collected data were consolidated, tabulated, and analyzed statistically using the following tests.

- Mean
- Standard deviation
- Test of significance(T-test)
- ANOVA (Analysis of Variance)

DISCUSSION AND ANALYSIS

TABLE 1

MATHEMATICS TEST ANXIETY AMONG SECONDARY SCHOOL STUDENTS DURING COVID WITH RESPECT TO THE DOMAINS MATHEMATICS TEST ANXIETY AND NUMERICAL ANXIETY



DOMAINS	NUMBER OF STUDENTS	MEAN	SD	df	t- value	SIG.
MATHEMATICS TEST ANXIETY	127	47.98	9.91	252	2.4261	Sig*
NUMERICAL ANXIETY	127	44.93	10.76			

Sig*-Significant

From the above table it is evident that the calculated ‘t’ value is 2.4261 which is found to be significant at 0.05 percent level. It is clear that there is no significance difference in mathematics test anxiety among secondary students during COVID with respect to the domains math test anxiety and numerical anxiety. Hence the hypothesis stated that “*There is no significant difference in mathematics test anxiety among secondary school students during COVID with respect to the domains math test anxiety and numerical anxiety*” is rejected. It infers that students possess more math test anxiety than numerical anxiety.

RESULTS AND FINDINGS :

There exists significant difference in mathematics test anxiety among secondary school students during COVID with respect to the domains math test anxiety and numerical anxiety.

CONCLUSION :

This study shows that there exists significant difference in mathematics test anxiety among secondary school students during COVID with respect to the domains math test anxiety and numerical anxiety. Hence the investigator hopes that the findings will help to identify the mathematics test anxiety and to find remedies to overcome the anxiety.

SUGGESTIONS :

- ❖ Problems faced by teachers in teaching Mathematics at various levels can be studied.
- ❖ Learning difficulties faced by the students in learning Mathematics can be studied at a broader level.
- ❖ Various methods and techniques to eradicate mathematics test anxiety should be practiced and analyzed

REFERENCES:

1. Abed, A.S & Alkhateeb, H.M (2001). Mathematics anxiety among eighth grade students of the United Arab Emirates, Sultan Qaboos University.
2. Annmarie Fritz (2019), Math Anxiety during the Transition from Primary to Secondary School, Inclusive Mathematics Education.
3. Chinn S. (2009) .Mathematics Anxiety in secondary students in England, Special Issue: Making Links: Selected papers from the 7th Conference of the British Dyslexia Association.
4. Darrah & Leppma (2022) Self-Efficacy, mindfulness, and self -compassion as predictors of math anxiety in undergraduate students, International Journal of Mathematical Education in Science and Technology.
5. Fulya Yuksel-Sahin (2008) Mathematics Anxiety among 4th and 5th grade Turkish elementary School Students, International electronic journal of Mathematics education.
6. Karimi.S and Venkatesan (2009) Mathematics Anxiety and Mathematics Performance, and Academic Hardiness in high school students, International Journal Education Science.



7. Khatoon,T(2010) Mathematics Anxiety among Secondary School Students in India and its relationship to Achievement in Mathematics, European journal of Social sciences.
8. Lee ,C,Mann& Margaret Walshaw (2019) Mathematics Anxiety in Secondary School Female Students: Issues, Influences And implications, New Zealand journal of Educational Studies.
9. Mohamad,S,H & Tarmizi,R,A(2010) Anxiety in Mathematics Learning among secondary school learners.A comparative study between Tanzania and Malaysia, International Conference on Mathematics Education Research.
10. Putch,M & Khalin ,S.Z.(2016) Mathematics Anxiety and Its Relationship with the Achievement of Secondary Students in Malaysia, International Journal of Social Science and Humanity.
11. Steve chinn (2008), Mathematics Anxiety in Secondary Students in England, Dyslexia,An International Journal of Research and Practice.
12. Zakaria and Nordin (2007) , The effects of mathematics Anxiety on Matriculation students, Eurasoia Journal of Mathematics, science and Technology education.



Student teachers Perspectives towards Online Learning during Covid 19 Pandemic: A study

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Abstract: Online learning mode was opted by educational institutions worldwide to provide students with ongoing education during the COVID-19 pandemic. The present study explores to know the student teachers perspectives towards online learning during covid 19 pandemic. Objectives of the study were to find whether student teachers with different gender, marital status, educational qualification, type of institutions differ in their perspectives towards online learning during pandemic. Population of the study were student teachers belonging to Bed colleges of Bangalore urban district. The sample comprised of 120 student teachers belonging to Private and Aided Bed colleges were selected through stratified random sampling techniques using survey method during the academic year 2021-22. Tools used for the data collection was Online learning during pandemic scale constructed and developed by the researcher. t- test was the statistical technique employed to analyse the data. The result revealed that Male and Female student teachers perspectives don't differ significantly towards online learning during covid 19 Pandemic. Married and unmarried student teachers perspectives don't differ significantly towards online learning during covid 19 pandemic. Student teachers having Bachelors and master degree don't differ significantly towards online learning during covid 19 pandemic. Student teachers belonging to Private and Aided Bed colleges differ significantly. The mean scores Private Bed colleges (51.8667) is more than Aided bed colleges (48.6778) differ in their perspectives towards online learning during covid 19 Pandemic. It can be concluded that student teachers belonging to Private Bed colleges should have provided with proper training and workshops related to online mode of learning during covid 19 pandemic compared to student teachers belonging to aided Bed colleges.

Key Words: Student teachers, Perspectives, Online learning, Covid 19, Pandemic.

BACKGROUND OF THE STUDY:

COVID-19 was declared as a global pandemic in March 2020 (WHO, 2020). It impacted all walks of life including education. It led to the closure of schools and universities. This closure put a considerable burden on the academic institution to cope with the unprecedented shift from traditional to online learning. The outbreak triggered new ways of teaching online. Most countries imposed restrictions, where the medium of education has shifted into either synchronous or asynchronous modes. The world has seen the most extensive educational systems disruption in history in more than 190 countries worldwide. The closure of the academic institutions has impacted up to 99% of the world the student population in the lower-middle-income (The Economic Times, 2020). India has the third-largest system of education in the world comprising almost one thousand universities, forty thousand colleges and eleven thousand stand-alone institutions of eminence (Gupta S. & Garg S., 2020: 28). Face to Face mode for an educational transaction was common and considered the most viable in these institutions but the pandemic brought drastic and sudden changes and led towards digitalisation and virtual platform, one of the most affected arena fields is education and ultimately teacher is at the stake. Teaching has been one of the most difficult tasks and challenging professions in the twenty-first century and especially during the outbreak of COVID-19. The Covid-19 pandemic era has led and changed a variety of life settings, including the world of education and learning. Face-to-face learning was not



possible during pandemic, physical distancing and isolation was inevitable and adopted the learning process through online, teacher education Programme was no exception. Teaching and learning online has a wide range of advantages, yet poses some challenges. It makes the process of learning for students' comfort due to time flexibility in attending classes. However, online learning acts as a barrier to the engagement of students in real class activities. Moreover, students lack the influence of peer learning. These challenges also leave an impact on student's personalities and prevent them from taking their turns. Additionally, the faculty's role is to teach, monitor, and provide advice for students on both academic and personal levels. Most Educational institutions opted to use synchronous and asynchronous online teaching methods: synchronous is where faculty and their students meet in a pre-scheduled time as a part of interactive learning classes, while the asynchronous method refers to the Faculty giving the course without interaction with the students. There is no interaction between the faculty and students. Asynchronous modes of online learning suit students to access online material whenever they like. Faculty are the role players in making learning enjoyable, shaping students' attitudes and personalities, and helping students pass.

Some of the challenges faced by student teachers towards online learning during covid 19 pandemic are:

Lack of Motivation in Students: It was thought that online learning would be the new interactive and immersive method to teach the students. Though, the results speak on the contrary. Endless oceans of texts, quizzes, frequent learning assignments and MCQ's have led to students losing motivation to keep revisiting the learning portal. Students complain of lacking motivation due to a lack of interpersonal touch between the students and the teacher in the online classes. The need for physical interaction between the students is also a necessity for maintaining engagement which the online learning methodology has no answers for yet. Institutions need to deliver interactive lessons to students.

Infrastructural Problems: Though online learning doesn't require huge buildings, big classrooms, chairs, tables, blackboards, chalk doesn't mean there are no infrastructural requirements. The need for a computer, adequate software, constant electricity and high-bandwidth internet is quite a big demand. In most developed nations, this infrastructure is available to the public through public libraries if they cannot personally afford it. But for developing countries such as India and many others, this quality of infrastructure is only available to a select few percent of the population.

Digital Literacy and Technical Issues: Though the teachers is proficient in working with computers doesn't necessarily translate to Digital Literacy. To proficiently learn through an online system requires understanding the workings of multiple software, which presents a huge learning curve. Also, students need to understand online communication etiquette and know student rights and responsibilities in an online learning environment. A bigger problem is with constant technical issues faced by both teachers and students on these platforms. These problems often require technical support to rectify, causing frequent disruption in the learning flow.

Lack of In-person Interaction: Humans are social animals. The growth of the internet hinged on the principle that humans will always be curious to interact and know more about one another. That said, on a psychological level, virtual interaction cannot mimic that of a physical one. The physical presence inside a classroom with a teacher and fellow peers often leads to an atmosphere that can't be replicated through virtual means. The physical model also ensures discipline as students cannot switch off webcams and doze off. Physical classrooms also allow for teachers to provide more personal attention to each student's needs.

Objectives:

- To study whether there is any significant difference among male and female student teachers perspectives towards online learning during covid 19 pandemic
- To study whether there is any significant difference among married and unmarried student teachers perspectives towards online learning during covid 19 pandemic
- To study whether there is any significant difference among bachelors and master degree student teachers perspectives towards online learning during covid 19 pandemic



- To study whether there is any significant difference among Private and Aided college student teachers perspectives towards online learning during covid 19 pandemic

LITERATURE REVIEW:

Mohammad Mahyoob (2020) Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners, COVID-19 has disrupted most of the industries in the world. Education is the only industry that is completely transferred to online mode in most countries around the world. Online learning was the best solution for continuing education during the pandemic, especially in tertiary education. This study aims to determine the challenges and obstacles confronted by English language learners (EFL) in Science and Arts College, Alula, Taibah University, Saudi Arabia, during switching to online learning in the second semester of 2020 due to the COVID-19 pandemic. The contribution of this study is to evaluate the learners' new experiences in online education and to assess the feasibility of the virtual methods of learning. This is achieved by analyzing 184 learners' responses to the survey-based questionnaire. A descriptive statistical method was used to test the validation of the study. It is found that the main problems that influence and impact online EFL learning during COVID-19 are related to technical, academic, and communication challenges. The study results show that most EFL learners are not satisfied with continuing online learning, as they could not fulfill the expected progress in language learning performance.

Muthuprasad. T, S.Aiswarya , K.S.Aditya , Girish K.Jha (2021) Students' perception and preference for online education in India during COVID -19 pandemic, Educational institutes across the world have closed due to the COVID-19 pandemic jeopardizing the academic calendars. Most educational institutes have shifted to online learning platforms to keep the academic activities going. However, the questions about the preparedness, designing and effectiveness of e-learning is still not clearly understood, particularly for a developing country like India, where the technical constraints like suitability of devices and bandwidth availability poses a serious challenge. In this study, we focus on understanding Agricultural Student's perception and preference towards the online learning through an online survey of 307 students. We also explored the student's preferences for various attributes of online classes, which will be helpful to design effective online learning environment. The results indicated that majority of the respondents (70%) are ready to opt for online classes to manage the curriculum during this pandemic. Majority of the students preferred to use smart phone for online learning. Using content analysis, we found that students prefer recorded classes with quiz at the end of each class to improve the effectiveness of learning. The students opined that flexibility and convenience of online classes makes it attractive option, whereas broadband connectivity issues in rural areas makes it a challenge for students to make use of online learning initiatives. However, in agricultural education system where many courses are practical oriented, shifting completely to online mode may not be possible and need to device a hybrid mode, the insights from this article can be helpful in designing the curriculum for the new normal.

Manash Pratim Goswami, Jyoti Thanvi, Soubhagya Ranjan Padhi (2021) Impact of Online Learning in India: A Survey of University Students during the COVID-19 Crisis, the unprecedented situation of COVID-19 caused the government of India to instruct educational institutions to switch to an online mode to mitigate the losses for students due to the pandemic. The present study attempts to explore the impact of online learning introduced as a stop-gap arrangement during the pandemic in India. A survey was conducted (N=289), via Facebook and WhatsApp, June 1-15, 2020 to understand the accessibility and effectiveness of online learning and constraints that students of higher education across the country faced during the peak times of the pandemic. The analysis and interpretation of the data revealed that the students acclimatized in a short span of time to online learning, with only 33.21% saying they were not satisfied with the online learning mode. However, the sudden shift to online education has presented more challenges for the socially and economically marginalized groups, including Scheduled Caste (SC), Scheduled Tribes (ST), Other Backward Class (OBC), females, and



students in rural areas, due to factors like the price of high-speed Internet (78.20% identified it as a barrier to online learning), insufficient infrastructure (23.52% needed to share their device frequently or very frequently), poor Internet connectivity, etc. According to 76.47% of respondents, the future of learning will be in “blended mode.” A total of 88.92% of the respondents suggested that the government should provide high-quality video conferencing facilities free to students to mitigate the division created by online education in an already divided society

Yung-Hsiang Hu (2021) Effects of the COVID-19 pandemic on the online learning behaviors of university students in Taiwan, Prior to the corona virus disease 2019 (COVID-19) pandemic, due to the rarity of pandemics in recent centuries, suitable conditions did not exist in educational institutions for the implementation of asynchronous distance teaching. No empirical studies have been conducted on whether the considerable environmental changes caused by COVID-19 have affected students’ online learning behaviors. Therefore, this study collected information on students’ online learning behaviors during the COVID-19 pandemic and other periods to examine whether pandemic-caused environmental changes affected students’ online learning behaviors. This study focuses on the 60-day transmission after the beginning of the second semester of the 2019 academic year. The data source was from a comparative assessment between the pandemic group (331 students) and the control group (101 students). The Spearman Rank Correlation Test and the Wilcoxon signed-rank test were used as our statistical methods. This paper presents preliminary results on how COVID-19 has affected students’ online learning behaviors and proposes asynchronous online learning as a method for maintaining university students’ learning during the COVID-19 pandemic.

RESEARCH METHODOLOGY:

Population of the study was student teachers belonging to Bed colleges of Bangalore urban district. The sample comprised of 120 student teachers belonging to Private and Aided Bed colleges were selected through stratified random sampling techniques using survey method during the academic year 2021-22. Tools used for the data collection was Online learning during pandemic scale constructed and developed by the researcher. t- test was the statistical technique employed to analyse the data.

ANALYSIS & INTERPRETATION:

H1: There is no significant difference among male and female student teachers perspectives towards online learning during covid 19 pandemic

Variable	Group	N	Mean	S.D	t-Value	Level of Significance
Gender	Male	27	51.4444	5.25747	1.674	*NS
	Female	93	48.9032	7.35300		

*NS= Not significant

Table no 1 shows that the obtained t value 1.674 is lesser than the tabled t value of 1.960 for degrees of freedom 118 at 0.05 level of significance. Hence the null hypothesis is accepted and it is concluded that there is no significant difference among male and female student teachers perspectives towards online learning during covid 19 pandemic.

H2: There is no significant difference among married and unmarried student teachers perspectives towards online learning during covid 19 pandemic

Variable	Group	N	Mean	S.D	t-Value	Level of Significance
Marital status	Married	21	49.9048	5.282155	0.309	*NS
	Unmarried	99	49.3838	7.24598		

*NS= Not significant



Table no 2 shows that the obtained t value 0.309 is lesser than the tabled t value of 1.960 for degrees of freedom 118 at 0.05 level of significance. Hence the null hypothesis is accepted and it is concluded that there is no significant difference among married and unmarried student teachers perspectives towards online learning during covid 19 pandemic

H3: There is no significant difference among bachelors and master degree student teachers perspectives towards online learning during covid 19 pandemic

Variable	Group	N	Mean	S.D	t-Value	Level of Significance
Educational Qualification	Bachelors	40	49.1000	5.72802	0.414	*NS
	Masters	80	49.6625	7.58065		

*NS= Not significant

Table no 3 shows that the obtained t value 0.414 is lesser than the tabled t value of 1.960 for degrees of freedom 118 at 0.05 level of significance. Hence the null hypothesis is accepted and it is concluded that there is no significant difference among bachelors and master degree student teachers perspectives towards online learning during covid 19 pandemic

H4: There is no significant difference among Private and Aided college student teachers perspectives towards online learning during covid 19 pandemic

Variable	Group	N	Mean	S.D	t-Value	Level of Significance
Type of Institution	Private	90	51.8667	8.24928	2.196	*0.01
	Aided	30	48.6778	6.38261		

*= significant at 0.01 level

Table no 4 shows that the obtained t value 2.196 is greater than the tabled t value of 1.960 for degrees of freedom 118 at 0.05 level of significance. Hence the null hypothesis is rejected and alternative hypothesis is accepted and it is concluded that there is a significant difference among Private and Aided college student teachers perspectives towards online learning during covid 19 pandemic. Comparing the mean value of student teachers belonging to Private Bed colleges (51.8667) is more than Aided bed colleges (48.6778).

RESULTS:

- Male and Female student teachers perspectives don't differ significantly towards online learning during covid 19 Pandemic.
- Married and unmarried student teachers perspectives don't differ significantly towards online learning during covid 19 pandemic
- Student teachers having Bachelors and master degree don't differ significantly towards online learning during covid 19 pandemic
- Student teachers belonging to Private and Aided Bed colleges differ significantly. The mean scores Private Bed colleges (51.8667) is more than Aided bed colleges (48.6778) differ in their perspectives towards online learning during covid 19 Pandemic. It can be concluded that student teachers belonging to Private Bed colleges should have provided with proper training and workshops related to online mode of learning during covid 19 pandemic compared to student teachers belonging to aided Bed colleges.



DISCUSSIONS:

Although these findings provided valuable insights about the issues student teachers experienced during online learning, information about their learning conditions and expectations were not stated. Such information could assist educational authorises and institutions to better comprehend student teachers' difficulties and potentially improve their online learning experience. Online learning mode during pandemic can lead to a sense of isolation, which can be detrimental to student success; therefore integration of social interaction for online learning is essential. One other important aspect that institutions need to keep top of mind during this shift to new technologies and course delivery methods is accessibility and the inclusion of all students. If students need to access their course materials, lectures, and learning activities online, they need to have access to proper hardware and reliable networks. Institutions must not let differences in disability or socioeconomic status hinder access to learning and other institutional resources. All of the strategic plans for the academic year must be designed to ensure that *all* students have access to their courses and other necessary services and that student experiences are equivalent, no matter where the students are located. Moreover, these considerations also apply to faculty, some of whom have disabilities and many of whom are being asked to teach and otherwise interact with students from home.

CONCLUSIONS:

Technology is becoming an even larger part of the student and faculty experience as institutions prepare for fall and the new normal. However, a big challenge of the new normal is the need to be prepared for the constantly shifting scenarios brought on by the continued pandemic. In response, institutions need to plan how their use of technology can shift alongside those scenarios. Additionally, they need to update and improve faculty training and dedicate resources to instructional design as we move forward to improve our online and hybrid learning. Emerging evidence on student teachers online learning experience during the COVID-19 pandemic has identified several major concerns like issues with internet connection, problems with technological gadgets, lack of trainings related to online learning apps, limited collaborative learning opportunities, reduced learning motivation and increased learning burdens. Underdeveloped countries are not adequately equipped to teach online efficiently. There may be numerous pros and cons of online learning with respect to the students of different classes, castes, genders, and economic conditions. Despite all odds, the government and stakeholders of educational institutions have been working hard to strengthen the knowledge of the individual, larger community, and society for any normal and future crisis situations.

