

EFFECT OF SYNCHRONOUS AND ASYNCHRONOUS METHODS OF INSTRUCTION ON 21ST CENTURY SKILLS AMONGST PROSPECTIVE TEACHERS

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1.0.0. INTRODUCTION

The education systems of the world have for long moved in a linear path and although there have been progresses there have few significant technological advancements in the methods of imparting education, theoretical or practical. Education in its traditional sense had always been a process of transfer of knowledge in a formal setting. Alismail, H.A. and Patrick McGuire. (2015) observed that with the advancements in technology, the world saw in the late 20th century and the early 21st century drastically change in the nature of education itself which opened up opportunities to modernize the education system. The process of it all started with the advancements in the computer technology. With the advent of personal computers, the computer no longer stayed an advanced tool of calculation or limited use for research and data storage facilities, rather became a tool of academic convenience. 'The advent of Internet changed communication with instantaneous data transmission around the world leading to practically unlimited educational resources at the disposal of learners' (Tikam, M.V.2013). The advent of this technology led to a change in the skill set required for the professionals of the 21st century. With access to information becoming easier the emphasis on textbook knowledge has taken a backseat with other skills which determine the ethics and approach of the professional task at hand. This implies that 21st century skills are the skills which are essential for a successful and fulfilling professional and personal life in the modern world.

1.1.0. 21ST CENTURY SKILLS

Twenty first century skills include a few skills and qualities that an individual needs to cultivate in a professional life. These skills are a synchronism of ethics, communication skills, technological capability and personal development. In broad terms, the 21st century skills can be defined as a combination of three dimensions of skills, such as: (i) Cognitive Skill (ii) Interpersonal Skill and (iii) Intra Personal Skills. These skills do not function consecutively however their function is parallel to one another.

There are many categories in each of the dimensions of skills of 21st century skills. The categories of the first dimension Cognitive Skills are: (i) Critical thinking: It's the capacity of an individual to analyze and interpret information with an impartial and open mind to reach a fair conclusion. (Salameh, E. S. 2019). (ii) Problem Solving: Rahman, M.M (2019) defining the Concept "Problem Solving" says 'Problem Solving is a part of Critical Thinking and it helps identifying the useful pieces of information from a large data pool and use that data and previous experiences to rectify problems.' (iii) Creativity: Creativity is the ability of an individual to innovate their thinking and create new ways of approach and thought. It also encompasses the concepts of adaptability, flexibility and the ability to elaborate and expand existing ideas.

The second dimension of the 21st century skills is the Inter-Personal Skill which includes some categories. The categories of Inter-Personal skills are; (i) Communication: Defining communication skill, Chirugure, S. (2020) states that it's the ability to express the needs, opinions, perspectives, and issues that an individual faces in an effective manner, appropriately through a variety of means both verbally and non-verbally. (ii) Social Skills: these are the skills that enable a person to interact and work more efficiently in a diverse social setting and help them function better in an environment with a multitude of cultural

elements. (iii) Teamwork: which is an effort made by different individuals within the team to achieve a common goal. (iv) Cultural Sensitivity: which is understanding of cultural differences and similarities among individuals without placing a value on them. (v) Dealing with problem: is the ability to make a decision in order to improve the current situation. Together these Inter-Personal Skills enable an individual to gain information through a variety of means and help them with their learning skills. It helps them evaluate and critique the content made available to them through different platforms and enables them to communicate effectively.

The third dimension comprise of the Intrapersonal Skills. These skills themselves have several categories such as, (i) Self- Management: which is the ability to control ones action, thoughts, feelings and behavior in a way that benefits oneself. (ii) Self-Regulation: which is the capacity to comprehend and manage one's own actions and reactions. (iii) Time Management: which is the practice of managing and planning how to split the time between various activities (iv) Self Development: which is the process of acquiring new knowledge and abilities. (v) Adaptability: it means quickly changing of ones behavior in response to new situations. Thereby, it is implicit that there are genres of the skills in the 21st century that a person needs to enhance their professionalism.