REFERENCES:

1. Education times (2020) Impact of closure of academic institutions, <https://www.educationtimes.com>
2. Gupta S. & Garg S. (2020) COVID-19 and Higher Education: Some Issues, *University News Journal*, V 58, I (23), pp. 1-3. New Delhi
3. Mohammad Mahyob (2020) Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners, *Arab World English Journal (AWEJ)* Volume 11. Number4 Pp. 351-362, DOI: <https://dx.doi.org/10.24093/awej/vol11no4.23>
4. Manash Pratim Goswami, Jyoti Thanvi, Soubhagya Ranjan Padhi (2021) Impact of Online Learning in India: A Survey of University Students during the COVID-19 Crisis, *AJPOR Journal*, Vol. 9, Issue 4, KST, <https://doi.org/10.15206/ajpor.2021.9.4.331>
5. Muthuprasad, S.Aiswarya, K.S.Aditya, Girish K.Jha (2021) Students' perception and preference for online education in India during COVID -19 pandemic, *Social Sciences & Humanities Open*, Volume 3, Issue 1, <https://doi.org/10.1016/j.ssaho.2020.100101>
6. World health organisation (2020) closure of educational institutions, <https://www.who.int/pandemic>
7. Yung-Hsiang Hu (2021) Effects of the COVID-19 pandemic on the online learning behaviors of university students in Taiwan, *Education Information Technology*, 27(1): 469–491. doi: 10.1007/s10639-021-10677-y



Mongolian-Chinese border treaties of the 20th century

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Abstract: *This article examines the origins and development of the southern borders of Mongolia and historical changes, in the second half of the last century, the “Border Agreement between the People's Republic of Mongolia and the People's Republic of China”, one of the major events in the history of Mongolia, was successfully concluded, when and how the process of demarcating the southern border, the historical merits of its participants, the difficulties of demarcating the border, and how to ensure the security of the southern border, the demarcation of the border on the ground under the agreement will have a significant impact not only on the security of the two countries, but also on regional relations, as well as their contribution to the economic and social development of the country.*

Key Words: *Mongolian-Chinese border agreement, southern border, demarcation.*

THEORETICAL PART:

A country's border is a line that demarcates the boundaries of a country's territory from the territory of a neighboring country. In addition, the formation of a country's borders is a gradual process of political and military relations between neighboring countries over a long period of history and is an important criterion for the independence of the country, which is enshrined in the fundamental national interests of the country, guaranteed by neighboring subjects and international agreements within the framework of modern international legal norms.

INTRODUCTION AND METHODOLOGY:

The historical tradition of the southern border

For Mongolians, who have long established their statehood in the highlands of Central Asia, the concept of borders and traditional knowledge have many characteristics that are very different from those of other countries. These features and distinctions are related to social forms, including nomadic herding, which is the main occupation, as well as natural and geographical areas suitable for livestock breeding (Arvai, 2015). The first nomadic state established in Mongolia, the territory of the Hunnu, covered most of Central Asia, As the Hunnu grew stronger, the Han realized that they could not defeat them by force of arms, and sought a peaceful coexistence by concluding a peace treaty. As a result, the Han Chinese were forced to recognize the Hunnu as the most powerful state in Central Asia, and in 198 BCE, the Chinese signed the "HeQin" or peace treaty (Eldev, 2020),. In a letter to Laoshan Shanyu of the Hunnu in 162 BCE, King Xiao-Wendi of the Han Dynasty "The country of the archers after the Great Wall will follow the Shanyu order, and the country of the archers and hats of the Great Wall will be subject to me... The Han Dynasty and the Hunnu are powerful neighbors side by side. ” is the first part of a treaty signed in 198 BCE and the general idea and purpose of the agreement can be considered as a border agreement. Genghis Khan united many scattered tribes in 1206 to form the Great Mongol Empire it stretched from northern nature to the Great Wall of Tumen in the south, from the Hyangan Mountains in the east to the Altai Mountains in the west (Ganbaatar, 2011),. The territory of the Great Mongol Empire and its outer borders remained intact until the 17th century.



However, the political fragmentation that began in the 16th century weakened Mongolia's unity. The Mongols were divided into three relatively independent groups: Southern Mongolia, Khalkha Mongolia, and Western Mongolia, or Oirat. The natural and geographical effects of this division were significant. Southern and Khalkha Mongols were separated by the Great Gobi, and the Khalkha and Oirat Mongol boundaries ran along lakes, rivers, and streams between the Altai and Khangai mountains. In 1632, King Ligden was defeated by the Manchus and his allies on his way to Khukh Lake, where he died at Yellow Steppe. In 1636, Southern Mongolia came under Manchu rule after the suppression of Ligden Khan's struggle against the Manchus. With the conquest of Southern Mongolia by the Manchus, the then Mongolian border of the Great Wall was postponed to the southern edge of Khalkha Mongolia. As a result, the border line between Khalkha and Southern Mongolia became the border between Khalkha Mongol and Manchu in 1636.

In 1691, Khalkha Mongols came under Manchu rule, and the Khalkha-Southern Mongolian border became part of the Manchu Empire. Mongolia's borders also narrowed considerably to the west, forming the borders of the DZungarian Empire. Since the Manchu and Qing dynasties came into power in 1691, Mongolia's current borders have a history of being "pastureland borders." For example, the Barga of Manchuria separated from Khalkha Mongolia, and in 1737-1838, they divided their pastures and erected oboo signs and installed guards (Tseden-Ish, 1997). Between Khalkha and Inner Mongolia provinces In 1695-1850 there was a constantly updated schedule of pastureland мөн By the treaty of Tsarist Russia, China, and Mongolia, the administrative boundaries of the Khovd region were changed and annexed to China. However, the persistent struggle for independence of the Mongolian people continued with the People's Revolution. Even from the years of the revolution, some of the frontiers have been protected, and our present southern frontier has been formed.

RESULTS & DISCUSSION:

Although Mongolia's local counties have "household guards" who protect their territory and borders. They, like their nomadic herders, grazed their pastures in winter and summer, so there was no opportunity for them to keep their borders as they do now. For example, during the four seasons of the year, the Khalkh Barga border in the eastern part of the plateau and the Soyolz Uul border household guards are located close to the border. The southern border of Mongolia remained unoccupied until 1938, when guards from the Galbyn Gobi, the northern part of the Great Borzong Gobi, and the eastern edge of the Tsenkher Nomin Gobi, 150-250 km from the border, settled in the southern steppe and Gobi desert areas. Each has been left unattended and unguarded. Uprisings and movements against Manchu rule took place in China and Mongolia in the early twentieth century. Representatives of the Khalkha princes, with the support of Tsarist Russia, overthrew the Manchu government, declared independence on November 29, 1911, enthroned the Jebtsundamba, and re-established the state as the Bogd Khanate (Troops, 1972). In October 1913, Russia and China signed a declaration in Beijing agreeing to take over the Altai Territory from China and the Tagna Tuva Territory from Tsarist Russia. In 1913, the Chinese government pushed a large army into Mongolia to forcibly annex the Altai Territory, occupying some areas, sparking an armed conflict between Mongolia and China. In December 1913, the Russian side was represented by MN Kuzminsky, the Russian consul in the Yellow Temple, and the Chinese side, on behalf of the Torguud van Balt, signed an agreement to cease hostilities and establish a demilitarized zone through the Altai Mountains to Tsagaan Tunge. By the 1915 Treaty of the Three Kingdoms Tsarist Russia and China forcibly hand over the demilitarized zone line in the Altai Mountains to Mongolia. In 1914, Tuva was annexed by Tsarist Russia. Thus, the territory of Mongolia along the southern slopes of the Altai Mountains, Khar Erchis, Chingil, Bulgan, Urungo rivers, and the basin of Urungur Lake came under Chinese control. The borders of the Kingdom of Mongolia, established by the 1915 Treaty of Khiagt between Mongolia, Russia and China, form the basis of the external borders of present-day Mongolia. The Mongols lost their independence under the 1915 Khiag Treaty and were occupied by the Chinese military in 1919 and the victory of the national movement in the 1921 revolution ushered in a new era in twentieth-century Mongolian history, marked by profound socio-economic changes. In early 1921, the People's Revolution, led by courageous Mongolian fighters against foreign oppression, won a historic opportunity to restore the country's independence. The historical merit of the national democratic revolution is that it has re-established an independent and sovereign Mongolia on the world



stage and has preserved the country's borders, territories and traditional customs and culture. The Yalta Agreement is one of the most important agreements for the fate of Mongolia in the 20th century. After the People's Revolution of 1921, the relentless efforts and struggles of the leaders of the then People's Republic of Mongolia provided an opportunity to secure Mongolia's independence through international legal instruments in what is now Yalta, Crimea, Russia. This was also due to Mongolia's commitment to the Soviet Union and its allies during World War II (Batbayar, 2021),.

The Conference of the Heads of State of the Allies was held in Yalta on February 4-11, 1945, with eight sub-meetings. The conference discussed a wide range of issues, including the establishment of the United Nations, the European Declaration of Liberation, the Allied Powers in Germany, the borders of European countries, war payments and the trial of war criminals. The 14-item protocol was signed by the foreign ministers. The Yalta Agreement is of special historical significance to Mongolia and was signed by J. Stalin, F. Roosevelt and Winston S. Churchill. Two or three months after defeating Germany and ending the war in Europe, the Soviet Union will side with the Allies in the war against Japan under the following conditions. One of these provisions is to maintain the status quo of Outer Mongolia (MPR). At the Soviet-Chinese talks in Moscow after the Yalta Agreement, Stalin defined the "status quo of Outer Mongolia" as "the independence of the People's Republic of Mongolia". Following this position, the parties reached an agreement and on August 14, 1945, the Soviet Union and China signed the Treaty of Friendship and Alliance. The agreement was accompanied by a note stating that "China will recognize the independence of the People's Republic of Mongolia". Pursuant to the above provisions of the Treaty, the Chinese side began a referendum on the population of the People's Republic of Mongolia, and on October 20, 1945, a referendum was held for independence. The people of Mongolia voted 100 percent for their country's independence. Based on the proposal, on January 6, 1946, China Government officially recognized Mongolia's independence. The 35-year struggle of our ancestors, which began in 1911, has come to fruition and Mongolia has become a de jure or officially recognized sovereign state. Our Mongolians have a history of gaining international recognition and recognition of their independence. This laid a solid foundation for the international recognition of Mongolia's independence and territorial integrity. After World War II, the Civil War in China lasted for almost four years, ending in 1949, with the victory of the Communist Red Army led by the CCP, and on October 1, 1949, the People's Republic of China was officially proclaimed. The People's Republic of Mongolia was one of the first countries to recognize the new China, and on October 16, 1949, the two countries officially established diplomatic relations.

In a short period of time, the People's Republic of Mongolia and the People's Republic of China successfully developed political and economic relations and cooperation, and the pace of socialist construction was accelerating. At this point, the two governments began to take the initiative to finalize the long-defunct border and bring it into line with international law. On November 21, 1957, for the first time, the Government of the People's Republic of Mongolia officially submitted a note to the Government of the People's Republic of China proposing negotiations to define the Mongolian-Chinese border as the "**current border**". B. Tseden-Ish, Counselor of the Embassy of the People's Republic of Mongolia in the People's Republic of China, took an active part in preparing this note and handing it over to the Government of the People's Republic of China. On March 28, 1958, the Chinese government sent a reply stating that it agreed to negotiate the Sino-Mongolian border, and that the "**current border**" of the People's Republic of Mongolia was the basis for the demarcation of the border. After receiving and studying the note, our People's Republic of Mongolia government drew a map of the "**current border**" that it had owned and protected since the victory of the People's Revolution and sent it to the Chinese government on July 18, 1958, accompanied by a note. The Chinese side accepted the specific proposal on the border line and prepared for the border negotiations beginning in the autumn of 1958, a large number of groups and units were deployed along the border to measure the land, make maps, add new numbers and figures to the border ovals and signs, plant additional trees, and plant stakes. However, in the 1960s, the situation changed dramatically, and new families from the depths of China were relocated, brought closer to the border, and tried to leave traces of their possessions by demolishing, fencing, and replenishing wells in our territory.

In the early 1960s, the Central Committee of the MPRP established a border research expert group consisting of B. Tseden-Ish, M. Batkhuyag, B. Lamjav, and Kh. Sharav to prepare for border



negotiations. The border survey team visited the southern border four times in seven months, covering a total of 25,000 km and бөгөөд On the Chinese side, thousands of families with livestock have entered our abandoned and unprotected areas up to 10 km deep Ikh Khongorj, Baga Khavtag, Baitag Bogd, Gurvan Khuud, Bayan Mod, Kharaat and Bumbat rivers were discovered and repatriated in cooperation with local people. A parallel study of the proposals of the People's Republic of Mongolia and the Government of the People's Republic of China on the state border Nearly one-third of the entire length of Mongolia's "current border" line is affected, a total of 16,767 km² of land in 27 areas, or one hundredth of our territory, was included in the border negotiations as disputed land. Our government has instructed the Border Research Expert Group to develop a plan for border negotiations, a line of action, and steps to bring the two sides closer together Mongolia side have prepared a proposal to bring the issue of 554 km² of land in three parts, including Soyolz Uul, to the border negotiations for a total of 30 parts of 17,321 km². The meeting of the border representatives of the two countries was opened by the Deputy Ministers on October 13, 1962 in Ulaanbaatar. The first meeting on border issues began with B. Tseden-Ish, Member of the Mongolian Delegation in charge of Territorial Affairs, explaining in detail the Mongolian delegation's position on the 30 disputed areas on a 15 m long map. In response to our proposal, the Chinese delegation approved 16 of the 30 sites under discussion, made minor repairs to 5 sites, and maintained its proposals for 9 sites. The heads of the two sides of the border commission discussed the above-mentioned territorial issues for half a month and finally agreed.

On November 17, 1962, the heads of delegations signed the first protocol defining the border negotiations between Mongolia and China. The Mongolian-Chinese border agreement was signed on December 26, 1962 in Beijing by Yu. Tsendenbal, Chairman of the Council of Ministers of the People's Republic of Mongolia and Zhou Enlai, Chairman of the State Council of the People's Republic of China and ratification of the treaty was exchanged on March 25, 1963 in Ulaanbaatar (Enkhjargal, 2019),. The two countries have set up 17 joint border units to carry out field work to establish border lines and ovoos markers in the western mountains, southern deserts and eastern steppes along the state border, within three years, it is planned to erect 1,292 pillars on the border between the two countries. The composition of the commission to demarcate the state border between the People's Republic of Mongolia and the People's Republic of China was appointed by the 5th resolution of the Central Committee of the MPRP on April 1, 1963. According to the border agreement between the People's Republic of Mongolia and the People's Republic of China, the demarcation of the border line was completed in 1963-1964.

The work was completed in one year and 639 units (603 single, 29 numbered, 7 identical, and 547 cement columns, 106 stone ovoos, and 653 columns) were erected. A 105-page map of China with a scale of 1: 100,000, covering 5 km each on both sides of the border, has been published about China (Enkhjargal, 2019),. Initially, it was difficult to comply with the provisions of the border agreement and determine the actual boundary line. First of all, there were many difficulties, such as the inexperience of the people on both sides, but due to the efforts of the parties, the work was completed on time. At the end of the work on demarcating the state border between the two countries, the definition of the border line and its appendix were included in the map (M1: 100000), documents such as boundary markers and geodetic coordinates were developed.

In accordance with the border agreement of December 26, 1962, the demarcation of the border line was successfully carried out on the spot, The demarcation protocol was signed by D. Bataa, Deputy Chairman of the Mongolian Commission, and Lu Qing, Deputy Chairman of the Chinese Commission, in Beijing on June 30, 1964 (Shi,1993),. Later, the agreement was registered with the United Nations on October 9, 1975, and our southern border was internationally confirmed. Thus, the Mongolian-Chinese border has changed over the centuries, Registered with the United Nations since the middle of the twentieth century, protected by international law, The current border zone, border regime, and border agreements have been established as the border of friendship between Mongolia and China. The "Border Agreement between the People's Republic of China and the People's Republic of China" signed on December 26, 1962 was registered in the UN Secretariat's Register of International Agreements No. 14375 on October 9, 1975. The southern border of the country is internationally secured (Arvai, 2010) The Government of Mongolia and the Government of the People's Republic of China conducted a second joint border inspection between 2001 and 2004, A geodetic network consisting of 120 points was established and topographic maps were drawn on a scale of 1: 50,000 on land and at a scale of 1:



10,000 on the surface of water. According to the inspection, the total length of the border line between Mongolia and China is 4709 km. In terms of geographical coordinates and altitude, it has the ITRF coordinate system and the Baltic Sea altitude system(General, 2009),.

CONCLUSION:

The peaceful conclusion of the Mongolian-Chinese border agreement reaffirms that the two countries have no unresolved border issues, Thus, the Agreement on Friendly Relations and Cooperation between Mongolia and the People's Republic of China was renewed in 1994, In 2003, the two sides established good-neighborly, trusting and partnership relations, in 2011, Mongolia-China strategic partnership, In order to reach the level of a Comprehensive Strategic Partnership in 2014, the historic Border Agreement of 1962, the relevant documents and the results of the joint border inspection played a decisive role.

REFERENCES:

1. Sh. Arvai, (2015), Features of Mongolia's border policy and strategy, *Turiin medeeler*, 12(9)
2. G. Eldev-ochir, (2020), Letter from the Western Khanate, *Admon Publishing house* , 42(8)
3. Ya.Ganbaatar, (2011), Hunnu's history, culture, *Munkhiin useg Publishing*, 19(7)
4. B. Tseden-Ish, (1997), History of the formation of the borders of Mongolia, *Soyombo Publishing house*, 20(9-10)
5. Historical history of the Border Troops of the People's Republic of Mongolia (1972), *State printing company*, 30(3-4)
6. Ts. Batbayar, (2021), Foreign relations of Mongolia (1900-1925), *Bembi san publishing* ,78(6)
7. Ts. Enkhjargal, (2012), The legendary warrior of the century, *Soyombo Printing*, 56(23)
8. Ts. Enkhjargal, (2019), Dictionary of state borders , *Admon publishing house*, 64(45)
9. Shi. Guan Yi (1993), Sino-Soviet Sino-Mongolian Border Memorabilia, *Hohhot state printing* ,134(18)
10. Sh.Arvai(2010)
<https://docs.google.com/presentation/d/1fJVFcgS4Veprv4Fa4urlaIMsqhM1aY2k-Pssgy1aG8/htmlpresent>
11. The General Authority for Border Protection of Mongolia (2009)
<http://bpo.gov.mn/page/legal?lt=3>



A STUDY ON THE LIGHT SENSITIVE AND THERMOSENSITIVE NEURONS

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Abstract: In this study Hindmarsh–Rose neuron model (H-R) and Fitzhugh-Nagumo (FHN) which exhibit several fire patterns of the neuron are used due to their programmable and reconfigurable features. Models serve as tools for finding the membrane potential and its related parameters in neurons coupled with various electronic components. The simulations are attempted in order to obtain thermo sensitive and photosensitive neuron which are influenced by the electromagnetic radiation due to the presence of memristor.

Key Words: Neuron models, Thermistor, Phototube, Membrane potential.

INTRODUCTION:

In 1992 and 1994 Miller discusses a variety of neuroscientific models [1-2]. In this paper, we focus on electronic neuron models that have been built to simulate the electric behaviour of neurons. Malmivuo (1973) [3] and Reiss et al. (1964) [4] provide a more extensive analysis of electronic neuron models built using discrete electronic components. It's worth noting that using digital computers to simulate electric circuits is a versatile technique to explore the behaviour of electronic models. Neurons and other excitable cells are examples of nonlinear dynamical systems because whose behaviours are highly complex and nonlinearity is responsible for their wide range of behaviours. We bring back dynamics to computers using dynamics-based computing [5-8].

ELECTRONIC AND COMPUTATIONAL MODELLING OF NEURONS:

The nervous system is made up of several different functional units that are responsible for encoding information and processing signals. Neurons need to be sensitive to a variety of stimuli and able to respond in an appropriate and timely manner in order for them to perform their role. In generic neuron models [9], the term "external forcing" refers to a variety of factors, such as physical current forcing, acoustical signals, audio signals, electromagnetic radiation, etc. Nonlinear oscillators that mimic the dynamic firing patterns of biological neurons can be activated using periodic pressures and excitation settings. This is accomplished precisely through the selection of excitation parameters. Researchers have carried out a number of illuminating investigations to study transitions between nonlinear oscillator modes, a speedy and painstaking investigation into the effects of time delay and the consequences of frequency excitation [9]. Therefore, it is possible to tame the majority of dynamical systems by either applying periodic stimulation or altering the parameters of the excitation. In addition, a wide variety of nonlinear electric circuits can be constructed using the available components [10] employing these hypothetical oscillators resembling neurons. In point of fact, this physical effect ends up being quite significant when it comes to the construction of neuron models. This is due to the fact that a change in the concentration of ions inside and outside of the cell induces an electromagnetic field. One example of this would be the process of supplying the channel current that is responsible for generating action potential firing patterns to a memristive coupled model. Because of this, magnetic



flux and memristive synapses model of a neuron [9] can be analysed and by estimating the induction current across a cell membrane [10] the impact of electromagnetic induction can be evaluated.

BIOLOGICAL NEURON MODELS:

Building dynamical models to study the neural basis of behaviour is one of the important issues in computational neuroscience. They are indeed a virtual laboratory to investigate different regimes in the electrical activities of a single neuron or a network of neurons. Some researchers have claimed that the transition of the ions through the membrane may induce an electrical field [31]. Specialized neurons transform environmental stimuli into neural code. This encoded information travels along specific pathways to the brain or central nervous system and combined with other information. The action potentials cause changes in electrical potential across cell membrane. It lasts for about one millisecond. Spiking neurons are the major signalling unit of the nervous system. Many artificial neuron models were proposed to model neurons in the nervous system to express the ion flows through the surface of membrane, to examine exactly how brain works and simulate the activities of the brain. In 1943, the first neuron model [11] was proposed by McCulloch and Pitts. Later the most successful and widely used neuron model, the Hodgkin Huxley model (H-H) is developed (1952) [12]. The ionic mechanism and electrical current on membrane surface were discussed in this model. After that, the FitzHugh–Nagumo neuron model (FHN), the simplified type of the Hodgkin– Huxley neuron model, was proposed. In 1972, Nagumo and Sato [13] defined a neuron model and the weakly coupled Wilson–Cowan neuron model was defined in the same year. The Moris–Lecar neuron model was proposed in 1981 is a conductance based neuron model [14]. Later Hindmarsh–Rose (H-R) and Izhikevich [15] neuron models were also proposed. The studies based on the behaviour of the collective neurons rather than that of an individual neuron were proposed later. Since the biological information process and production of regular rhythmic activity are always related with the cooperative behaviour of neurons [16]. It is difficult to identify the interactions of the collective neurons in the living body except for some applications. Several alternative system approaches such as numerical modelling [11] and hardware implementations, which help to observe the fire patterns or synchronizations of neurons, have become crucial [17]. Hardware realizations are able to emulate the behaviour of an individual biological neuron or coupled neurons with real time adaptability. Furthermore, hardware realizations of neuron models can be used in practical applications such as bio-inspired robotic systems and CPGs (Central Pattern Generators) [17]. The software examinations of the biological neuron models can simulate the behaviour of the neurons [18].

FITZHUGH-NAGUMO NEURON MODEL (FHN):

The Hodgkin–Huxley (H-H) model [19] of the nerve impulse made up of four coupled nonlinear differential equations. Because of the complexity of the equations, it is difficult to use them in simulations of interactions in small neural networks. Hodgkin-Huxley model can mimic all the behaviours of neuron spiking. But due to its high dimensionality it is difficult to achieve analytical solutions. Only numerical solution can be found for each specific conditions. Thus second-order differential equation of the model can predict the main properties such as the frequency–current relationship. Fitzhugh [20] introduced a second-order model of the nerve impulse. It helps for the reduction of action potential duration. The dynamics of the slow sodium and potassium ions in Hodgkin - Huxley Model (H-H) model i.e., the gating variables: n and h are replaced by an effective current $w(t)$ in Fitzhugh – Nagumo (FHN) model [22]. The fast dynamics of sodium ion across the neurons in H-H model is replaced by $v(t)$ [23]. The FHN model is mathematically expressed as,

$$\frac{dv}{dt} = v - \frac{1}{3}v^3 - w + I_{ext} \dots\dots\dots (4.1)$$

$$\frac{dw}{dt} = \varphi(v + a - bw) \dots\dots\dots (4.2)$$

where, v is the rate of change of the neuron membrane potential from its equilibrium due to the fast ion dynamics with time. w is the recovery variable for the neuron membrane potential which deals with slow diffusive ion currents in the neuron. These two variables represent the state of the system at any



instant. The equation for the recovery variable shows that, it depends on the departure of the membrane potential from its equilibrium value v , and it decays at a constant rate ' b '. I_{ext} is the external stimulus or the external current given to the neuron. a, b and φ are constants, where typically $0 < a < 1$, $\varphi > 0$, $b > 0$. Parameters can be chosen as $a = 0.7$, $b = 0.8$, $\varphi = 0.08$. With $\varphi > 0$, the origin in the system is an unstable fixed point surrounded by a globally stable limit cycle. It is the only parameter that can change the behaviour of the neuron around the threshold. Also, decreasing I decreases spike rise and fall times. Finally, the behaviour around and below threshold is influenced by φ . For certain parameter values, the solution demonstrates a slow collection and fast release of the potential. This kind of behaviour is often labelled as 'integrate and fire'. However, in biological systems, a resting phase is required for the neurons after firing. Tonic spiking with FHN can be generated with appropriate parameter values.

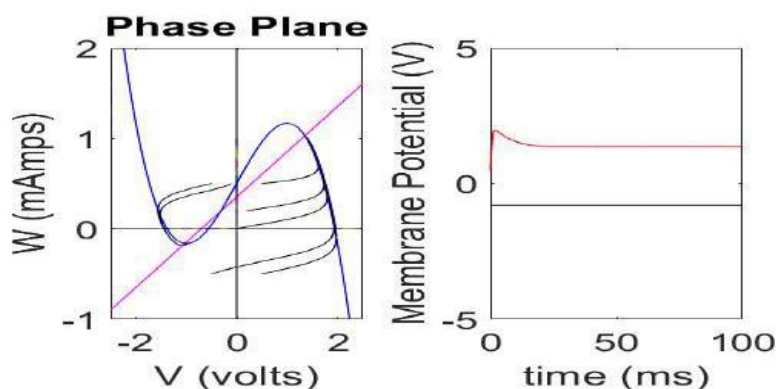


Figure 1: Transient pulse and quiescent state approached by setting $a=0.7, b=0.8, c=0.1, A=0.03, \omega=0.035$, and $\zeta=0.175$ (1) Phase plane curve (2) Membrane potential curve.

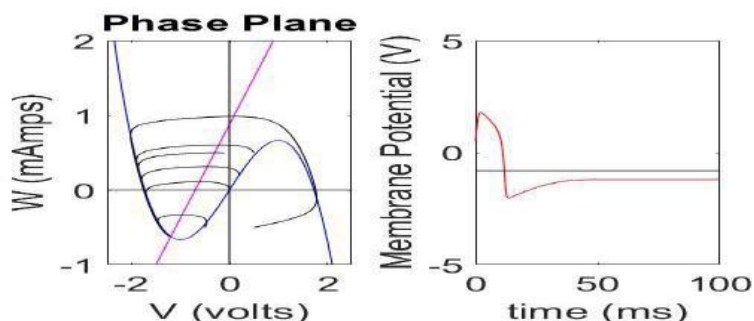


Figure 2: Continuous spiking patterns generated by setting $a=0.7, b=0.8, c=0.1, A=0.8, \omega=0.08$, and $\zeta=0.175$ (a) Phase plane curve (b) Membrane potential curve

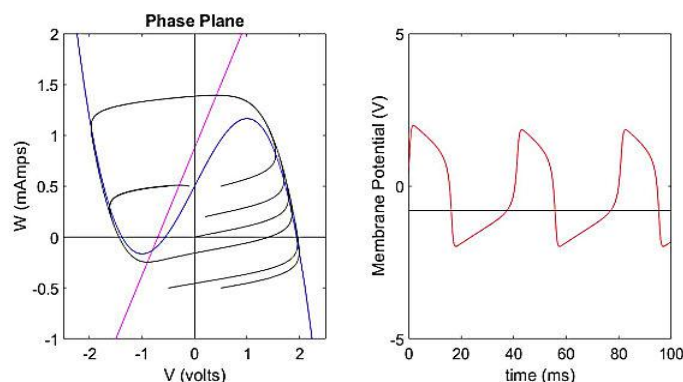


Figure 3 continuous bursting pattern generated by setting $a=0.7, b=0.8, c=0.1, A=0.8, \omega=0.005$, and $\zeta=0.175$ (a) Phase plane curve (b) Membrane potential curve



FHN under electromagnetic field with Memristor:

A new modified version of this model has been proposed considering the effect of the electric field with a new set of parameters [32, 33]. This model (which is a three-dimensional ordinary differential equation) considers the role of the electrical field in neural activities. In fact, the additional variable is characterized for the fluctuation of the electrical field, which covers the effect of both changing the ions' density distribution and the external electric field. The model description is as follows [31]:

$$\dot{x} = x - \frac{x^3}{3} - y + I_{ext} - k\rho(\varphi)x \dots \dots \dots (4.1.1)$$

$$\dot{y} = \varphi(x + a - by) \dots \dots \dots (4.1.2)$$

$$\dot{\varphi} = k_1\varphi + k_2\varphi \dots \dots \dots (4.1.3)$$

where the variables x and y describe the membrane potential and slow current. Here I_{ext} is responsible for the external forcing current. The memductance corresponding to the charge $q(\varphi)$ is given by $\rho(\varphi)$. Relation among induced current, flux and memristor can be understood by Faraday's law of electromagnetic induction [27] as given below.

$$i = \frac{dq(\varphi)}{dt} = \frac{dq(\varphi)}{d\varphi} \frac{d\varphi}{dt} = \rho(\varphi)v = k\rho(\varphi)x_1 \dots \dots \dots (4.1.4)$$

Here k_1x_1 denotes the changes in magnetic flux induced by membrane potential and $k_2\varphi$ represents the leakage of magnetic flux. The interaction between membrane potential and magnetic flux is denoted by the variables, k and k_2 . The effect of electromagnetic induction and corresponding modes of electrical activities with memristor could be examined by finding the influence of the magnetic flux on membrane. Also the term $k\rho(\varphi)x_1$ denotes induced current and it causes the variation in magnetic flux which in turn generates Faradic current. In this section the study is done on a FHN neuron model which is made to interact with quadratic flux controlled memristor. The memductance corresponding to the charge $q(\varphi)$ is given by the derivative of q with respect to the flux [25, 28]. The equation corresponding to memductance after scaling is $\alpha\varphi^2 + \beta\varphi + \gamma$.

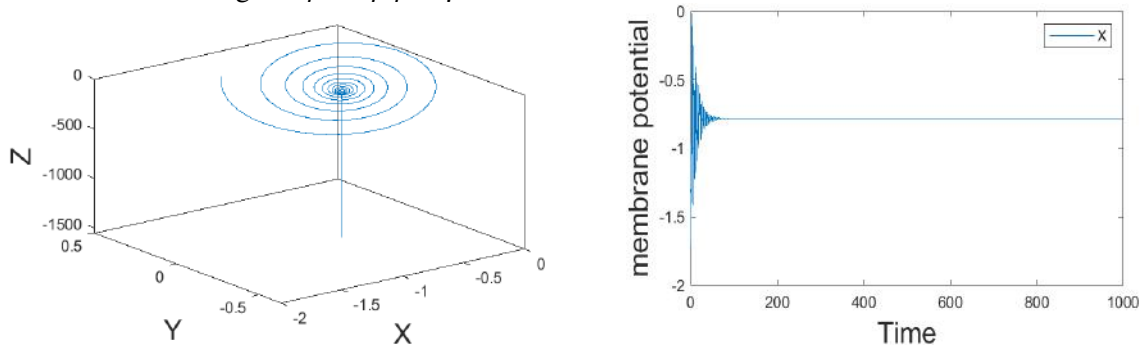


Figure 4: Phase portrait and Time Portrait of FHN neuron with memristor under the influence of electromagnetic induction when $a=2; b=2.5; c=1; d=3; r=0.06; s=2; k=1; k_2=1.5; g=0.9; f=.05; h=0.05; I=3.5; u=0.5; A=0.5; w=1; t=1$

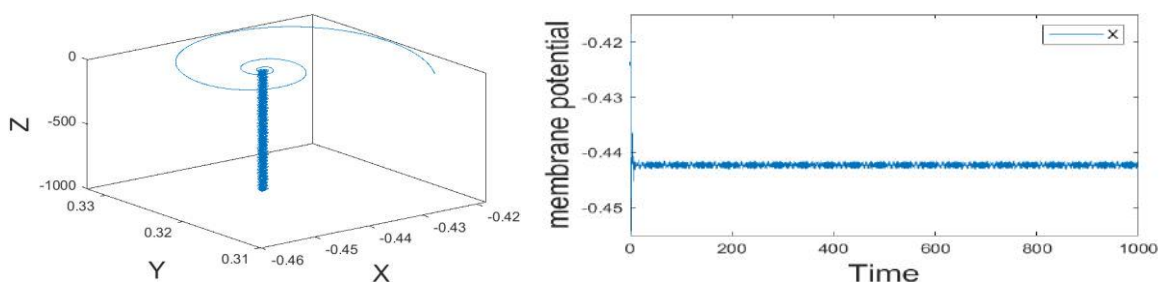


Figure 5: Phase portrait and Time Portrait of FHN neuron with memristor under the influence of electromagnetic induction when $a=1; b=3; c=1; d=5; r=0.06; s=4; k=1; k_2=0.5; g=0.4; f=.02; h=0.5; I=6; u=1; A=1; w=0.04; t=1$

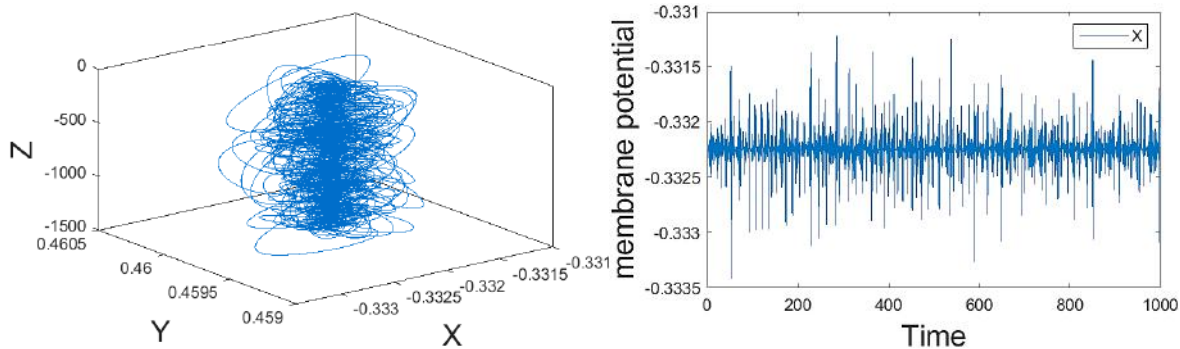


Figure 6: Phase portrait and Time Portrait of FHN neuron with memristor under the influence of electromagnetic induction when $a=1$; $b=3$; $c=1$; $d=5$; $r=0.06$; $s=4$; $k=1$; $k_2=0.5$; $g=0.4$; $f=.02$; $h=0.5$; $I=4$; $u=2$; $A=1$; $w=0.04$; $t=1$

By keeping up the fundamental parameters of the model a, b, c, d constants and by varying the external current I and u that corresponds to the function of the memristive component in the circuit or the dynamical system the evolution of the membrane potential and corresponding phase portrait are depicted above. It shows strange and chaotic behaviour for the higher values of I and u .

FHN under electromagnetic induction with Thermistor:

The stability and chaotic behaviour of a system are much dependent on the intrinsic nonlinearity and parameters region for deterministic nonlinear systems which are often represented by ordinary differential equations. When nonlinear circuits are mapped into dimensional dynamical systems for further nonlinear analysis, the physical parameters of electric components, e.g. capacitor, inductor, resistance, memristor, can also be replaced by dynamical parameters for possible adjustment [34]. Here a thermistor is incorporated into the circuit and the temperature effect is considered by investigating parameters setting in thermistor.

$$\frac{dx}{dt} = x - \frac{1}{3}x^3 - y + I_{ext} + A\cos\omega't\tau \dots\dots\dots (4.2.1)$$

$$\frac{dy}{dt} = \varphi(x + a - b(T')y) \dots\dots\dots (4.2.2)$$

Where $A\cos\omega't\tau$ is the periodical term and $b(T')$ is responsible for the effect of temperature.

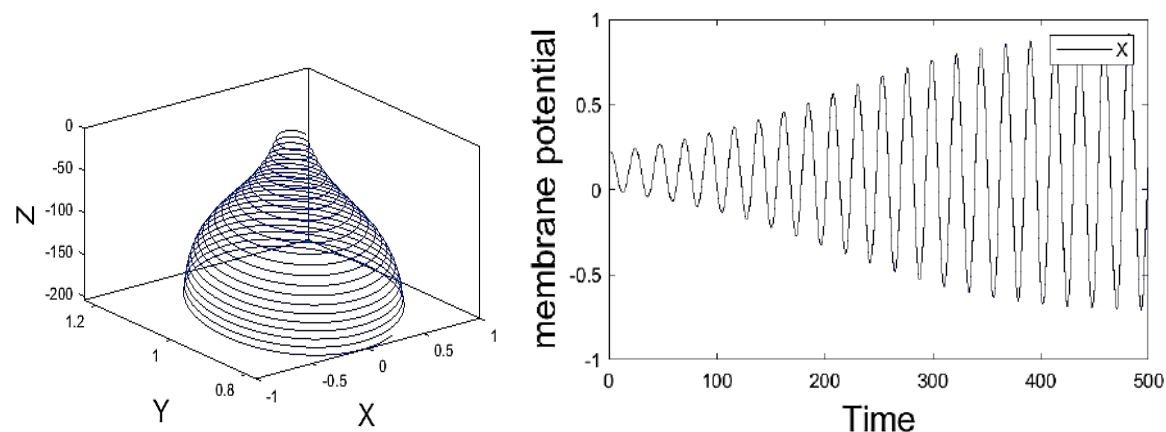


Figure 7: Phase portrait and Time Portrait of FHN neuron with thermistor under the influence of electromagnetic induction when $a=2$; $b=2.5$; $c=1$; $d=3$; $r=0.06$; $s=2$; $k=1$; $k_2=1.5$; $g=0.9$; $f=.05$; $h=0.05$; $I=3.5$; $u=0.5$; $A=0.5$; $w=1$; $b(T) = 0.8$

Fig 4.is indeed a strange and distinct plot of FHN neuron due to the involvement of thermistor that enables the temperature dependent function of this neuron, and its dynamics is thus dependent on the initial values of the fundamental parameters. The membrane potential shows distinct switch from



negative value to positive value as well as distinct periodical oscillation. The firing pattern tends to be stable with appropriate initial conditions.