1.2.0. 21ST CENTURY SKILL IN TEACHER EDUCATION

The education of teachers is crucial to be kept updated with the changes in times as this education is what later serves as the foundations of the schooling of several students under the tutelage of those teachers. Thus the skills learnt by the educators do eventually trickle down to their pupils. In research titled "Fostering 21st century skills for future teachers," Cretu D. (2017) mentions the student teachers studying in teacher education program reflected their views in the survey. Many such student teachers responded that the inclusion of 21st century skills, helps the educators to understand the methods through which such skills can be taught to the students and thus is an essential in teacher's education. In this research it was also been discovered that the process of learning of the 21st century skills essential for the student educators is not the same for every individual candidate and the ease of learning the components of the 21st century skills can vary from person to person based on their individual capabilities and experiences. As the education structure of the student teachers is centered on the methods of instruction to be used for education of students, it is crucial that the student teachers learn the methods of instructions for fostering the 21st century skills. And this is where the skills of understanding the methods of learning of the 21st century skills give them an edge towards becoming better teachers. The aforementioned study indicated that the learning of the 21st century skills during their education as prospective teachers could potentially improve their teaching skills.

Collis, B.A. (1996) in 'Technology in Teacher Education', points out the challenges being faced in teacher education. First issue is regarding the effective use of technology in Teacher Education delivery and the other is about the use of technology as Course Content. Talking about the delivery of content in teacher education program technology enhancement can be considered. A suitable channel to deliver course at a distance is by the help of computer assisted telecommunications. It was reflected in the study, 'the methods of teaching used for the instruction plays a significant impact on their capability at developing an understanding and fostering the 21st century skills'.

1.3.0. SYNCHRONOUS AND ASYNCHRONOUS METHOD OF INSTRUCTION

Teaching is a dynamic process and cannot be restricted to a singular process however there are two broad methods of instruction which encompass the various methods involved in the teaching process. These two methods are the synchronous and the asynchronous instruction. In simple terms synchronous method of instruction is when the teaching and learning happens at same time and place. It happens face to face

in a traditional classroom environment or in virtual classroom using platforms such as Google Meet, Zoom meeting application, Google Classroom, Live YouTube Sessions etc. While the asynchronous is when the times of teaching and learning are not in synchronization. It is flexible in terms of place and time wherein students can learn at their own pace using offline study materials such as pre-recorded lectures, books, articles, DVD, pen drive etc.

In online mode of Instruction several types of technical system and support can be included which make the process of instruction take place in virtual platform. Internet connectivity is a pre-requisite of carrying out online instruction which includes both synchronous and asynchronous method of Instruction.

Raj, Rita. (2009) in 'Encyclopedia of Educational technology' defines synchronous and asynchronous delivery in terms of Distance Education wherein Synchronous Delivery is the exchange of Information without delay. The traditional classroom teaching is completely Synchronous in nature. The example of Synchronous Delivery in distance education would be live audio or video transmitted among instructors and students where a certain level of real time communication is expected. The book of Encyclopedia also mentions of advantages of Synchronous Delivery as of developing motivation, tele-presence, feedback & pacing. Asynchronous Delivery on the other hand refers to all pre stored material consisting of web pages, DVDs, CDs, E-mail, pre- recorded videos, pen drives etc. Both the methods are used to deliver the content to the students.

There are several components to the Synchronous method of teaching such as the interactions between the teacher and the student that occur in real time. This form of teaching mostly occurs in a team setting and it is categorized by active interactions between the members of the team or the group. Synchronous teaching methods are further characterized by a fixed schedule of teaching which all members need to adhere to. It also results in real time problem solving and feedback for both the students and the educator. On the other hand, asynchronous teaching, the teaching and learning processes do not occur simultaneously. There are no real time interactions between the student and the teacher. Instead, the teacher records their lessons at a time and the lessons are learnt by the students at very different times. This method of teaching is characterized by, an absence of a team setting as the real time classrooms. Even video conferences are not utilized. There is an absence of real time interactions between the teachers and the students as well as absence of interactions among the students themselves. This method of teaching is also characterized by the lack of a fixed schedule as the teachers can record the lessons at their time of convenience and the student can learn those lessons at a very different time which suits them. This method of teaching also reduces repetitive work as the recorded lessons can be used multiple times. In the opinion of Islam, M.N.(2021) Synchronous and Asynchronous instruction has revolutionized the process of imparting education. The computer mediated instruction help those students whose feasibility to have access to the traditional classroom is not achievable.