Coupled FHN under electromagnetic induction with Phototube:

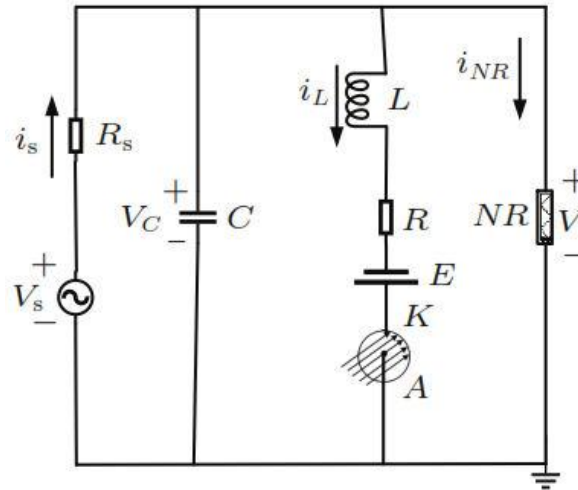


Figure 8: Schematic diagram of light-sensitive neural circuit [35]

Here we attempt a coupling of two identical photo sensitive neural circuits as per the schematic diagram in fig 7. The components are rearranged accordingly as in the previous scientific paper [35]. The two sets of V_s, E, C, L, R, R_s and NR represent external signal source, constant voltage source, capacitor, induction coil, linear resistors and nonlinear resistor respectively corresponding to circuit 1 and circuit 2 coupled via R_K . Photo electrons are released from the cathode exposed to external electromagnetic radiation. When a phototube is connected to the induction coil in the branch circuit as shown in fig 7. , the induction current and induced electromotive force (IEF) will be controlled by the photocurrent, and then the output voltage from the capacitor is regulated for presenting different firing modes. The equivalent equations for Fig 4.3.1 are described by

$$C \frac{dV_c}{dt} = \frac{V_s - V}{R_s} - i_L - i_{NR} \dots\dots\dots (4.3.1)$$

$$L \frac{di_L}{dt} = V + E - Ri_L - V_g \dots\dots\dots (4.3.2)$$

The dimensionless neuron can be expressed as

$$\begin{aligned} \dot{x} &= \frac{dx}{d\tau} = x(1 - \xi) - \frac{1}{3}x^3 - y + \xi u_s \\ \dot{y} &= \frac{dy}{d\tau} = c(x - by + a - u_g) \dots\dots\dots (4.3.3) \end{aligned}$$

By applying the scale transformation for the variables and parameters in the circuits, equation (4.3.3) can be modified for two identical photosensitive neurons under electrical synapse coupling with coupling intensity, $r = \rho/R_k$ as follows where x_1, y_1 corresponds to first neuron and x_2, y_2 corresponds to second neuron.

$$\begin{aligned} \dot{x}_1 &= x_1(1 - \xi) - \frac{1}{3}x_1^3 - y_1 + \xi u_{s1} + r(x_2 - x_1) \\ \dot{y}_1 &= c(x_1 - by_1 + a - u_{g1}) \dots\dots\dots (4.3.4) \end{aligned}$$

$$\begin{aligned} \dot{x}_2 &= x_2(1 - \xi) - \frac{1}{3}x_2^3 - y_2 + \xi u_{s2} + r(x_2 - x_1) \\ \dot{y}_2 &= c(x_2 - by_2 + a - u_{g2}) \dots\dots\dots (4.3.5) \end{aligned}$$

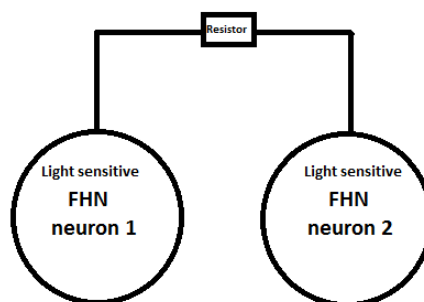


Figure 9: Schematic diagram of two identical coupled light sensitive FHN neurons

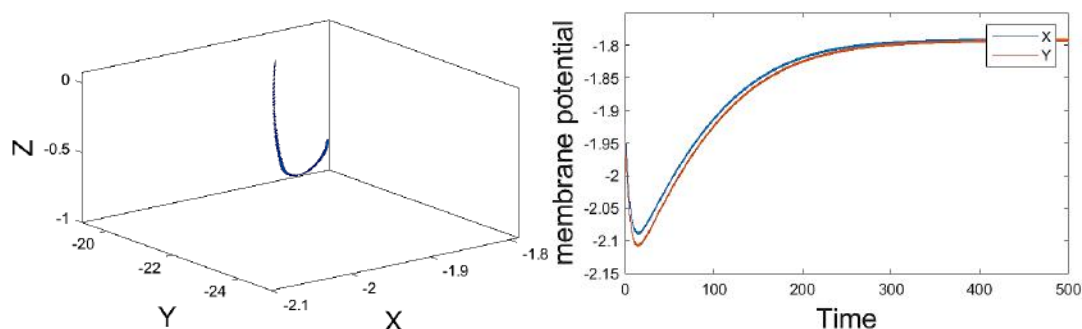


Figure 10: Sensitivity of coupled light sensitive FHN neurons when $d=5$; $r=0.006$; $s=4$; $k=20$; $b_2=0.8$; $b_3=0.4$; $g=0.4$; $f=.02$; $h=0.5$; $I=2$; $u=1$; $A=3.1$; $A_1=4.2$; $w=0.1$; $t=1$; $b_3=0.8$

HINDMARSH-ROSE MODEL (H-R):

FitzHugh- Nagumo model is the simplification of the Hodgkin-Huxley model for neurons. It came with many drawbacks. The FHN model reduced the complexity of the neuron models. Self-sustained chaotic dynamics was not observed with FHN model. The most essential characteristics of neurons such as bursting could not be observed. FHN model consists of only a few parameters. It is difficult to adapt this model to neurons with specific properties. The problem with FHN model is that those equations do not provide a very realistic description of the rapid firing of the neuron [22]. They do not give a reasonable frequency–current relationship. The FHN model, which is the simplified version of H-H model, with only two dimensions was introduced so that its global behaviour can be easily studied in a phase plane. However, this model could explain only the generation and propagation of action potentials with only the Sodium and Potassium channels. Elucidation of the rhythm of spike train seems to be difficult with FHN model. More channels with slower kinetics have to be introduced to understand more about the underlying mechanisms. Hence, the FHN model was modified to give the Hindmarsh-Rose model which is a three dimensional model for neuron with rapid firing. In particular, it shows bursting behavior and chaos. The Hindmarsh-Rose (H-R) model for neurons was developed by J. L.Hindmarsh and R. M. Rose to allow for rapid firing or bursting in neurons. The Hindmarsh-Rose neuron model is a simplified model of the Hodgkin-Huxley model and a modification of the FitzHugh-Nagumo model [22]. The Hindmarsh-Rose model differs in many ways from FitzHugh-Nagumo model in terms of topology of the phase space, the threshold for spikes, the way the spike trains are created and how bursting is shut off.

H-R model of neuronal activity is used to study the spiking-bursting behaviour of the membrane potential. A chain of action potentials emitted by a single neuron is called a spike train; a sequence of stereotyped events which occur at regular or irregular intervals [23]. The bursting behaviour of the neurons, characterized by the transition of a neuron from resting phase to a recurring firing state, relies on the slow adaptation variable $z(t)$ [23]. This means that the adaptation variable was added to the existing model to terminate the firing. Each burst will have a definite number of spikes unless they are in the chaotic regime. This model is based on the global behaviour of the neuron. Despite being simpler with less governing equations and coefficients, the model is accurate to neurons seen in biology and



was created to accurately follow the bursting seen in mollusks [23]. The membrane potential is represented by the variable $x(t)$. It is written in dimensionless units. There are two more variables, $y(t)$ and $z(t)$ which denotes the transport of ions across the membrane through the ion channels. Thus, at any instant, the state of the system is represented by these time dependent state variables. The transport of sodium and potassium ions is made through fast ion channels and its rate is measured by $y(t)$ which is called the spiking variable. The transport of other ions is made through slow channels represented by $z(t)$ which is called the bursting variable (slow adaptation variable). The Hindmarsh–Rose model has the mathematical form of a system of three nonlinear ordinary differential equations used to represent pulse propagation in neurons

$$\dot{x} = y - ax^3 + bx^2 - z + I_{ext} \dots\dots\dots (3.5.1)$$

$$\dot{y} = c - dx^2 - y \dots\dots\dots (3.5.2)$$

$$\dot{z} = r(s(x - x_e) - z) \dots\dots\dots (3.5.3)$$

Here $x(t)$ represents the membrane potential and it considered as a natural output of the cell. $y(t)$ and $z(t)$ are recovery and adaptation variables which account for fast and slow ion currents respectively. I_{ext} represents the external stimuli or the applied current. We choose the parameters as $a = 1, b = 3, c = 1, d = 5, r = 0.005, s = 4, x_e = -\frac{8}{5}$ so that the rich phenomena like bursting and spiking are observed. The responses of this model to a current, largely depends on the values of μ and b . The parameter ‘ μ ’ controls the speed of variation of the slow variable $z(t)$. This helps to analyse how efficiently the slow variables are exchanging the ions. It is not possible by the FitzHugh-Nagumo model. The model could successfully display regular bursting, chaotic bursting and post inhibitory rebound

H-R under electromagnetic radiation with Memristor:

The general H-R model in an isolated neuron has been extended to an improved model of four variables [24,25]. The new variable φ incorporates magnetic flux. Hence this model can be effective to detect the effect of electromagnetic radiation [30] by applying external magnetic flux associated with electromagnetic field on the dynamical equation for magnetic flux. The neuron model is made to interact with memristor. The memristor magnetic flux is due to the flux arising from the ions.[29] The four variable H-R neuron model with memristor is given below.

$$\dot{x}_1 = x_2 - ax_1^3 + bx_2^2 - x_3 + I_{ext} - k\rho(\varphi)x_1 \dots\dots\dots (5.1.1)$$

$$\dot{x}_2 = c - dx_1^2 - x_2 \dots\dots\dots (5.1.2)$$

$$\dot{x}_3 = r(s(x_1 - x_0)) - x_3 \dots\dots\dots (5.1.3)$$

$$\dot{\varphi} = k_1x_1 - k_2\varphi \dots\dots\dots (5.1.4)$$

Here the variables x_1, x_2 and x_3 represent the membrane potential, slow current recovery variable and adaption current for first neuron. The important electrical signal in neurons arises from a big voltage change (of the order of many millivolts) which is termed as action potential or membrane potential (spikes) and it occurs in less than a second for neuron [26]. The parameter values are selected as $a = 1, b = 3, c = 1, d = 5, s = 4, r = 0.006$ and $x_0 = -1.6$. External forcing current is represented by the term I_{ext} and the magnetic flux across the membrane is denoted by the fourth variable φ . The memductance corresponding to the charge $q(\varphi)$ is given by $\rho(\varphi)$. Relation among induced current, flux and memristor can be understood by Faraday’s law of electromagnetic induction [27] as given below.

$$i = \frac{dq(\varphi)}{dt} = \frac{dq(\varphi)}{d\varphi} \frac{d\varphi}{dt} = \rho(\varphi)v = k\rho(\varphi)x_1 \dots\dots\dots (5.1.6)$$

Here k_1x_1 denotes the changes in magnetic flux induced by membrane potential and $k_2\varphi$ represents the leakage of magnetic flux. The interaction between membrane potential and magnetic flux is denoted by the variables, k and k_2 . The effect of electromagnetic induction and corresponding modes



of electrical activities with memristor could be examined by finding the influence of the magnetic flux on membrane. Also the term $k\rho(\varphi)x_1$ denotes induced current and it causes the variation in magnetic flux which in turn generates Faradic current. In this section the study is done on a four variable H-R neuron model which is made to interact with quadratic flux controlled memristor. The memductance corresponding to the charge $q(\varphi)$ is given by the derivative of q with respect to the flux [25, 28]. The equation corresponding to memductance after scaling is $\alpha\varphi^2 + \beta\varphi + \gamma$.

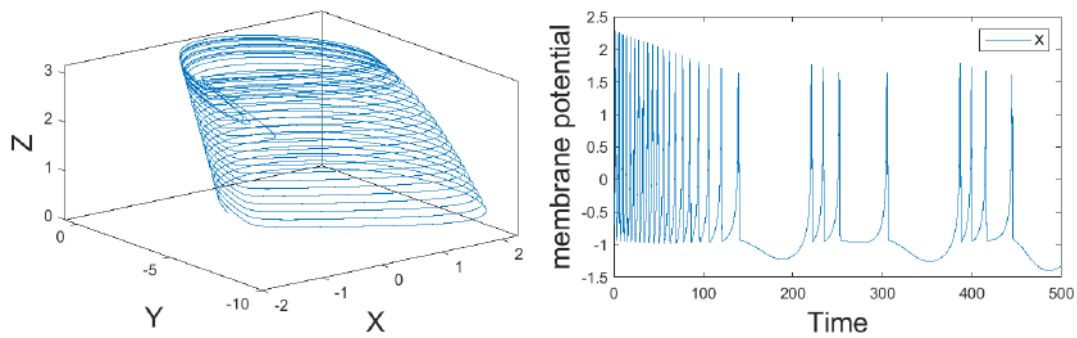


Figure 11: Phase portrait and Time Portrait of H-R neuron under the influence of electromagnetic induction when $I = 3$

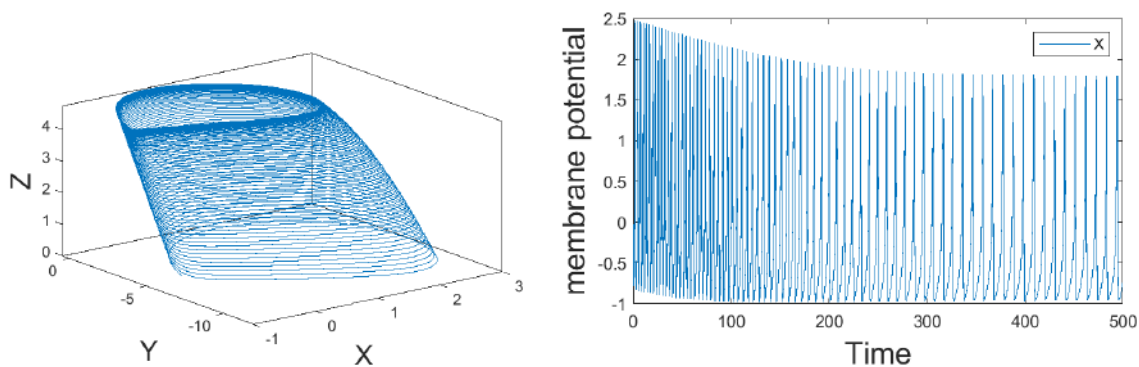


Figure 12: Phase portrait and Time Portrait of H-R neuron under the influence of electromagnetic induction when $I = 5$

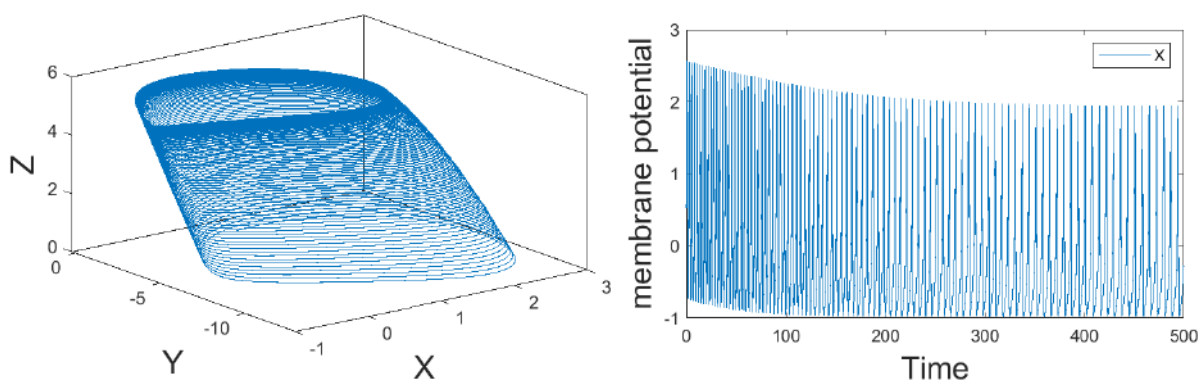


Figure 13: Phase portrait and Time Portrait of H-R neuron under the influence of electromagnetic induction when $I = 6$



The results in Fig. 11, 12 and 13 confirm that the neuron can be excited from quiescent state and develop into bursting state with varying intensity of external radiation field and the external forcing current. As the current is increased into higher values the time series is evolved from bursting to spiking.

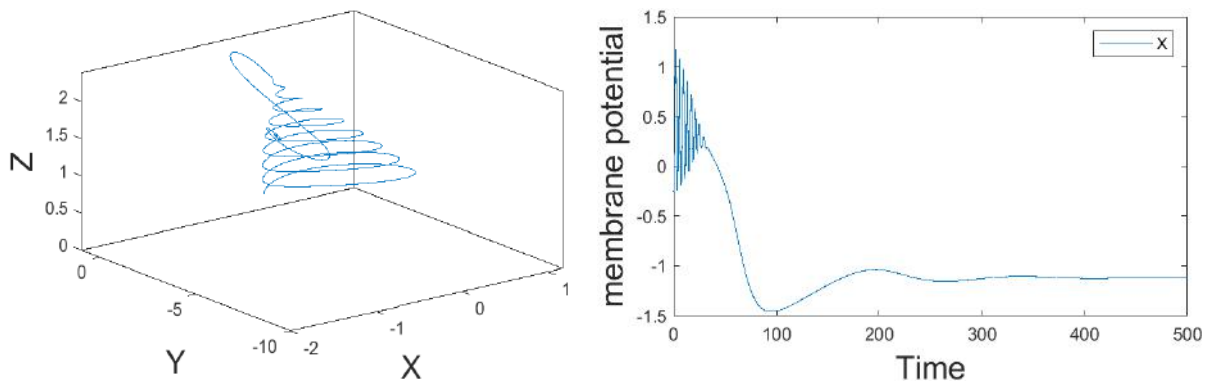


Figure 14: Phase portrait and Time Portrait of H-R neuron with memristor under the influence of electromagnetic induction when $I = 3$

Any changes in one of the intrinsic parameters will induce distinct mode transition in the neural activities when stimulus is applied. By incorporating memristor to the HR neuron under electromagnetic radiation transition in the electrical activity of the neuron is observed. That is transition from spiking to quiescent state or from periodic oscillation to damped oscillation. Fig 5.1.4 shows the phase portrait and temporal series of the isolated neuron under electromagnetic radiation connected with a memristor.

HR under electromagnetic induction with Thermistor:

The association of nonlinear electric components produces simple chaotic circuits and these nonlinear circuits can be manipulated to produce favourable signals. Some nonlinear circuits can be improved for building more effective neural circuits to mimic neural activities in nervous systems [34]. Governing equations are as follows:

$$\dot{x}_1 = x_2 - ax_1^3 + bx_2^2 - x_3 + I_{ext} + A\cos\omega'\tau - k\rho(\varphi)x_1 \dots\dots\dots (5.2.1)$$

$$\dot{x}_2 = c - dx_1^2 - x_2 \dots\dots\dots (5.2.2)$$

$$\dot{x}_3 = r(s(x_1 - x_0)) - x_3 + b(T') \dots\dots\dots (5.2.3)$$

$$\dot{\varphi} = k_1x_1 - k_2\varphi \dots\dots\dots (5.2.4)$$

Where $A\cos\omega'\tau$ is the periodical and $b(T')$ is responsible for the effect of temperature.

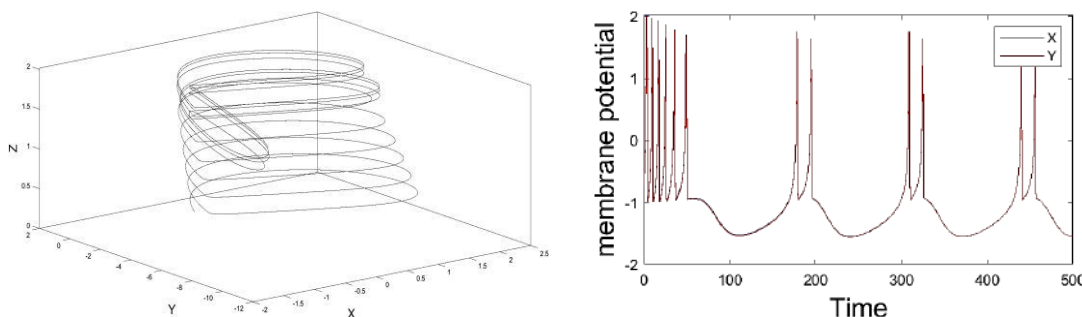


Fig 5.2.1 Phase portrait and Time Portrait of H R neuron with thermistor under the influence of electromagnetic induction when $a=2; b=2.5; c=1; d=3; r=0.06; s=2; k=1; k_2=1.5; g=0.9; f=.05; h=0.05; I=3.5; u=0.5; A=0.5; w=1, b(T') = 0.8$

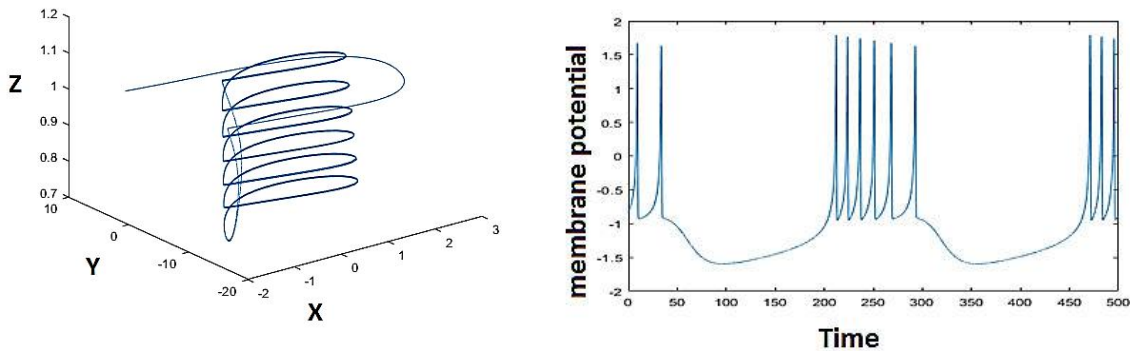


Figure 15: Phase portrait and Time Portrait of H-R neuron with Thermistor under the influence of electromagnetic induction when $a=0.7$; $b=0.8$; $c=0.1$; $d=0.15$; $r=0.014$; $s=2$; $k=1$; $k_2=1.5$; $g=0.9$; $f=0.05$; $h=0.05$; $I=0$; $u=0.4$; $A=1$; $w=1$, $b(T')=0.8$

By changing the external forcing current I and keeping the temperature parameter $b(T)$, a constant, the HR thermistive neuron under the influence of electromagnetic radiation shows different dynamic behaviours such as bursting and regular spiking in fig 3.5.2.1 and 3.5.2.2 respectively. There is an intuition for chaotic behaviour of the neuron for higher values of external current and temperature parameter.

HR under electromagnetic induction with phototube:

When the phototube is connected to the capacitor in series, the output voltage and membrane potential will be controlled by the external illumination and electromagnetic wave directly, and the neuron shows more sensitivity to external stimulus. The scenario which we discussed in section 3.4.3 is similar to the current case except the neuron model. Here the Hindmarsh neuron model is taken into consideration.

$$\begin{aligned} \dot{x}_1 &= x_2 - ax_1^3 + bx_2^2 - x_3 + I_{ext} + \xi u_{s1} + r(x_4 - x_1) \dots \dots \dots (5.3.1) \\ \dot{x}_2 &= c - dx_1^2 - x_2 - u_{g1} \dots \dots \dots (5.3.2) \\ \dot{x}_3 &= r(s(x_1 - x_0)) - x_3 + \xi u_{s2} \dots \dots \dots (5.3.3) \\ \dot{x}_4 &= x_2 - ax_1^3 + bx_2^2 - x_3 + I_{ext} + \xi u_{s1} + r(x_4 - x_1) \dots \dots \dots (5.3.4) \\ \dot{x}_5 &= c - dx_1^2 - x_2 - u_{g1} \dots \dots \dots (5.3.5) \\ \dot{x}_6 &= r(s(x_1 - x_0)) - x_3 + \xi u_{s2} \dots \dots \dots (5.3.6) \end{aligned}$$

where $\dot{x}_1, \dot{x}_2, \dot{x}_3$ corresponds to first neuron and $\dot{x}_4, \dot{x}_5, \dot{x}_6$ corresponds to second neuron.

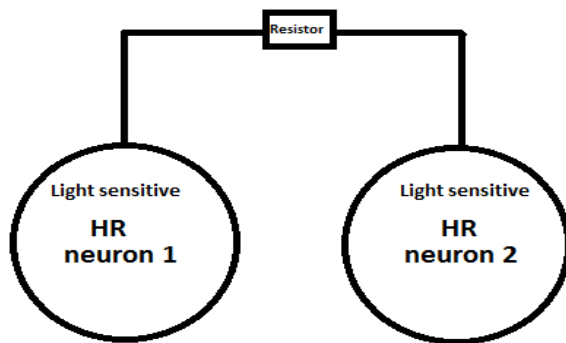


Fig 5.3.1 Schematic diagram of two identical and light sensitive coupled HR neurons

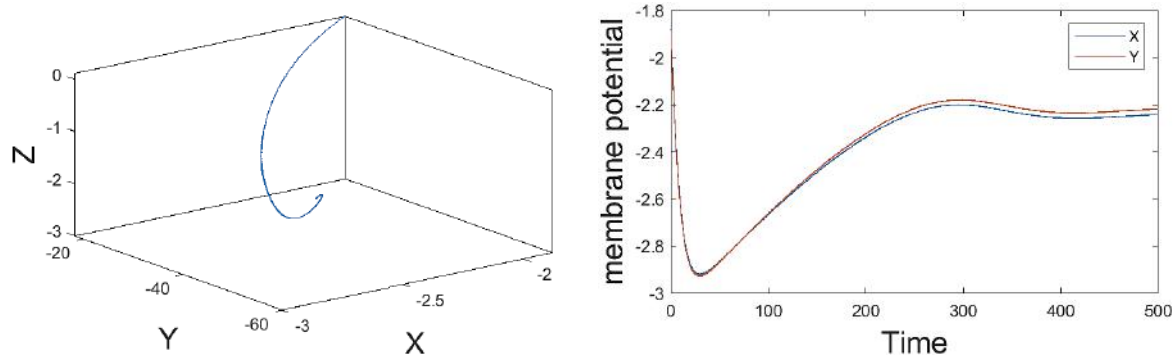


Figure 16: Enhanced sensitivity of HR neuron when $d=5$; $r=0.006$; $s=4$; $k=20$; $b_2=0.8$; $b_3=0.4$; $g=0.4$; $f=.02$; $h=0.5$; $I=2$; $u=1$; $A=3.1$; $A_1=4.2$; $w=0.1$; $t=1$; $b_3=0.8$

CONCLUSION:

This paper gives a glimpse of vast possibilities of coupling electronic components to the neuron models in order to mimic various neuronal functions. According to the earlier researches there is possibility to incorporate Josephson junction, Photodiodes, Photocells etc. to obtain variety of artificial neurons with biological functions.

REFERENCES:

1. Miller, K. D. (1994). A model for the development of simple cell receptive fields and the ordered arrangement of orientation columns through activity-dependent competition between ON-and OFF-center inputs. *Journal of Neuroscience*, 14(1), 409-441.
2. Miller, K. D. (1992, February). Models of activity-dependent neural development. In *Seminars in Neuroscience* (Vol. 4, No. 1, pp. 61-73). Academic Press.
3. Malmivuo, J. (1973). Hermostulun biosähköinen toiminta ja sen kuvaaminen elektronisilla malleilla. (Bioelectric function of a neuron and its description with electronic models).
4. Kaushik, A. (2008). Singular perturbation analysis of bistable differential equation arising in the nerve pulse propagation. *Nonlinear Analysis: Real World Applications*, 9(5), 2106-2127.
5. Mahowald MA, Douglas RJ (1991): A silicon neuron. *Nature* 354:(December) 515-8. (Jeanne, J., Thomas, J., & Yu, T. A Silicon Synapse.)
6. Mahowald, M. A., Douglas, R. J., LeMoncheck, J. E., & Mead, C. A. (1992, February). An introduction to silicon neural analogs. In *Seminars in Neuroscience* (Vol. 4, No. 1, pp. 83-92). Academic Press.
7. Roy, G. (1972). A simple electronic analog of the squid axon membrane: The neurofet. *IEEE Transactions on Biomedical Engineering*, (1), 60-63.
8. Prange, S. (1988). Aufbau eines Neuronenmodells mit Hilfe einer analogen, kundenspezifischen Schaltung. *Institute of Microelectronics, Techn. Univ. Berlin, Berlin*, 87.
9. Jolivet, R., Schürmann, F., Berger, T. K., Naud, R., Gerstner, W., & Roth, A. (2008). The quantitative single-neuron modeling competition. *Biological cybernetics*, 99(4), 417-426.
10. Huang, L., Max, M., Margolskee, R. F., Su, H., Masland, R. H., & Euler, T. (2003). G protein subunit G γ 13 is coexpressed with G α , G β 3, and G β 4 in retinal ON bipolar cells. *Journal of Comparative Neurology*, 455(1), 1-10.
11. Tremblay, R., Lee, S., & Rudy, B. (2016). GABAergic interneurons in the neocortex: from cellular properties to circuits. *Neuron*, 91(2), 260-292.
12. Izhikevich, E. M. (2000). Neural excitability, spiking and bursting. *International journal of bifurcation and chaos*, 10(06), 1171-1266.
13. Shelley, B. P. (2016). Footprints of phineas gage: Historical beginnings on the origins of brain and behavior and the birth of cerebral localizationism. *Archives of Medicine and Health Sciences*, 4(2), 280.
14. Izhikevich, E. M. (2007). *Dynamical systems in neuroscience*. MIT press.



15. Bear, M. F. (2007). Chemical control of the brain and the behavior. Neuroscience: exploring the brain, Bear, MF, Connors, BW, and Paradiso, MA, ed.
16. Hodgkin, A. L., & Huxley, A. F. (1952). A quantitative description of membrane current and its application to conduction and excitation in nerve. *The Journal of physiology*, 117(4), 500.
17. Squire, L., Berg, D., Bloom, F. E., Du Lac, S., Ghosh, A., & Spitzer, N. C. (Eds.). (2012). *Fundamental neuroscience*. Academic press.
18. Holt, C. E., Martin, K. C., & Schuman, E. M. (2019). Local translation in neurons: visualization and function. *Nature structural & molecular biology*, 26(7), 557-566.
19. Izhikevich, E. M. (2000). Neural excitability, spiking and bursting. *International journal of bifurcation and chaos*, 10(06), 1171-1266.
20. Tremblay, R., Lee, S., & Rudy, B. (2016). GABAergic interneurons in the neocortex: from cellular properties to circuits. *Neuron*, 91(2), 260-292.
21. Rabinovich, M. I., Friston, K. J., & Varona, P. (Eds.). (2012). *Principles of brain dynamics: global state interactions*. MIT Press.
22. Shelley, B. P. (2016). Footprints of phineas gage: Historical beginnings on the origins of brain and behavior and the birth of cerebral localizationism. *Archives of Medicine and Health Sciences*, 4(2), 280.
23. Simpson, D. (2005). Phrenology and the neurosciences: contributions of FJ Gall and JG Spurzheim. *ANZ journal of surgery*, 75(6), 475-482.
24. Storace, M., Linaro, D., & de Lange, E. (2008). The Hindmarsh–Rose neuron model: bifurcation analysis and piecewise-linear approximations. *Chaos: An Interdisciplinary Journal of Nonlinear Science*, 18(3), 033128.
25. Lv, M., & Ma, J. (2016). Multiple modes of electrical activities in a new neuron model under electromagnetic radiation. *Neurocomputing*, 205, 375-381.
26. Guo, Q., Gu, W., & Tao, Z. (2015). Properties of quadratic flux-controlled and charge-controlled memristor. *Adv. Eng. Res*, 2352-5401.
27. Wang, S., Wang, W., & Liu, F. (2006). Propagation of firing rate in a feed-forward neuronal network. *Physical Review Letters*, 96(1), 018103.
28. Xu, Y., Jia, Y., Ma, J., Hayat, T., & Alsaedi, A. (2018). Collective responses in electrical activities of neurons under field coupling. *Scientific reports*, 8(1), 1-10.
29. Thottil, S. K., & Ignatius, R. P. (2017). Nonlinear feedback coupling in Hindmarsh–Rose neurons. *Nonlinear Dynamics*, 87(3), 1879-1899.
30. Thottil, S. K., & Ignatius, R. P. (2022). Electromagnetic Induction on Neurons Through Field Coupling and Memristor. In *Advances in Nonlinear Dynamics* (pp. 105-113). Springer, Cham.
31. Yan, B., Panahi, S., He, S., & Jafari, S. (2020). Further dynamical analysis of modified Fitzhugh–Nagumo model under the electric field. *Nonlinear Dynamics*, 101(1), 521-529.
32. Ma, J., Zhang, G., Hayat, T., & Ren, G. (2019). Model electrical activity of neuron under electric field. *Nonlinear dynamics*, 95(2), 1585-1598.
33. Wu, F., Ma, J., & Zhang, G. (2019). A new neuron model under electromagnetic field. *Applied Mathematics and Computation*, 347, 590-599.
34. Zhang, X., Wang, C., Ma, J., & Ren, G. (2020). Control and synchronization in nonlinear circuits by using a thermistor. *Modern Physics Letters B*, 34(25), 2050267.
35. Xie, Y., Yao, Z., Hu, X., & Ma, J. (2021). Enhance sensitivity to illumination and synchronization in light-dependent neurons. *Chinese Physics B*, 30(12), 120510.



Assessing the Open Educational Resources Research output: a bibliometric analysis (2011 to 2022 July)

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Abstract: *Open Education Resources (OER) was first fabricated in 2002 by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and followed by various definitions. The OER can be explained as educational resources which can be used, reused freely and could be shared. This study aims to quantify OER's leading and influential publications. For this study, research output in OER was searched systematically using Scopus, an abstract and citation database of peer-reviewed literature of scientific journals, books, and conference proceedings. To narrow down the study area, "Open Educational Resources, Open Education Resources" acted as a keyword for a search. The studies published and retrieved in the Scopus database in the last 12 years (till 21 July 2002) were carefully selected, keeping in mind the study area. Selected publications were analysed by variables such as their type of publication and studies, language, country, topmost countries, growth, productive authors, authorship, authorship collaboration, publications with maximum citations, top journals, top affiliation, and keywords occurrences. VOS viewer was used to visualise countries' collaboration and keyword occurrences. Graphical representation was prepared using Microsoft Excel. Of 721 publications, 397 are in article form, while the rest fall in various categories such as conference proceedings, book chapters, books, notes, and reviews. Studies published in OER are outnumbered in the English language than other languages. The United States (25%) and the United Kingdom (10.5%) bag a total of 721 documents among all. Authorship collaboration was calculated by Subramanyam's formula, which reveals that it has been increasing gradually over the past five years. Overall, the Bibliometric Analysis depicted progressive growth in research output in OER.*

Key Words: *Open educational resources (OER); bibliometric analysis; scientific database; open repository.*

INTRODUCTION:

Open educational resources are valuable and of crucial importance in the field of education. UNESCO, in the 2002 forum on the Impact of Open Courseware for Higher Education in Developing Countries, defined OER for the first time as materials used for teaching, learning and research which have the licence for intellectual property and are released in the public domain for free use, adaptation and distribution of its resources (Wiley, D., & Hilton Iii, J. L., 2018). There are many definitions, but a most common illustration of OER is that they are educational resources that are openly available for educators and students without any payment. (Kanwar &Uvalic-Trumbic, 2011). Open educational resources today in the time of covid-19 crisis, education to students was next to impossible. Open educational resources encouraged to educate many students before and during the crisis of covid-19.



Day by day, research on OER is increasing as the number of OER in the world rises progressively. This raises the need of analysing OER and research output in it.

REVIEW OF LITERATURE:

OER is just in its beginning. What and which type of research is done in the field of OER is necessary to know. It is necessary to review the literature written on OER as many authors have researched it. Scopus, web of science, the OER knowledge cloud and Google scholar have a large number of publications on OER. For bibliometric analysis of research output in OER, literature on bibliometric analysis was reviewed for conceptual and procedural understanding.

Ranjan et al. (2019) conducted a bibliometric study to know research trends of Open Knowledge Research between the time span of 2014 to 2019. Researchers found 3943 publications in the research field from which the highest number of documents was from the USA and in 2018 the highest numbers of publications were published. Analysis showed that authors selected “Lecture notes in Computer Science” publications at most. Piedra and Chicaiza contributed more than the other authors.

Wahid et al. (2020) analysed publications on MOOCs from 2009 to 2020 through bibliometrics using data extricated from Scopus. Analysis showed that there are 3118 articles from which the maximum number of documents were published in 2018. Highest number of publications were conference papers, and very less were in book form. The study showed that the maximum number of authors preferred Lecture Notes in Computer Science, Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics. The highest numbers of publications were from the Universidad Nacional de Educación a Distancia than any other institute. Maximum number of publications was from the USA.

Zancanaro et al. (2015) mapped publications on OER available in the Web of Science, Scopus and OER Knowledge Cloud open repository from 2002 to 2013. Authors found 544 publications from 61 countries and 843 authors. They also explored institutions, sources, author keywords included in bibliographic data of selected publications and compared the collected data.

Saha and Mukhopadhyay (2016) analysed websites of OER providers in India using bibliometric and webometric analysis with the purpose of ranking them. Webometric indicators like citation counts, web impact factor, hyperlink analysis, etc. were used to analyse. The National Institute of Open schooling stood at first with the maximum number of web impact factors based on Academic web crawler ranking. Sakshat had the highest number of backlinks. The NPTEL had maximum WebPages. *Otto, (2019)* analysed 25 projects in Germany related to OER according to their adoption and diffusion. Projects covered all educational areas of the school, higher studies and vocational education. Institutional considerations and training & workshops were examined for the OER design recommendations. The Author suggested that the integration of OER with existing educational training should be encouraged as a meta-analysis of projects reveals that OER could not be ignored in terms of learning and teaching in a digital age.

Objectives:

- To study the current trends and research output in Open Educational Resources.
- To check out the top authors, countries, institutes and universities in contribution to the research area.
- To find out the most cited documents and journals in OER.

METHODOLOGY:

Bibliometric analysis evaluates publications or research output of a particular area using a statistical method and helps in finding out the impact of research output (Ellegaard, O., & Wallin, J. A., 2015). Term ‘Bibliometrics’ was first given by Paul Otlet. According to Otlet, bibliometrics means the measurement of all the features related to the publications (Pessin, V. Z., Yamane, L. H., & Siman, R. R., 2022). Steps for bibliometric analysis taken in the study: Collecting publications of OER, filtering collection, data standardization and analysis & synthesis of the collected data. For creating a proper collection “open educational resources”, “open education resources” were used as terms in search for ‘Title of the publications’ in Scopus. The created collection was filtered by limiting collection to the



time span of 2011 to 21st July of 2022 which includes a period of covid-19 crisis in the world, and particular types (articles, conference papers, book chapters, notes, book and reviews) of publications were selected. After filtering, collection scopus generated 721 publications. Bibliographic data of collected publications are generated, which was analysed and details of top authors, countries, languages, sources, affiliations, citation of the publications. Using VoSviewer collaboration among authors and countries, and keywords occurrences data is visualized in image form.

RESEARCH RESULTS:

Results from the analysis and synthesis of bibliographic data and citation detail of selected documents of open educational resources are given below:

General Bibliometric data of publications in Scopus

Bibliographic data	Frequency
Documents	721
Sources for the documents	391
Authors	1598
Countries of authors'	90
Author Keywords used in documents	1609
Different Languages used by authors	9

Analysis of documents related to open educational resources indexed in Scopus from the year 2011 to 2022 (July, 21st) was done in twelve criteria. Data generated by Scopus was presented, some in tabular form and some in graphs. In the first instance, the status of publications was examined by observing their growth. Secondly, types, languages, affiliations and sources of collected publications were explored. And at last, authors and authorship, countries and country collaboration and keywords occurrence were inspected.