Thus both synchronous and asynchronous instructional methods present the necessary means for an effective system of teaching. But how far can these methods develop learning in conventional classroom having prescribed syllabus and that too for the development of 21st Century Skills requires an investigation.

1.4.0 FACTORS AFFECTING 21ST CENTURY SKILLS

Other than the methods of instruction the previous studies indicate multiple factors which affect the proficiency of students' development of 21st Century Skills. Few of these skills are;

(1) Motivation: In a research study conducted by Talmi, Iris. et. al. (2018) on Undergraduate Engineering Project found that students who were intrinsically motivated performed well in the assigned project. Motivation is found as an important factor that has an impact on acquiring 21st Century skills.

(2) Classroom Environment: Ball, Annahita. et.al. (2016) mentioned in their study that the learning environments are useful in the development of 21st century skills amongst students, providing learning opportunities and higher perception of skills thereby enhancing their proficiency at utilizing these skills in varied settings. The learning environment incorporates factors such as, involvement, cooperation, satisfaction, role fulfilment, newness and personalization.

(3) Digital Adaptability: The evolution of technology presents a challenge to the digital skills of a learner. The ability to adapt to evolution in the technologic sphere is crucial to the digital competence serving as an integral aspect of 21st Century Skills. (Puckett, C., 2022)

(4) Digital Literacy: Proficiency in 21st century skills requires technological progression in a learning setting. Skill and support of technological ability ensures that 21st century skills are engrained in the education. (Lewin, Cathy & Sarah, McNicol., 2015)

2.0.0. RELATED LITERATURE

The related literature includes previous research studies related to 21st Century Skills and Computer Mediated Instruction.

2.1.0. 21ST CENTURY SKILLS

The earlier literature related to 21st century skills includes few of the studies as such;

Purohit, A.R. (2016) focused on “A study of coping skills for 21st century at secondary school level.”

The objectives of the study were (i) to range over the coping skills for 21st century anticipated in students of secondary level. (ii) to create such educational activities that would help exploring the coping skills for 21st century. (iii) to prepare a tracker on the coping skills for 21st century. Ankur Vidhyalaya, Dasrath was chosen for taking out sample of the study. 40 students of IX std, six teachers and a principal were the sample of the study. Parents of selected students (Sample), adolescents of Pratap Gunj, Vadodara, Research scholars and teacher educators of Centre of Advanced Study in Education were selected. The data of the study was collected through semi-structured interviews & interview schedule, Brainstorming Sessions, 6 Focused Group Discussions, Battery of Tests, Socio metric, Moodle, Observation, Observation Schedule, Field Notes & Field Diaries and student profile. The design of this research was exploratory cum intervention study, which was qualitative in nature. The findings of the study presented the mixed scenario of the students on different coping 21st century skills. No student was found good at all the skills. Ball, Annahita. et.al.(2016) study on the topic “Exploring 21st Century Skills and Learning Environments for Middle School Youth.”, aimed to specify the characteristics and skill set required by the youth to excel after secondary education. It was an Exploratory Research. Data from 262 middle school was collected through Survey Method. Instruments of study were 21C-LCS and 21C-CE. Factor Analysis was used to interpret the data. The result of the study suggested that both cognitive and non-cognitive skills are important for the overall development of the students. It also reflected about the scales that could measure 21st Century Skills.