PUBLICATIONS' GROWTH:

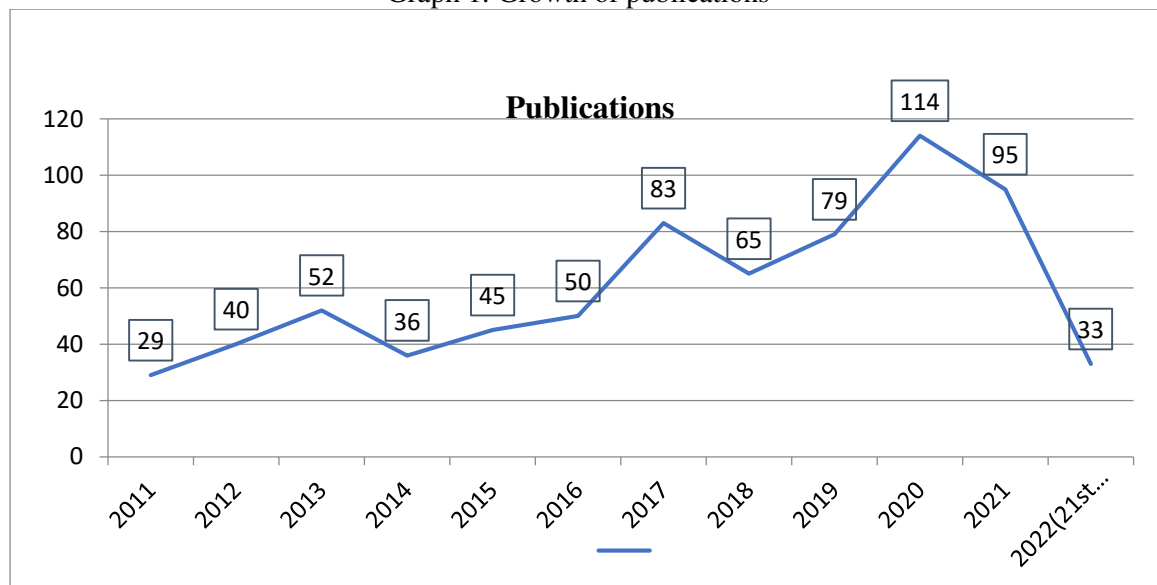
The bibliometric study was carried out during the month of July 2022. Publications from January 2011 to 21st July 2022 period were selected. Table 1 shows that in 2011 publications on open education resources were 29. The cumulative growth of publications is increasing gradually. Graph 1 reveals that the graph is rising with many ups and downs in the number of documents on open educational resources. The peak point in the graph is in 2020 and the second most in 2021. The Covid-19 crisis affected publication growth. A decade before covid-19 (2020), there were 479 documents in open educational resources, while after the covid-19 outbreak in the world to till date, there are 242 (=721-479) documents on open education resources. 2020 was the most productive year in the research area of open educational resources.

Table 1: Year-wise progress in number of publications

Year	Year wise Publications	Cumulative Growth of Publications	Contribution in Percentage
2011	29	29	4.02
2012	40	69	5.55
2013	52	121	7.21
2014	36	157	4.99
2015	45	202	6.24
2016	50	252	6.93
2017	83	335	11.51
2018	65	400	9.01
2019	79	479	10.95
2020	114	593	15.81
2021	95	688	13.18
2022(21 st July)	33	721	4.58



Graph 1: Growth of publications



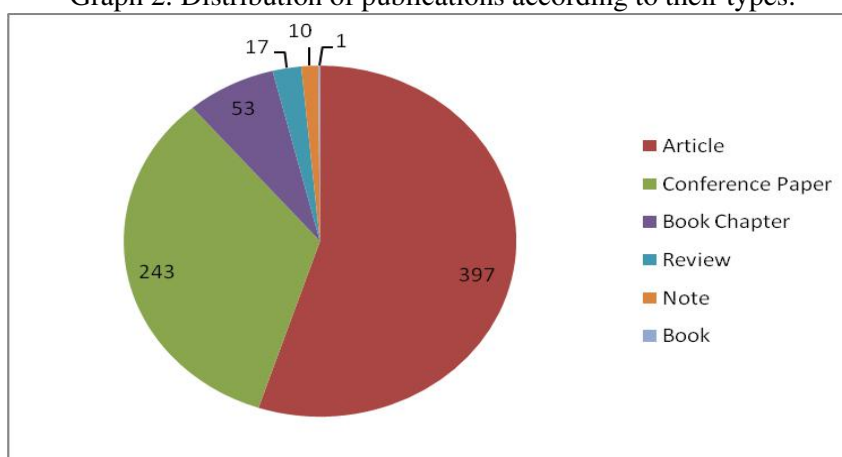
Types of Publications

Maximum number of researchers approached for articles in comparison to other types of documents in the field of open educational resources as it is seen from graph and table 2 that there are highest numbers of documents in the type of articles. Just one document is of book type. Many researchers are interested in conference papers also as conference papers cover a good number of 243 documents. Very few researchers are interested in review (17), note (10) and book (1).

Table 2: Types and number of publications

Type of Publications	Number of publications
Article	397
Conference Paper	243
Book Chapter	53
Review	17
Note	10
Book	1

Graph 2: Distribution of publications according to their types.





Publications in different Languages

There are a total of 9 languages in which all documents are published. From which the English language leads with a maximum number of 674 publications followed by Spanish and Portuguese with 27 and 16 publications respectively. Publications in German, Italian, Russian, Arabic, Chinese and Japanese are very few. 3 documents are written in two languages and 1 document is written in three languages. These multilingual documents are written in English and in other languages.

Table 3: Publications according to language

Language	Number of publications
English	674
Spanish	27
Portuguese	16
German	5
Italian	2
Russian	2
Arabic	1
Chinese	1
Japanese	1

Productive authors

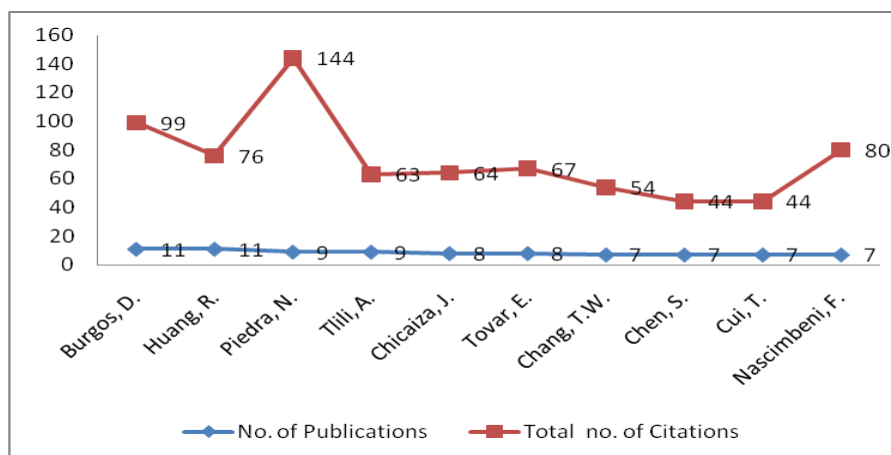
Table 3 and graph 3 reveal that Burgos and Huang are productive authors as they both have 11 publications with 93 and 70 total number of citations respectively. Documents of Piedra are cited more than the others as a total number of citations is maximum (144). Documents of Tovar and Chicaiza are also cited more in comparison with the others. Table 3 shows that Piedra, Nascimbeni and Tovar have a greater average number of citations than the other authors.

Table 4: Top 10 Authors by their publications

Sr. no.	Author	Number of publications	Total number of Citations	Average number of Citations
1	Burgos, D.	11	99	9
2	Huang, R.	11	76	6.9
3	Piedra, N.	9	144	16
4	Tlili, A.	9	63	7
5	Chicaiza, J.	8	64	8
6	Tovar, E.	8	67	8.4
7	Chang, T.W.	7	54	7.71
8	Chen, S.	7	44	6.28
9	Cui, T.	7	44	6.28
10	Nascimbeni, F.	7	80	11.43



Graph 3: Overview of Top 10 authors according to their publications



Publications with maximum citations

This analysis informed that Burgos is the most productive researcher as having the highest research papers but table 5 exposed that most influential work is done by Hilton as he gains highest citations for his one of the publications. Table 5 presents ten researchers whose publications have more citations than the other authors. Table 5 displays publications which are cited maximum times and thus most useful in the field of open educational resources. Hilton, J. and Mtebe, J. S. have two publications which are cited more than the other.

Table 5: Top ten publications according to citations

Sr. No.	Total citations	Author	Publication Title	Journal Title
1	171	Hilton J.	Open educational resources and college textbook choices: a review of research on efficacy and perceptions	Educational Technology Research and Development
2	79	Wiley D.	Open educational resources: A review of the literature	Handbook of Research on Educational Communications and Technology: Fourth Edition
3	74	McKerlich R.	Measuring use and creation of open educational resources in higher education	International Review of Research in Open and Distance Learning
4	73	Rolfe V.	Open educational resources: Staff attitudes and awareness	Research in Learning Technology
5	70	Mtebe J.S.	Challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania	International Review of Research in Open and Distance Learning
6	68	Mtebe J. S.	Investigating perceived barriers to the use of open educational resources in higher education in Tanzania	International Review of Research in Open and Distance Learning
7	66	Richter T.	Open educational resources: Education for the world?	Distance Education



8	65	Hilton, J. L.	The adoption of open educational resources by one community college math department	International Review of Research in Open and Distance Learning
9	51	Willems, J.	Equity considerations for open educational resources in the globalization of education	Distance Education
10	50	Mishra S.	Open educational resources: removing barriers from within	Distance Education

Authorship

Average author per document is 0.45 as there are 721 documents given by a total 1598 authors. Documents written by single, double and triple authors in number are 170, 202 and 150, respectively. Documents written by four and five authors are below a hundred in number. Very few are written by more than five authors. Analysis shows that there are maximum documents written by double authors and then by a single author and triple author.

Table 6: Authorship in documents

No. of author per document	No. of Documents	Documents (%)
1	170	23.58
2	202	28.02
3	150	20.8
4	96	13.315
5	48	6.66
6	25	3.47
7	11	1.526
8	6	0.83
9	5	0.69
10	3	0.42
11	2	0.277
13	1	0.14
14	1	0.14
26	1	0.14

Authorship collaboration

Subramanyam gave a following formula, to analyse degree for authorship collaboration

Subramanyam gave formula to calculate the degree of collaboration,

$$\text{Degree of collaboration} = \frac{\text{No. of multiple authored papers}}{\text{Number of multiple author papers} + \text{Number of single author papers}}$$

Using the Subramanyam formula, the degree of collaboration for authorship is 0.76 for selected 721 documents in which 170 single author documents and 551 multiple-authored papers.

Table 7: Degree of collaboration year wise



Year	Publications Per year	Single author	More than one author	Degree of collaboration
2011	29	7	22	0.80
2012	40	15	25	0.73
2013	52	17	35	0.75
2014	36	11	25	0.76
2015	45	8	37	0.85
2016	50	8	42	0.86
2017	84	18	66	0.82
2018	65	17	48	0.79
2019	144	34	110	0.81
2020	114	27	87	0.81
2021	95	23	72	0.80
2022 (21 st July)	33	2	31	0.94

It is observed that the degree of collaboration is highest in the recent time of the year 2022. The degree of collaboration fluctuated two times between the year 2011 to 2022 (21st July). In recent years the degree of collaboration has been increasing. This implies that authors are more collaborating on research in the last few years.

Top proficient journals

Analysis exposes ten highly productive journals according to the number of publications on open educational resources. The journal “International Review of Research in Open Distance Learning” published the maximum number of articles in the research area; it shows that authors are more interested in this journal. But the h-index of the journal “Lecture notes in computer science including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics” is the highest, which reveals that articles published in this journal were more useful to readers and researchers. The journal “Proceedings Frontiers in Education Conference FIE” has fewer publications but a good number of citations.

Table 8: Top ten Journals

Sr. No.	Journals	Number of publications	h-index
1	International Review of Research in Open and Distance Learning	46	73
2	Lecture Notes in Computer Science Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics	29	415
3	Lecture Notes in Educational Technology	15	16
4	Distance Education	13	57
5	Educational Technology Research and Development	13	95
6	Library Philosophy and Practice	13	24
7	Open Learning	13	36
8	Communications In Computer and Information Science	12	55
9	ASEE Annual Conference and Exposition Conference Proceedings	10	37
10	Proceedings Frontiers in Education Conference Fie	10	43



Top ten Affiliations

Following table shows the top 10 universities of the world which have many documents in OER. The ‘open university’ has the highest number of documents. Athabasca University and Universidad Politecnica de madrid with good number of documents

Table 9: Topmost Affiliations

Sr. No.	Institutes	No. of documents
1	The Open University,	31
2	Athabasca University,	17
3	Universidad Politécnica de Madrid	16
4	Universidad Técnica Particular de Loja	15
5	Beijing Normal University	14
6	Universidade de São Paulo	13
7	International University of La Rioja	13
8	Brigham Young University	11
9	The Open University	11
10	Athabasca University	10

Topmost Countries

Authors of 90 countries of the world had published a total 721 documents on open educational resources. The United States contributed with the highest number of documents and country’s h index. The United Kingdom stands at 2nd rank. But there is a big difference in the number of documents published by the United States and the United Kingdom. Australia at the tenth rank is the country whose h index is 1193 while documents related to research area is less. Ecuador at ninth rank has less h index but has 27 publications. India has contributed 32 documents and stands at ninth rank.

Table 10 -Top ten countries by number of publications

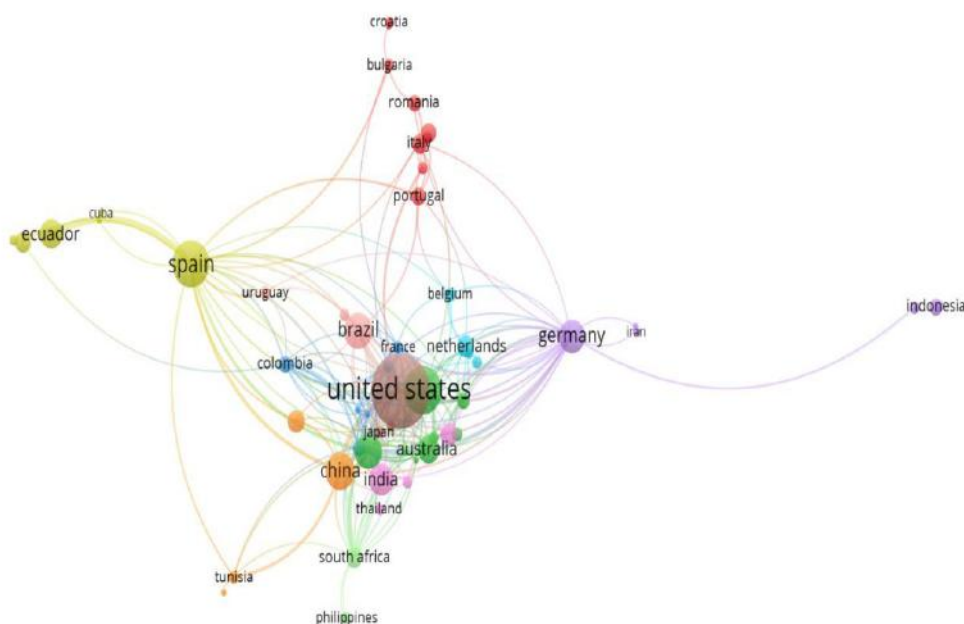
Sr. No.	Countries	Documents	Country’s h index	Total Link Strength
1	United States	180	2711	39
2	United Kingdom	76	1707	31
3	Spain	71	1073	65
4	China	45	1112	39
5	Brazil	43	690	23
6	Canada	41	1381	39
7	Germany	37	1498	42
Sr. No.	Countries	Documents	Country’s h index	Total Link Strength
8	India	32	745	17
9	Ecuador	27	197	23
10	Australia	25	1193	19



Country collaboration in research output of OER

Country collaboration in selected publications could be seen by the above image of research networking between countries. This image shows that the United States, Spain, Germany, Canada, Japan, Australia, China, India and Brazil are the most collaborated countries in this research area.

Image: Countries collaboration



Keywords and their occurrences

Keywords given by authors are 1609, and the keywords in abstracts are 1595. The total keywords given in abstract and by authors are 2725. Researchers used open educational resources, OER, education, e-learning and teaching maximum times as keywords in their research papers and therefore these terms have maximum link strengths.

Table – Ten topmost Keyword co-occurrence

Sr. No.	Keywords	Occurrence	Total links
1	Open Educational Resources	452	1510
2	Oer	136	447
3	Education	107	570



REFERENCES:

1. IGI Global: Publisher of timely knowledge.
<https://www.igi-global.com/dictionary/education-literature-development-responsibility/2406>
2. Subramanyam, K. (1983). Bibliometric studies of research collaboration: A review *Journal of Information Science*, 6(1), 33-38.
3. Ranjan, A., Balutagi, S., & Huded, S. M. (2019). A bibliometric analysis of open knowledge resources: a study.
4. Wahid, R., Ahmi, A., & Alam, A. S. A. (2020). Growth and collaboration in massive open online courses: A bibliometric analysis. *International Review of Research in Open and Distributed Learning*, 21(4), 292-322.
5. Zancanaro, A., Todesco, J. L., & Ramos, F. (2015). A bibliometric mapping of open educational resources. *International Review of Research in Open and Distributed Learning*, 16(1), 1-23.
6. Saha, A., & Mukhopadhyay, P. (2016). Ranking OER providers in India: a webometric analysis. *International Research: Journal of Library and Information Science*, 6(1).
7. Otto, D. (2019). Adoption and diffusion of open educational resources (OER) in education: A meta-analysis of 25 OER-projects. *International Review of Research in Open and Distributed Learning*, 20(5), 122-140.
8. Murugan, V. HIGHER EDUCATION ENVIRONMENT AND OPEN EDUCATIONAL RESOURCES. *MULTIDISCIPLINARY RESEARCH VOLUME-2*, 239.
9. Patel Mr, R. M., & Zala Dr, L. N. (2021). Bibliometric Analysis of Literature Published on Information Seeking Behaviour Using Scopus Database.
10. Sweileh, W.M. (2020). Bibliometric analysis of peer-reviewed literature on climate change and human health with an emphasis on infectious diseases. *Global Health* 16, 44 (2020). <https://doi.org/10.1186/s12992-020-00576-1>
11. Iqbal, W., Qadir, J., Tyson, G., Mian, A. N., Hassan, S. U., & Crowcroft, J. (2019). A bibliometric analysis of publications in computer networking research. *Scientometrics*, 119(2), 1121-1155.
12. Kiraz, M., & Demir, E. (2020). A bibliometric analysis of publications on spinal cord injury during 1980–2018. *World neurosurgery*, 136, e504-e513.
13. Chiu, W. T., & Ho, Y. S. (2007). Bibliometric analysis of tsunami research. *Scientometrics*, 73(1), 3-17.
14. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285-296.
15. Djeki, E., Dégila, J., Bondiombouy, C., & Alhassan, M. H. (2022). E-learning bibliometric analysis from 2015 to 2020. *Journal of Computers in Education*, 1-28.
16. Hylén, J., Van Damme, D., Mulder, F., & D'Antoni, S. (2012). Open Educational Resources: Analysis of responses to the OECD country questionnaire.
17. Wiley, D., & Hilton Iii, J. L. (2018). Defining OER-enabled pedagogy. *The International Review of Research in Open and Distributed Learning*, 19(4).
18. Tlili, A., Huang, R., Shehata, B., Liu, D., Zhao, J., Metwally, A. H. S., ... & Burgos, D. (2022). Is Metaverse in education a blessing or a curse: a combined content and bibliometric analysis? *Smart Learning Environments*, 9(1), 1-31.
19. D'Antoni, S. (2009). Open educational resources: Reviewing initiatives and issues. *Open Learning: the journal of open, distance and e-learning*, 24(1), 3-10.
20. Cobo, C. (2013). Exploration of open educational resources in non-English speaking communities. *International Review of Research in Open and Distributed Learning*, 14(2), 106-128.
21. Richter, T., & McPherson, M. (2012). Open educational resources: education for the world? *Distance education*, 33(2), 201-219.



22. McGreal, R. (2017). Special report on the role of open educational resources in supporting the sustainable development goal 4: Quality education challenges and opportunities. *The International Review of Research in Open and Distributed Learning*, 18(7).
23. Ahmad, K., Ming, Z. J., & Rafi, M. (2018). Assessing the digital library research output: bibliometric analysis from 2002 to 2016. *The Electronic Library*.
24. Garg, K. C., Lamba, M., & Singh, R. K. (2020). Bibliometric Analysis of Papers Published During 1992-2019 in DESIDOC Journal of Library and Information Technology. *DESIDOC Journal of Library & Information Technology*, 40(6).
25. Ellegaard, O. (2018). The application of bibliometric analysis: disciplinary and user aspects. *Scientometrics*, 116(1), 181-202.
26. Ellegaard, O., & Wallin, J. A. (2015). The bibliometric analysis of scholarly production: How great is the impact? *Scientometrics*, 105(3), 1809-1831.
27. Kanwar, A., & Uvalic-Trumbic, S. (2011). A basic guide to open educational resources (OER). (N. Butcher, ed.) Unesco (p. 133). Vancouver: Commonwealth of Learning & UNESCO.
28. Pessin, V. Z., Yamane, L. H., & Siman, R. R. (2022). Smart bibliometrics: an integrated method of science mapping and bibliometric analysis. *Scientometrics*, 1-24.



RELATIONSHIP BETWEEN HIGHER SECONDARY STUDENTS STUDY SKILLS AND ACADEMIC SUCCESS

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Abstract: *This study aims to find the relationship between higher secondary students study skills and academic success. This study was conducted on 60 higher secondary school students. i)There is no significant difference between boys and girls of higher secondary students in their study skills and academic success. ii)There is no significant difference between arts and science subject of higher secondary students in their study skills and academic success. iii)The Government Aided, Matriculation And Corporation higher secondary students do not differ significantly in their study skills and academic success. iv) Medium of instruction is not associated with the level of study skills and academic success of the higher secondary students. v)There is no significant difference between rural and urban area of higher secondary students in their study skills and academic success. vi)There is no significant difference between study skills and academic success of the higher secondary students based on parental education. vii)There is no significant relationship between study skills and academic success of the higher secondary students. viii)the higher secondary school students moderate level of study skills and academic success.*

Keywords: *study skills, Academic success, higher secondary students.*

INTRODUCTION:

Teachers plays a significant role in drawing the best potentialities from the student to nourish a good study habit. Study skills plays an important role in influence academic performance of higher secondary. school students which can be modified, can be used as indicator on how a student would perform academically in his course of study. The main purpose of the study is to determine the study skills among the school students and to find the relationships of these with student's academic performance. Different students have different study habits, but the achievement of the students depends on good study habits mong students (mittal, 2009). So the higher secondary school students need intensive study with good study skills to get maximum scores in the higher secondary level of examination .Study skills are fundamental to academic competence. Effective study skills are associated with outcomes multiple academic content areas and for the diverse learners. The main purpose of this study is to describe the contribution of study skills to academic competence of, and to identify evidence-based strategies that are effective in helping students to improve their study skills. (Contributions of study skills to academic competence) Gettinger, maribeth, seibert, jill k school psychology review, V31 n3 P350-65 2002.

STATEMENT OF THE PROBLEM:

The present study is termed as **Relationship Between Higher Secondary Students Study Skills And Academic Success.**



NEED AND SIGNIFICANCE OF THE STUDY:

Importance of study skills:

“Teacher is the main source of positive influences of student achievement” (prof.hattie). In order to improve the quality of education we must develop certain innovative strategies which will enhance the educational standards. In addition to that from the students side there must be some important steps, which form the basis for their academic achievement. Good study skills can increase your confidence, competence, and self-esteem. By developing effective study skills, you may be able to cut down on the numbers of hours spend studying, leaving more time for other things in your life. Active listening, reading comprehension, note taking, stress management, time management, testing taking, and memorization are only a few of the topics addressed in our study skills guides for students.

Importance of Academic Success :

Academic success is the extent to which a student or institution has achieved either short or long term educational goals. Achievement may be measured through students’ grade point average, whereas for institutions, achievement may be measured through graduation rates. Academic success is the outcome of education. It is mainly measured by formative or summative assessment techniques. School procurement might be influenced by different aspects resembling study habits, memory power and the way of behaviour of learners towards school, financial status and a different kind of their personality. In our community, Academic success is observed as an important concept to justify the individual’s whole capacities and potentialities.

OBJECTIVES:

- To find out the level of study skills of the higher secondary students.
- To find out the level of Academic success of Higher Secondary Students.
- To find out any significant difference in Study Skills Of Higher Secondary Students with reference to background variables.
- To find out the relationship between Study Skills and Academic success Of Higher Secondary Students.

NULL HYPOTHESES:

- There is no significant difference between boys and girls of higher secondary students study skills and Academic success.
- There is no significant difference between arts and science subject of higher secondary students study skills and Academic success.
- The Government Aided, Matriculation And Corporation higher secondary students do not differ significantly study skills and Academic success.
- Medium of instruction is not associated with the level of study skills and Academic success of the higher secondary students.
- There is no significant difference between rural and urban area of higher secondary students study skills and Academic success.
- There is no significant difference between study skills and Academic success of the higher secondary students based on parental education.
- There is no significant relationship between study skills and Academic success of the higher secondary students.

METHODOLOGY :

local of the study:

- The investigator selected the samples three different types of schools such as Govt. Aided, Corporation and Matriculation School in Coimbatore district.



Research design:

- The term survey method suggests the gathering of evidence relating to current conditions. The investigator has adopted survey method to study the dimensions of Study Skills and Academic success of higher secondary students.

Variables used in the study

- The two main variables were used in this study namely study skills and Academic success of higher secondary students are in relation to following background variables.
- Dependent variables: study skills and Academic success.
- Independent variables: demographic variables are as follows: Gender, Stream, Type of school, Locality, Parental education and Medium of instruction.

Selection of the sample: survey method:

- Purposive sampling technique was used to select the sample for collecting data.
- The sample of the study consists of 60 students of male and female of Corporation, Government aided and matriculation higher secondary school.

Figure: 1 Demographic variables of the sample size:

S.No	Categories	Variables	No.of samples	%
		Male	30	50
1	Gender	Female	30	50
		Science	30	50
2	Stream	Arts	30	50
		Govt.Aided	20	33.3
3	Type of school	Matric	20	33.3
		Corporation	20	33.3
4	Medium of instruction	Tamil	17	28.33
		English	43	71.66
5	Locality	Rural	31	51.66
		Urban	29	48.33
6	Parental education	Literate	41	68.33
		Illiterate	19	31.66

Selection and construction of the Tool:

- The tool used to determines the quality and quantity of the data. The UHCL Counseling services framed the questionnaire statement is used as a tool for study skills were indicated 4-point rating scale like close ended questions which is consists of 1= Never 2= Sometimes, 3= Usually, 4= Always. The 8 dimentions of study skills categorised eight statements each statement has eight responses. Academic exam marks were collected formative or summative exams.
www.uhcl.edu/counselingservices

8 Dimensions of study skills

Time management and procrastination:

Time management refers to the ability to use one's time effectively or productively, especially at work. time management is the key to efficient working”. “Procrastination refers to the act of putting off doing something that you should do till another day or time, because do not want to do it.”



Concentration and memory:

Concentration refers to “The ability to direct all effort and attention on one thing, without thinking of other things.” Memory refers to “which we draw on our past experiences in order to use this information in the present.”

Study aids and note taking:

Study aids (also referred to as supplements) are “commercially produced resources that are designed to assist you in your law school learning.” Note taking refers to the practice of writing down or otherwise recording key points of information.

Test Strategies and Test Anxiety:

A *test strategy* is refers to “an outline that describes the *testing* approach of the software development cycle.” test anxiety is refers to “cognitive, which is what you are thinking.”

Organizing and processing information:

Organizing is refers to involves coordinating and allocating a firm's resources in order to carry out its plans. Processing information is refers to the acquisition, recording, organization, retrieval, display, and dissemination of information.

Motivation and attitude:

Motivation refers to “Motivation is the process that initiates, guides, and maintains goal-oriented behaviours.” Attitude is refers to A learned tendency or readiness to evaluate things or react to some ideas, persons or situations in certain ways, either consciously or unconsciously.

Reading and selecting the main idea:

The act of looking at printed words and understanding or comprehending what they are saying, or the act of saying those words out loud or of interpreting those words. Selecting the main idea is refers to the *main idea* of a paragraph is the *primary point* or concept that the author wants to communicate to the readers about the topic

Writing:

Writing is refers to letters or characters that serve as visible signs of ideas, words, or symbols.

Statistical techniques used for the study

- The collected data were consolidated tabulated and analyzed statistically by using the following tests:

Descriptive analysis: Mean, Standard Deviation

Differential analysis: “t” test , “f” test (ANOVA) and correlation analysis

ANALYSIS AND INTERPRETATION :

DESCRIPTIVE ANALYSIS

Dimentions of study skills of higher secondary students

Mean scores of study skills of higher secondary students within dimentions where given in **table 2**

TABLE 2

Mean scores of dimentions of study skills of higher secondary students

Sl.No	Dimensions N=60	Mean	Mean%	SD
1	Time management and procrastination	23.05	72.03	4.59
2	Concentration and memory	21.92	68.49	3.31



3	Study aids and note taking	24.75	77.34	4.54
4	Test strategies and test anxiety	25.00	78.13	4.01
5	Organizing and processing information	21.68	67.76	3.64
6	Motivation and attitude	24.37	76.15	4.64
7	Reading and selecting the main idea	23.98	74.95	4.61
8	writing	23.52	73.49	3.89

Seen from above the table maximum mean scores of 25.00 and 78.13% compared to other skills students were concentrated only test strategies and test anxiety Wanted to achieve good scores in the examination.

Mean scores of dimensions of study skills graph given below

Figure1: dimensions of Study Skills

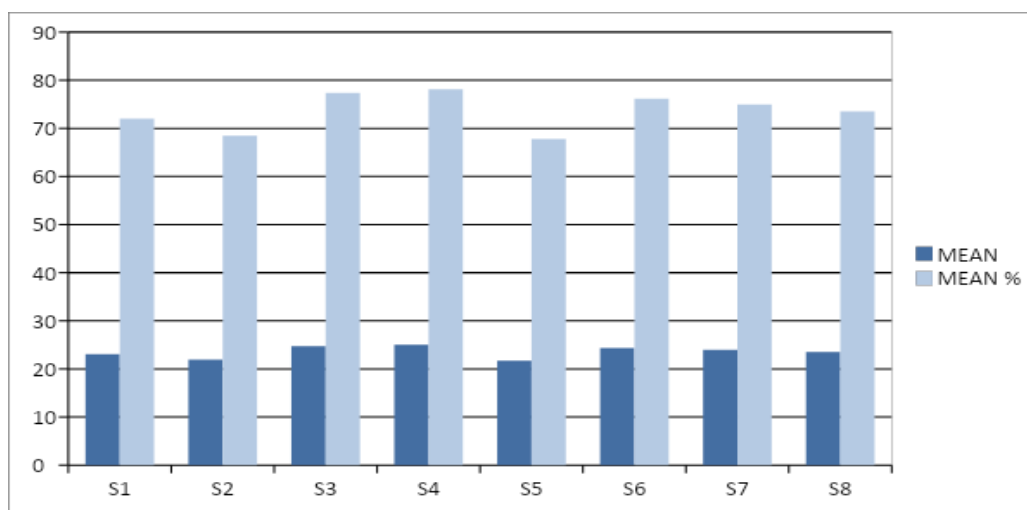


TABLE 3

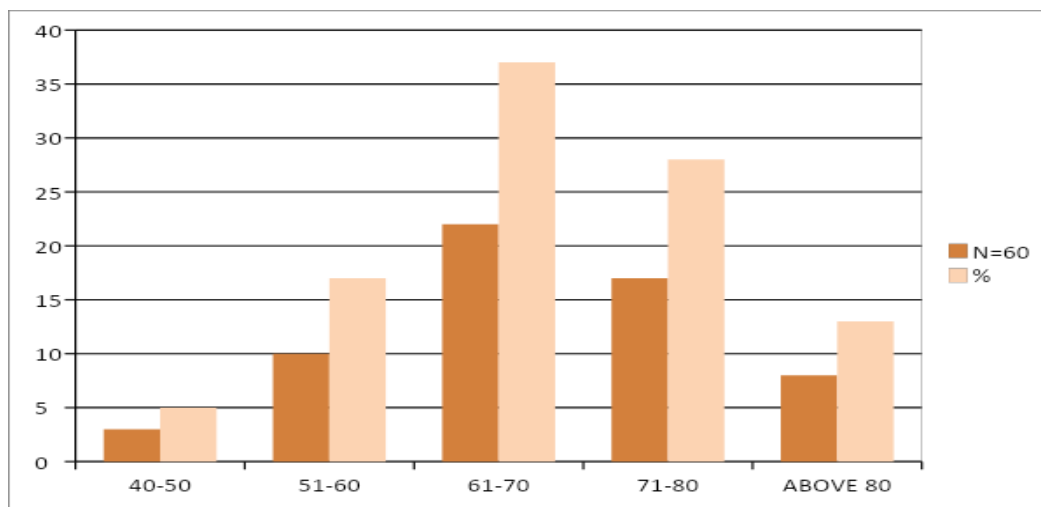
Predicts the academic scores of higher secondary students

S.No	Achievement Scores	N=60	%
1	40-50	3	5
2	51-60	10	17
3	61-70	22	37
4	71-80	17	28
5	Above 80	8	13

From above the table found out that students were utilized the study skills achieved the scores of 61 to 70 considered about moderate level compared to other scores.



Figure 2: Academic scores of higher secondary students



The higher secondary school students have moderate level of study skills and academic achievement

DIFFERENTIAL ANALYSIS

- **Hypothesis**

There is no significant difference between boys and girls of higher secondary students Study Skills and Academic success.

Table below refers to the details of significant difference between study skills based on gender of higher secondary students.

TABLE 4

Significant difference between study skills based on gender

Variable	Boys N=30	Girls N=30	Total N=60	Value of 't' test	Df	Remarks (Sig.)
Gender	Mean SD	Mean SD	Mean SD	-	-	-
Study skills	178.50 22.58	197.73 23.11	188.12 24.64	3.260	58	.002 (1%level)

CV -2.663

Discussion:

From the above table, the 't' value -3.260 is shows that there is a significant difference in the scores of boys and girls students study skills. Hence, the null hypothesis is rejected.

- **Hypothesis:**

There is no significant difference between arts and science subject of higher secondary students Study Skills and Academic success.

TABLE 5 : significant difference between study skills based on stream

Variable	Arts N=30	Science N=30	Total N=60	Value of 't' t-test	df	Remarks (Sig.)
Stream	Mean SD	Mean SD	Mean SD			
Study skills	184.33 28.09	191.90 20.41	188.12 24.64	1.193	58	.238 (NS)

CV -2.002



Discussion:

From the above table, the 't' value -1.193 shows that there is no significant difference in the scores of arts and science students in their study skills. Hence, the null hypothesis is accepted.

- **Hypothesis**

There is no significant difference relationship between study skills and academic success of higher secondary school students based on medium of instruction.

TABLE 6: Significance difference between study skills based on medium of instruction

Variable	Tamil N=17	English N=43	Total N=60	Value Of 't' t-test	df	Remarks (Sig.)
Medium of Instructions	Mean SD	Mean SD	Mean SD			
Study Skills	197.35 23.67	184.47 24.32	188.12 24.64	1.863	58	.067 (NS)

CV: 2.002

Discussion:

From the above table, the 't' value -1.863 shows that there is no significant difference in the scores of tamil and english students in their study skills. Hence, the null hypothesis is accepted.

- **Hypothesis**

There is no significant difference between rural and urban area of higher secondary students study skills and academic success.

Table 7: Significant difference between based on locality given below

Variable	Rural N=31	Urban N=29	Total N=60	value of 't' t-test	df	Rremarks (sig.)
Location	Mean SD	Mean SD	Mean SD			
Study Skills	187.90 24.99	188.34 24.70	188.12 24.64	0.069	58	.945 (1%level)

CV :2.002

Discussion:

From the above table, the 't' value -0.069 shows that there is no significant difference in the scores of rural and urban students in their study skills. Hence, the null hypothesis is accepted.

- **Hypothesis**

There is no significant difference between Study Skills and Academic success of the higher secondary students based on parental education.

TABLE 8: Significant difference between Study Skills based on parental education

Variable	Literate N=41	Illiterate N=19	Total N=60	Value of 't' t-test	df	Remarks (Sig.)
Parental education	Mean SD	Mean SD	Mean SD			
Study Skills	188.15 24.14	188.05 26.37	188.12 24.64	.014	58	.989 (NS)

CV: 2.002



Discussion:

From the above table, the 't' value -.014 is shows that there is no a significant difference in the scores of literate and illiterate students in their study skills. Hence, the null hypothesis is accepted.

Differential analysis: “f” test(ANOVA)

● **Hypothesis:**

The Government Aided, Matriculation And Corporation higher secondary students do not differ significantly in their Study Skills and Academic success.

TABLE 9: significant difference between study skills based on type of schools

Variable	Aided N=20		Matric.N=20		Corporation N=20		Total N=60	
Type of Schools	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Study Skills	184.33	28.09	191.90	20.41	201.30	27.24	188.12	24.64

Seen from above the table comparing mean scores of the Corporation school achieved (201.41) better than other schools.

TABLE 10 shows that significant difference between ANOVA for study skills based on type of Schools

Groups	Sum Squares	df	Mean Square	F	Sig.
Between	7509.233	2	3754.617	7.557	.001
Within	28318.950	57	496.824		
Total	35828.183	59			

CV: 4.998

The ANOVA result shows that the 'f-' value 7.557.there is a significant difference between the government, matriculation, govt aided school students in their study skills. Hence, the null hypothesis is rejected.

CORRELATION ANALYSIS

TABLE 11

Correlation between Study Skills and Academic success of higher secondary students

Variable	Correlation Coefficient	Remarks
Study Skills	-0.065	Not Significant
Academic success		

From the above table the value of correlation coefficient -0.065 shows a negative correlation. Hence it is concluded that there is no significant relationship between study skills and Academic success of higher secondary students.

SUMMARY AND CONCLUSIONS :

FINDINGS OF THE STUDY :

- There is a significant difference between boys and girls of higher secondary students Study Skills and Academic Success.



- There is a significant difference between arts and science subject of higher secondary students in their Study Skills and Academic Success.
- The Government Aided, Matriculation and Corporation higher secondary students differ significantly in their Study Skills and Academic Success.
- There is a significant difference between medium of instruction of higher secondary students Study Skills and Academic Success.
- There is no significant difference between rural and urban area of higher secondary students in their Study Skills and Academic Success.
- There is no significant difference between Study Skills and Academic Success of the higher secondary students based on parental education.
- There is no significant relationship between Study Skills and Academic Success of the higher secondary students.
- The higher secondary school students have moderate level of Study Skills and Academic Success.