Boholano, Helen. (2017) conducted a research study on the topic “Smart Social Networking : 21st Century Teaching and Learning Skills.” The study utilized Mixed Method Research Design. 250 Pre-Service Teachers were selected as sample of the study. Survey Questionnaire and interview were the tools used for the purpose of data collection. The study showed that Facebook was being frequently used by pre-service teachers followed by YouTube which was being used by the pre-service teacher in the process of teaching. Pre-service teachers were also familiar with Blogging, LinkedIn and Tumblr. Pintrest was the least utilized social networking site.

Sümen, O. O., & Hamza Çalisici. (2017) in their study focused on “Examining the 21st Century Skills of Secondary School Students: A Mixed Method Study.” Two hundred and twenty two students were

selected from a secondary school in Turkey belonging from middle class socio-economic background as sample for the research. 20 students out of selected sample participated in Semi structured interview. 32 5-point Likert Rating Scale was also used to collect data from the sample. 14 female and 6 male consisted of every five students from various grade level. Mixed Method Research Design has been used as research design. The result showed that students are good at 21st century skills. Students of 8th grade were well versed in 21st century skills. The 21st century skills in female are higher than their male counterpart.

Chalkiadaki, Areti. (2018) study on the topic “A systematic Literature Review of 21st century Skills and Competencies in Primary Education.” Includes systematic literature review taken up to answer the research questions. The searching of different literatures was done using ERIC and Google scholar. The number of total texts selected for analysis were 40. The findings of the study state that the categorization of several 21st century skills are not tangible and are falling into different sections of the broader classifications.

Ganayem, Asmaa., & Wafa, Zidan. (2018) conducted a study on “21st Century Skills: Student Perception of Online Instruction Role.” The aim of the study was to inquire about the perception of the students towards the role of technology education and diversity of culture instructors in improvising their 21st century skills. The study also highlights student preference of learning style. Sample of 99 students were taken up who took participation in TEC model. The data was collected through questionnaire. The students selected from eight various teacher education colleges and different cultural backgrounds. The result of the study suggested that students preferred face to face style for learning communication followed by blended method over complete online.

Talmi, Iris et al. (2018) studied “Intrinsic Motivation and 21st-Century Skills in an Undergraduate Engineering Project: The Formula Student Project.” The aim of the study was to find out the relationship between intrinsic motivation & 21st century skills expression. 54 students participated from different departments in this study. Research tools such as in-depth interviews, questionnaires, observations were used to collect the data for this study. The findings of the study suggested that the 21st century skill expression of the students participating in Technion formula project enhanced their motivation to take part because these skills made them attain the basic needs such as autonomy, competence etc. which are the supporter of intrinsic motivation.

Cigerci, F.M. (2020) conducted a research study on the topic “Primary School Teacher Candidates and 21st century skills” The purpose of the study was to find the effects of digital story telling on the enhancement of 21st century skill among teacher candidates. Explanatory Sequential research design has been used in this research study. A sample of 42 teacher candidates, 29 females and 13 males have been selected for the study. 21st century skills and competences scale directed at teaching candidates and structured interviews were the tools used for data collection. The result of the study suggested that the score of post-test was higher than that of the pre-test on 21st century skills analysis.

Gratani, Francesca & Lorella, Giannandrea. (2022) research titled, “Towards 2030. Enhancing 21st Century Skills through educational robotics.” The aim of the study was to incorporate robotics in education into the primary & junior secondary curriculum in school. The project was created through longitudinal approach & multidisciplinary approach and the methodology taken up was Design-based Implementation Research. Size of the sample was fifty 4th & 5th Students from Italy till the following years at school. The comparative findings of the study showed progress in leadership & interpersonal skills as compared to results in the 1st phase.

2.2.0. SYNCHRONOUS AND ASYNCHRONOUS METHOD OF INSTRUCTION

The preceding studies related to computer mediated instruction comprise some of the following titles

which are;

Carroll, Noel. (2011) whose research topic “Evaluating online Asynchronous support in the institutes of technology Ireland.” aimed to find about the perception of the students using asynchronous way of learning in an e-learning course. Survey method has been used in this research study, the data was collected using online questionnaire. The research got right response from 448 pupils across the Irish IoTs. The result of the study showed that synchronous assisted tools are considerably underused in the IoTs and are not that useful in meeting the learning needs of the students. Email proved to be an important means of communication.

Karal, H., et al. (2011) studied the “perceptions of Students who take Synchronous Course through Video Conferencing about Distance Education.” The objective of the study is to know the perception about distance learning course from the students taking synchronous distance education classes through video conferencing. The study used a qualitative research approach. Total 9 students from two different undergraduate levels at Karadeniz Technical University were selected as sample of the research through focused sampling. The data collection tools used to collect data from the sample was Semi-structured interviews and observations. Descriptive data analysis technique was taken up to analyze the data. The findings of the study suggest that the process of communication between students and teacher in the synchronous teaching was weak in the first week that gradually improved from the next week. Students felt satisfied by the technical equipments that were being used in the synchronous class. Some students also asserted that they felt more comfortable and could concentrate in a better way in the synchronous class through video conferencing.

Jacob, S.M. (2012) conducted a research study on “Mathematical achievement and Critical thinking skills in asynchronous discussion forums.” A relation between critical thinking and maths marks of engineering students had been checked among two groups of students. 43 students in group A and 60 students in group B were sample of the study. Data was collected using different ways being ODF postings, internal Maths scores and final exam scores. The result suggested that improved Critical thinking skill would help in achieving great results in Maths.

LeShea, A. V. (2013) carried out a research on the topic “The Effects of Synchronous Class Sessions on Students’ Academic Achievement and Levels of Satisfaction in an online Introduction to Computer Course.” The purpose of the study was to test the effect of live, synchronous class in online computer class. The size of the sample was 61. Quasi-experimental research design has been used to carry out the research. T-test was used to analyse the data. Data was presented using Histograms. The findings of the study showed that students who studied non-synchronously scored higher in their exam than the synchronous group students.

Woodcock, Stuart. et al. (2015) studied “The Learning Experience: Training Teachers Using Online Synchronous Environments.” The research studied the efficacy of synchronous platform being used to train pre service teachers. A blended learning approach was executed. Total number of participants in the course were 53. Both qualitative and quantitative approach have been used in the study. Data was collected through interview and survey. Statistical and thematic content analysis were used to analyze the data. The result of the study proved synchronous way to be an effective tool in training pre service teachers.

Kannan, Kalpana., & K, Narayanan. (2015) studied “Synchronous Teacher Training in India : A study of perception and satisfaction of the participants.” The study showed the results of survey of 14 workshops carried out through distance synchronous mode from 2009 to 2013. The objective of the study was to know whether the training program was accessible to the target group and to get the perception

and level of satisfaction of the participants. Size of the sample was 450 initially and later exceeded by 3700. Online survey was used to collect data. Questionnaire was the tool to collect the data. The result showed that the workshop could not reach the target group. The female teachers and the teachers in colleges based in rural areas had less opportunity.

Kuo, Ping-Hong. (2016) conducted a research study on the topic “Effects of synchronous web-based instruction on students’ Thinking styles and creativity.” The sample of the study consisted of teachers and students of public as well as private universities in Kaohsiung city. Total 600 questionnaire copies were distributed out of which 428 well founded copies are collected. The findings suggested that thinking styles were affected by synchronous web-based instruction. Creativity too was influenced by synchronous web-based instruction in a positive way.

Berry, Sharon. (2017) conducted a research study on “Educational Outcomes of Synchronous and Asynchronous High School Students: A Quantitative Casual-Comparative Study of Online Algebra 1.” The research design chosen to carry out the research study was ex post facto design. Students who enrolled into online courses in the United States were the target population of the study. The sample of the study were the 499 Algebra I pupils at the Cyber Charter school. The data for the study was collected through final course grade, grades retrieved from school database and questionnaire. The data was analyzed using SPSS. Chi-square and t-test statistical techniques were used to analyze data. The findings of the study showed that students scored good marks through asynchronous learning unlike synchronous learning.