RECOMMENDATION OF THE STUDY:

- To create a scheduling time an hour by hour weekly schedule. Using your class schedules as a guide, block out specific times each day for study and all other activities (generally, one and a half hours of study for each hour of class time).
- Make a Study Guide go through the textbook, notes, and any other material and write down any information that you think may be on the test such as important concepts, definitions, and formulas. Reading and writing the information will help you memorize it faster.
- Set time goals setting time goals for yourself will help make sure that you stay on track especially when you have time constraints. You're more likely to be productive if you have goals to achieve.
- Study during the week times in between classes, during lunch, and other breaks during the week to review material and prepare for upcoming exams. Having self- discipline and studying hard all week should allow students have the weekends free.
- Study space should be as quiet and comfortable as possible and large enough to have easy access to everything need for study. Get lots of sleep try to keep sleep schedule as consistent as possible.
- Use the 30 -3 -2 Schedule: * Study for 30 minutes and * Take a 3-minute break ,* take an extra 2 minutes to mentally review what you have just read and do a quick preview of what is coming up next. Study --> Break --> Review --> Preview --> Study

SUGGESTIONS FOR FURTHER RESEARCH :

- Similar studies can be conducted at other levels-primary, Secondary level of students.
- Experimental studies may be conducted on students of different localities in order to compare the results and find out the actual correlation between Study Skills and Academic Success.
- College and university students followed these kinds of study skills definitely get a good in their academic scores.
- Study skills and academic success can be studied in relation to some other variables like self-confident, surroundings, study habits, etc.,

CONCLUSION:

In this present study, if one is going to learn much of what there is to learn in the academic subjects is now taking and learn it well, those who are using these dimensions of study skills definitely get a good performance of academic success. Good study skills can increase our confidence, competence, and self-esteem. They can also reduce anxiety about tests and deadlines. By developing effective study skills,



resulted the ability to work and study independently, the ability to plan your studies and use of time, and to make study - related choices.

REFERENCES:

1. Alyami, A. ,Abdulwahed, A. , Azhar, A. , Binsaddik, A. and Bafaraj, S. (2021) Impact of Time-Management on the Student's Academic Performance: A Cross-Sectional Study. *Creative Education*, Vol.12,No.3,pp. 471-485.
2. Amraei.K,Elahi S.R,Zalani A.Z, Parhoon.H (2011),” The relationship between academic motivation and academic achievement students”. *Procedia - Social and Behavioral Sciences*.Vol.15,pp.399-402.
3. Babu,R.U.M and Kalaiyarasan.G (2020), “A Study on Learning Style of Higher Secondary School Students” *International Journal of Education*,Vol.9,No.1,pp-163-168.
4. Chaudhari A.N (2013), “Study Habits of Higher Secondary School Students in Relation to their Academic Achievement”. *International Journal of Research in Humanities and Social Sciences*, Vol. 1, Issue: 3, ISSN: 2320-771X,pp.52-54.
5. Crede, M &Kunnel, N.R. (2008). “Study habit,Skills and Attitude:the third pillar supporting collegiate academic performances”. *Perspective on Psychological Science*,25, 147-166
6. Ebele Uju F. Olofu Paul A. (2017). “Study habit and its impact on secondary school students' academic performance in biology in the Federal Capital Territory Abuja”. *Educational Research and Reviews*. Vol.12 (10), pp. 583-588
7. Gettinger, M., & Seibert, J. K. (2002). “Contributions of Study Skills to Academic Competence. *School Psychology Review*, 31(3), 350-365
8. Hanitha.T and Lawrence A.S.A (2017), “A Study On Teachers' Motivational Strategy And Academic Achievement Of Higher Secondary Students”. *Aarhat Multidisciplinary International Education Research Journal*, Vol.6, No.1, ISSN-2278-5655, pp.89-98.
9. Israel.J.A ,Bahago.B.A.(2020), “Effects of Study Skills Training on Achievement in Mathematics of Low Achieving Upper Basic Students in Plateau State, Nigeria”. *KIU Journal of Social Sciences*,Vol.6,No.2, ISSN: 2413-9580,pp.321-333
10. Jahan.N (2017),” A Comparative Study on Study Habits between High and Low Academic Achieving School Students of Ranchi Town”, *Journal of Emerging Technologies and Innovative Research*, Volume 4, Issue 2, Volume 4, Issue 2,pp.293-296.
11. Kalaiyarasan.G (2014).” Relationship Between Study Habits And Academic Achievement Of Higher Secondary Students In Biology”*Education Psychology-www.researchgate.net*.
12. Lawrence A.S.A. (2014). “Relationship Between Study Habits and Academic Achievement of Higher Secondary School Students”. *Indian journal of applied research*. Volume 4, Issue : 6, ISSN - 2249-555X.
13. Lekshmi D.G.S (2020),” Psychosocial Factors in Learning: Role of Study Habits and Learning Environment on Academic Progress”, *European Journal of Molecular & Clinical Medicine* Volume 7, Issue 4, ISSN 2515-8260,pp.2350-2370.
14. Magno, C. (2010). “Predicting Grades in Mathematics and English through Study Habits”. *The International Journal of Research and Review*, 5, 40-50.
15. Mehnaaz and Siddiqui,H,W,(2021) “Study Habits in Relation to Academic Achievement among Secondary School Students of Hyderabad” *Journal of Emerging Technologies and Innovative Research*, Volume 8, Issue 6,pp.e966-e970
16. M. Rabia, N. Mubarak, H. Tallat, W. Nasir. (2017). “A study on study habits and academic performance of students. *International Journal of Asian Social Science*. Vol. 7(10),ISSN 2224-4441 pp. 891-897.
17. Ogbodo, R. O. (2010).” Effective study habits in educational sector: Counselling implications. *Edo Journal of Counseling*, Vol:3, Issue No.2, pp.229-239



18. Oluwatimilehin, J.T.B. and Owoyele, J.W. (2012). “Study Habits and Academic Achievement in Core Subjects among Junior Secondary School Students in Ondo State, Nigeria”. Bulgarian Journal of Science and Education
19. Premalakshmi K. (2012)“Study Habits & Academic Achievement of higher secondary pupils,” Scholarly Research Journal for Interdisciplinary Studies, Vol. 1, No.3, 554-555.
20. Rahim N,M and Meon H (2013). “Relationships between Study Skills and Academic Performance”. Proceedings of the 20th National Symposium on Mathematical Sciences: Research in Mathematical Sciences: A Catalyst for Creativity and Innovation 1522(1):1176-1178
21. Sasi A and Anju A.R (2020). “The Correlation between Study Habits and the Academic Achievement of High School Pupils”, Universal Journal of Educational Research, 8(12A), pp.7359 - 7366.
22. Shahidi F, Dowlatkhah H R, Avand A, Musavi S R and Mohammadi E. “A study on the quality of study skills of newly-admitted pupils of Fasa University of Medical Sciences,” Journal of Advances in Medical Education & Professionalism, Vol.2, No. 1, 45-50.
23. Suthanthiradevi.J and Kavitha.P,(2022),” A Study On Goal-Oriented And Academic Achievement Of Higher Secondary School Students In Thanjavur District”. Journal of Positive School Psychology. Vol. 6, No. 4, pp.6692 – 6698
24. Verma A, (2016).” A study of Academic Achievement among high school students in relation to their study habits”. International Journal of Research in Humanities,Arts and Literature (IMPACT)Vol. 4, Issue 3, ISSN(P) 2347-4564; ISSN(E)

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- <https://www.educationcorner.com>



ANALYSIS OF SCIENTIFIC ATTITUDE AND SCIENCE PROCESS SKILLS OF HIGH SCHOOL STUDENTS

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Abstract: *The education of Science is essential for understanding our environment. It is a necessary tool for technological development in any society. As a compulsory subject in schools, Science aims to equip students with nature knowledge. It should develop scientific and positive attitude towards the learning of Science. As an indispensable part of science education, it considers the development of science process skills. Therefore, in the present paper, the investigator attempts to analyze the scientific attitude and science process skills of high school students through a survey method.*

1. INTRODUCTION :

“Education is not the learning of facts,
but
the training of mind to think.”

- Albert Einstein

One of the most essential and pervasive goals of schooling is to teach students to think. All school subjects should share in accomplishing this overall goal. Science contributes unique skills, emphasizing hypothesizing, manipulating the physical world, and reasoning from data. Scientific attitude is composition of mental habits or tendencies to react consistently in certain ways in a novel or problematic situations. These habits or tendencies include accuracy, open mindedness, intellectual honesty, suspended judgment and habit of looking for true cause and effect relationships. Science process skills use scientific method, scientific thinking, and critical thinking to describe these skills. In the cognitive aspect, the skills enable one to observe, forecast, explain, hypothesize, ask questions, conduct research, plan and produce, and communicate. In the affective aspect, the skills enable us to adapt to reality, respect proof, be curious, be flexible, think critically, take risks, and question.

Cepni et al. (1997) defined the science process skills as the core skills that guide research means and methods, enable the easy learning and persistency of sciences, and provide the pupils to be responsible and active in their education. Arslan and Tertemiz (2004) articulated the science process skills as 'the developer of self-responsibility in pupils' learning that enables easy learning in classes and supplies the pupils to be active and structure their knowledge.'

There are three important dimensions of science. The first is the content of science, the basic concepts, and our scientific knowledge. The other two critical dimensions of science and scientific knowledge are processes of doing science and scientific attitude. The methods of doing science are the science process skills that scientists use. Today the term "science process skills" is commonly used. It is a set of skills used in scientific activities. Each activity facilitates students to develop science process



skills such as observing, inferring, predicting, asking questions, constructing hypotheses, designing experiments, applying concepts, and communicating. Individuals need to think creatively and use their scientific process skills to develop a fundamental scientific understanding. Creative scientists must find valuable and new solutions for the problems existing in daily life. Process skills consist of two types - basic and integrated. The basic (simpler) process skills provide a foundation for learning the integrated (more complex) skills.

Objectives of the study:

- ❖ To find out if there is any significant difference in the dimensions of scientific attitude based on the type of schools.
- ❖ To find out if there is any significant difference in the dimensions of science process skills based on the type of schools.

Hypotheses of the study:

- ❖ There is no significant difference in the dimensions of scientific attitude based on the type of schools.
- ❖ There is no significant difference in the dimensions of science process skills based on the type of schools.

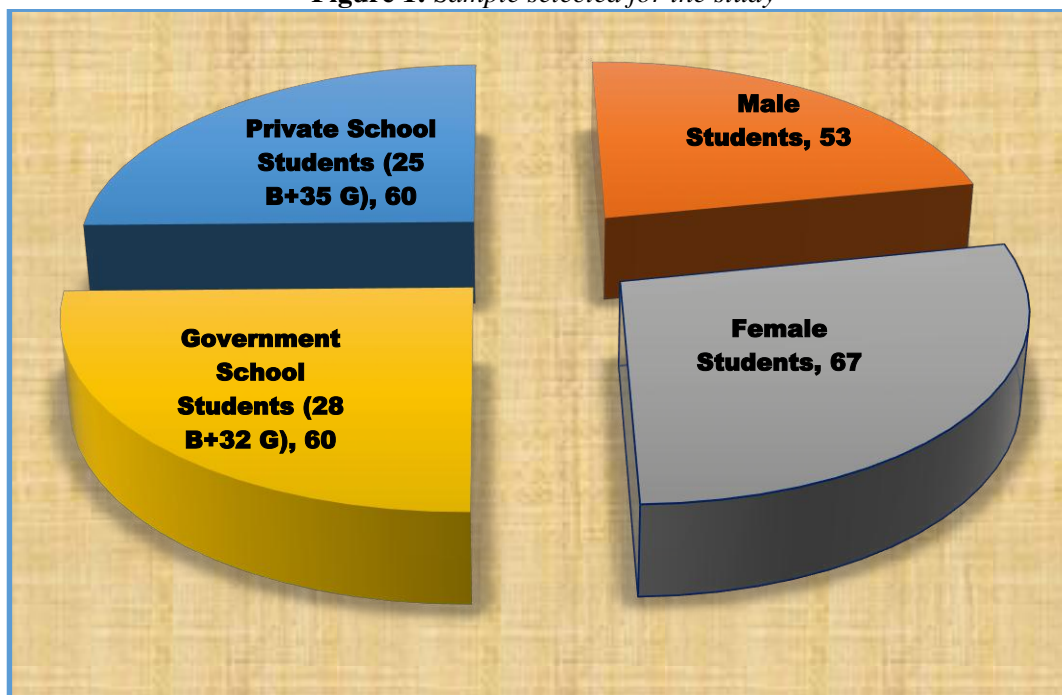
Method of the Study:

The researcher used the Purposive Sampling technique to select the sample for collecting data. The type of research used in the study is the Survey method. The type of schools is taken as the sub-sample. The present study consists of 120 high school students from the schools named Government high school and Sri Murugu Public school in Tiruppur district in Tamilnadu, India. The independent variable is Scientific attitude and the dependent variable is Science process skills. The two dimensions of scientific attitude constant in this study are superstitious belief and love for science, and two dimensions consider for science process skills are measurement and prediction. The method used for conducting the study is survey for the selected sample and the tools used are scientific attitude scale and science process skill questionnaire.

Scientific attitude of the sample under study was assessed using a rating scale developed by the investigator, which was made of 16 opinion statements about science. The scale was constructed in the English language. There were both positive and negative statements related to scientific attitude. The draft scale used for a pilot study and was administered to 120 students studying in class VIII. The scale was prepared in the form of a three- point scale following the response pattern of Disagree, Neutral, Agree. The score for each item was in the sequence of one, two, three for positive items and three, two, one for negative items. The subject has to respond to all the items. There was no time limit for the test. The total score obtained was taken as the score for scientific attitude. The data collected were subjected to item analysis using t-test. In order to collect the data on Science process skills from the selected sample, the researcher constructed open ended questionnaire for the students of standard VIII. A separate questionnaire was constructed for each process skill such as measurement and prediction. The researcher followed the ordering of items in the questionnaire based on the maxims of teaching simple to complex. Positive and easy items were given first so that students get motivated to answer. Details of the sample are given below.



Figure 1: Sample selected for the study



Results and Discussion:

Analysis of dimensions of Scientific attitude based on type of Schools

An attempt was used to find out if there is any significant difference in the dimensions of scientific attitude scores of students based on their type of school. The results obtained for the t test is given in Table 1.

Table 1:

Comparison of dimensions of scientific attitude of students based on type of schools

Variable	Type of School				df	t
	Government (N=60)		Private (N=60)			
	M1	SD1	M2	SD2		
Superstitious Belief	19.33	3.62	19.96	3.08	118	1.031
Love for Science	18.55	3.01	19.70	2.78	118	2.171*

Note . *p< .05

From Table 1, it is evident that the calculated t value for the dimension love for science is found to be 2.171 which is significant at .05 level. The mean value is greater for the private school students (19.70) indicating that the students belonging to private schools have more love for science than the students belonging to government school. Hence the null hypothesis “There is no significant difference in the



dimensions of scientific attitude based on the type of schools” is rejected for the dimension “Love for Science.” Also, it is evident that the calculated value for the other dimension of scientific attitude is found to be not significant. Hence the null hypothesis “There is no significant relationship between the dimensions of scientific attitude based on the type of schools” is not rejected for the dimension Superstitious Belief.

Analysis of Dimensions of Science process skills based on the type of Schools

An attempt was made to find out if there is any significant difference in the dimensions of student’s science process skill scores based on their type of school. The results obtained for the t - test is given in Table 2.

Table 2:

Comparison of dimensions of Science process skills of students based on type of schools

Variable	Type of School				df	t
	Government (N=60)		Private (N=60)			
	M1	SD1	M2	SD2		
Measurement	13.73	2.11	13.46	1.87	118	.731
Prediction	4.80	2.22	5.60	2.10	118	2.021*

Note. *p< .05

From Table 2, it is evident that the calculated t value for the dimension, Prediction is found to be 2.021 which is significant at the.05 level. The mean value indicates that the students of private school have more prediction skill than the students of government school. Also, it is evident that the calculated values for other dimension of the science process skill is found to be not significant. Hence the null hypothesis “There is no significant relationship between the dimensions of science process skills based on the type of schools” is rejected for prediction skill and is not rejected for the other dimensions of science process skill namely, measurement skill.

Major Findings:

- There is no significant difference in the Scientific attitude namely, Superstitious belief based on the type of school.
- There is a significant difference in the scientific attitude named love for science (t = 2.171*) based on the type of schools. The mean value indicates that the Private school students possess more Love for Science than the Government school students.
- There is no significant difference in the Science process skill namely, measurement skill based on the type of school.
- There is a significant difference in the dimensions of Science process skills named Prediction (t=2.021*) based on the type of schools. The mean value indicates that the students belonging to private schools have more prediction skill than the students belonging to government schools.

CONCLUSION:

Thus, this study revealed the scientific attitude and science process skills of high school students based on the type of schools. It is seen that Scientific attitude and Science process skill based teaching is better for the adolescent students. It makes learning permanent. Proper environment in the classrooms of the schools is essential for the development and promotion of scientific attitude and science process skills.



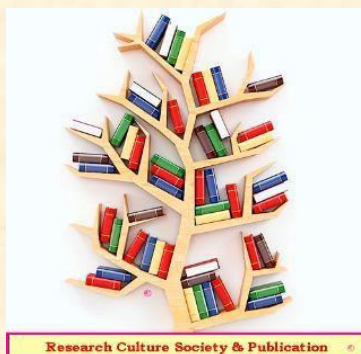
REFERENCES :

1. Asiri, A.A.M.(2018).Attitudes of secondary school students in Saudi Arabia towards science. *International Journal of Education, Learning and Development*, 6(3),30-36. <https://www.eajournals.org>
2. Ambross,J, Meiring, L & Blignaut,S. (2014). The implementation and development of science process skills in the natural sciences: A case study of teachers' perceptions, *Africa Education Review*, 11(3), 459-474,
3. DOI: <https://doi.org/10.1080/18146627.2014.934998>
4. Binwal.H.K.(2020). Attitude towards science: a study of 9th grade adolescent students. *The International Journal of Indian Psychology*, 8(1),609-615. <https://doi.org/10.25215/0801.076> <http://www.ijip.in/>
5. Dacumos, L. P. (2021). Improving the Science Process Skills of STEM Students through Personality-based Approach. *SEAQIS Journal of Science Education*, 1(02), 35-48. <https://orcid.org/0000-0001-6767-7903>
6. Darmaji, D, Astalini, A. , Kurniawan, D. A. & Lestari, A. (2020). Implementation of Basic Physics Practicum Guide I based on science process skills by using cooperative model group investigation type. . *European Journal of Educational and Social Sciences*, 5(1) , 9-21 .
<https://dergipark.org.tr/en/pub/ejees/issue/57557/818802>
7. <https://dergipark.org.tr/en/pub/ejees/issue/57557/818802>
8. Darmaji, Kurniawan, D. A., Parasdila, H., & Irdianti.(2018). Description of Science Process Skills“ Physics Education Students at Jambi University in Temperature and Heat Materials. *The Educational Review, USA*, 2(9), 485-498.
<http://dx.doi.org/10.26855/er.2018.09.004>
9. <http://dx.doi.org/10.26855/er.2018.09.004>
10. Dewi, N., & Atun, S. (2019). The Effect of Science Technology Society (STS) Learning On Students“ Science Process Skills. *Jurnal Ilmiah Peuradeun*, 7(1), 113-124.
11. DOI: <https://doi.org/10.26811/peuradeun.v7i1.288>
12. Duda H.J, Susilo .H.(2018). Science Process Skill Development: Potential of Practicum through Problems Based Learning and Authentic Assessment, *Anatolian Journal of Education* 3, 52. DOI: <https://doi.org/10.29333/aje.2018.315a>
13. Gupta,s.(2015). Influence of student“s gender and stream of study on scientific attitude and attitude towards science. *International Journal of Research-GRANTHAALAYAH*, 3(12), 187-194. <http://granthaalayah.com/>
14. Handayani,S.L.(2021). Comparison of Basic Science Process Skills for Students on Electrical Materials with the Rasch Model Analysis. *JPPPF (Jurnal Penelitian dan Pengembangan Pendidikan Fisika)*,7 (1). DOI: <https://doi.org/10.21009/1.07108>

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