Deepa, F & R, Muthaiyan.(2017) in their book “E-Learning” entitled ‘Concept of E-Learning’ have defined e-learning as an innovative application of teaching-learning process allowing learning to take place in a flexible space and time and is highly superior to traditional ways of imparting knowledge. It introduces the students to a rich learning environment which supersedes the learning experiences in the crowded classrooms. It takes individual differences into consideration. Synchronous and Asynchronous training are two important categories of E-Learning. In Synchronous Mode of Training the teaching takes place in real time. Contrary to this Asynchronous Mode of Training is not time or location dependent. This mode is quite effective when massive discussion between students and teachers are not required.

Francescucci, Anthony., & Laila, Rohani. (2019) conducted a research study on the topic “Exclusively Synchronous Online (VIRI) Learning: The Impact on Student Performance and Engagement Outcomes.” This research study was conducted at a large University of North America situated in the urban area. A sample of 698 participants was taken up. The level of student engagement and performance was compared using quasi-experimental research design. Exams were conducted to know the level of performance and engagement. The findings of the study stated that mixed results could be seen at both the levels.

Corfman, Timothy., & Dennis, Beck. (2019) carried a research study on the topic “Case study of creativity in asynchronous online discussions.” The aim of the study was to find out the effectiveness of online courses in developing creativity by the use of asynchronous online content, materials developed by teachers etc. Case study approach had been used in this study. Data was collected through individual interviews from students opted for the course and the teacher taking up the course. Two staged data analysis method has been used in the study. The result of the study suggested that project based, problem based and heuristic prompts taken up in asynchronous online teaching helps in promoting creativity.

Ogbonna, C. G.et.al. (2019) conducted a research study on the topic “Synchronous versus asynchronous e-learning in teaching word processing: An experimental approach.” The aim of the study was to investigate the impact of synchronous and asynchronous e-learning on achievement of cognitive academic and practical skills attainment in processing of words. Quasi-experimental design was used to carry the research. 70 junior secondary school students of ages 10–12 were taken up as the sample consisting of

two intact classes from the two schools. WPSAT and WPCAT consisting of 40 questions each were the two instruments taken up for the study. The results of this study show that teaching word processing through synchronous and asynchronous e-learning modes enhanced the cognitive academic achievement of students in word processing. The data also reflects that students taught through asynchronous e-learning showed greater cognitive achievement than those taught through synchronous e-learning.

Nejad, N. M.et.al. (2021) conducted a research study on the topic “ The effect of synchronous and asynchronous computer-mediated communication (CMC) on learner’s pronunciation achievement.” The purpose of the study was to examine the efficacy of one to one synchronous and asynchronous voice computer mediated communication on EFL Learner’s achievement in pronunciation. Experimental Design was used to carry out the research. Size of the sample was 45 of which 15 participants were in control group and 30 were in experimental group. Lexical stress test and phonemic discrimination test were used in the research. The result of the study suggested positive effect of CMC based instruction as compared to F-F oriented instruction. Also there was no significant difference witnessed between two CMC modes of instruction. Synchronous mode of instruction proved to be very effective than other modes of instruction in terms of learning pronunciation. The role of technology has a great importance in learning pronunciation.

Mukhopadhyay, Marmar.(2022) in his book “Educational Technology for Teachers.” entitled ‘Online Education’ has provided a wide range of information about Online Education. Online Education is a way through which knowledge is imparted using online means of instruction, internet. In this mode of education all the teaching activities are conducted online like teaching, discussion, assignment submission, feedback and so on. Basically, there are 3 ways through which online education takes place, they are Synchronous, Asynchronous & Hybrid. In Synchronous Mode both teachers & learners interact simultaneously with each other. The interaction can take place through audio or video chat (e.g., Google Meet, Google Classroom, Zoom, etc.). On the other hand Asynchronous Mode of instruction no interaction takes place in real-time. Learners get the content materials and assignments. They can work at their own pace in a given time period. The Hybrid mode also known as Blended mode. It is the combination of both Synchronous as well as Asynchronous mode of Analysis.

CONCLUSION

The metrics of previous study on the impacts of the methods of instruction are categorized into the hierarchy of variables in order to create productive research. The literature of the earlier studies available is carried out to study these variables to attain the understanding of the research process and findings. Among the length of literature studied many reflect a pattern of positive as well as adverse outcomes. Of the 22 literature perused through the course 9 studies were conducted in 21st Century Skills wherein different techniques and research methods have a exhibited significant impact on understanding and learning of 21st Century skills. However, some studies related to 21st Century such as of Sümen, Ö.Ö., & Hamza ÇALIŞICI. (2017) & Chalkiadaki, Areti. (2018) did not observe any significant impact on the learning of the 21st century skills among the students.

The studies conducted to find the impacts of different strategies reflects that the students have a tangible preference for one or the other teaching techniques and this preference reflects in the learning outcomes that these teaching techniques have on the students. But there are 4 studies as that of Francescucci, Anthony., & Laila, Rohani.(2019). Thomas, J.(2013) ,Mulcahy, K.F, Burns, Sharon., et.al. (2014) & Cunningham, J.(2014), Jacob, M.S. (2012) who neither found any significant preference of the students from the two different teaching techniques and nor were there any significant differences in the academic

outcomes. A few studies were observed on 21st Century Skills in respect to motivation, and learning environment as those mentioned by Talmi, I. et al. (2018) & Ball, Annahita. et al. (2016).

Among the other 13 studies conducted on Computer Mediated Instruction reveals the findings of 4 studies carried out by Nejad, N.M. et al. (2021), Woodcock, Stuart. et al. (2015), Kuo, Ping-Hong. (2016) & Karal, H., et al. (2011), that Synchronous mode of Instruction has positively impact on learning. Whereas, the 5 studies conducted by Ogbonna, C. G. et al. (2019), Corfman, Timothy & Dennis, Beck (2019), Berry, Sharon (2017) LeShea, A. V. (2013) & Carroll, Noel. (2011) exhibit that students showed a positive outlook towards Asynchronous mode of Instruction. This exhibits that computer mediated instruction is a powerful method of instruction to be opted for teaching learning process.

Several researches on Computer Mediate Instruction had been carried out in discipline of English, Mathematics, Computer science and Robotics, but rarely any study has been carried out on Teacher Education or on undergraduate teacher trainees. Only 1 study carried out by Ball, Annahita. et al. (2016) included the modelling factors affecting 21st Century Skills of Indonesian student teachers.

Moreover, from the earlier mentioned studies it is apparent that most of the studies have been done in foreign countries and only a few are in the Indian context. Only 1 Indian study mentions development of 21st Century Skills and 3 studies explored the area of CMI. One study that focused on technology enhanced learning, limited itself to creativity & motivation, whereas 21st Century Skills encompasses several other academic skills. The other observation was the inconsistency in the researches towards attainment of 21st Century skills. Where some studies agreed to attainment of 21st century skill two studies denied its attainment. (Sümen, Ö.Ö., & Hamza ÇALIŞICI, 2017 & Chalkiadaki, Areti. 2018)

The preceding study does focus the importance of instructional method for effective system of teaching but this study was conducted in respect to distance education. And the studies were either related to synchronous mode of instruction or asynchronous mode of instruction. None of the studies opted the hybrid mode CMI of instruction. So how far can Computer Mediated Instruction (CMI) develop 21st Century skills needs investigation? Moreover when a prescribed syllabus is transacted through CMI what will be the effect requires examination. These observation instigated the investigator towards some of the queries which are; (1). Can methods of teaching be used for instruction in developing 21st century skills among prospective teachers? (2). How far can CMI develop 21st century skills when following the prescribed syllabus of teacher training program? (3) Which of the aspects such as the subject background, motivation, classroom atmosphere, digital literacy, or digital adaptability respectively would have an interactive effect on 21st century skills? (4) What shall be the reaction of the participants when units of syllabus will be taught through Computer Mediated Instruction? These afore mentioned aspects paved the way to explore the impact of computer mediated instruction on attainment of 21st Century Skills.

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