ANALYSIS OF 21ST CENTURY LEARNING SKILLS AMONG STUDENTS AT UNDERGRADUATE LEVEL

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NATIONAL UNIVERSITY OF MODERN LANGUAGES
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ABSTRACT

Title: Analysis of 21st Century Learning Skills among Students at Undergraduate Level.

Present research was carried out to analyze the 21st century skills among students at undergraduate level. Major objectives of the study were to analyze 21st century learning skills set of Four Cs: creativity, critical thinking, collaboration, communication and use of technology among students at undergraduate level, to analyze existing learning practices in classrooms at undergraduate level in relation to 21st century learning skills set of Four Cs : creativity , critical thinking, collaboration, communication and use of technology for learning among students at undergraduate level and to investigate teachers' perspective about practice of 21st century learning skills and use of technology. The population of the study was 3044 Students at Undergraduate level in BS English and BS Education/B.Ed., 210 teachers teaching BS English and BS Education/B.Ed. The sample of study was 609 students which led to372 BS English and 237 BS Education/B.Ed. students. For obtaining quantitative sample, 20% of the total students were selected. To meet the saturation point of the study, 15 students from each stratum (9 English and 6 Education/B.Ed.),10 teachers (6 English and 4 Education/B.Ed.) and 10 classrooms were selected as qualitative sample. Proportionate stratified random sampling was used to obtain the sample from BS English and BS Education/B.Ed. students. For qualitative interviews and classroom observation purposive sampling technique was used. Sequential explanatory mix methods research design was used for the study. Jason Ravitz (2014) survey questionnaire on teaching and learning skills of twenty first century was used to get quantitative data from students. A semi- structured interview for students, a semi- structured interview for teachers and qualitative classroom observation were used to get more in-depth information of the problem under investigation. Descriptive statistics including mean scores and percentages were used to analyze quantitative data and thematic analysis was used to analyze qualitative data. Findings revealed that four Cs of learning and use of technology at undergraduate level are being practiced by students but at moderate level. Practices related to 21st century learning skills were not found at high level of practice among students at undergraduate level. The study recommends that practices related to four Cs of learning may be used frequently and may be the part of the classroom teaching and learning at high level. 21st century classroom environment may be part of learning at undergraduate level. Collaborative learning may be part of classroom teaching and learning. Teachers may be trained to integrate 21st century learning

practices in their teaching and professional development modules on 21st century learning skills may be designed by universities for teachers at undergraduate level.

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LIST OF ABBREVIATIONS

21CS	21st Century Skills
ATC21	Assessment And Teaching of 21st century Skills
BS	Bachelor of Sciences
Cb L	Collaborative Learning
CEO	Chief Executive Officer
CL	Cooperative Learning
CL	Contextual Learning
CM	Communication
CO	Collaboration
CR	Creativity
CT	Critical Thinking
DL	Discovery Learning
Four Cs	Creativity, Critical Thinking, Collaboration & Communication
HEC	Higher Education Commission
ICT	Information and Communication Technology
MMOE	Multi –Gate-Mixture of Experts
NCES	National Center for Educational Statistics
NEA	National Education Association
NQF	National Qualification Framework
OECD	Organization for Economic Cooperation and Development
P21	Partnership 21
PBL	Problem Based Learning
PjBL	Project Based Learning
TECH	Technology
Three Rs	Reading, Writing and Arithmetic

UNESCO	United Nations Educational, Scientific and Cultural Organization
USA	Unites States of America

Dedicated to

My Dearest Nanoo and Nana

Zainab Noor & Muhammad Nawaz

My loving Parents

Fakharrun -Nisa & Muhammad Riaz

&

My Respected Teacher

Prof. Mumtaz Ali

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Education in twenty first century is not the mere acquisition of bookish knowledge that one can exhibit to impress the fellowmen. Real education is a process which involves multi-dimensional and multifaceted learning skills adhered to this age which is an age of asking questions. Twenty first century skills include all those skills and abilities that are important for achieving professional and personal excellence in this contemporary society.

Twenty first century learning skills are applied universally to enhance ways of thinking, behaving, positively reacting and living in the world. These skills are implemented by teachers and instructors as well as leaders in various fields and the academia. There is a dire need to boost all these skills among learners, for a successful professional life.

There are multiple social skills like collaboration, critical thinking, problem-solving and preparing students for the digital age are important (Kennedy & Sundberg, 2020). These skills are significant for everyone in every walk of life, particularly in professional life. Twenty-first Century Skills corroborate with a diverse set of characteristics and abilities that enable individuals to become good citizens and as well a capable worker in the modern information society (Murat & Cam, 2021).

To cope with the new demands of the workplace and to remain competitive students need to be trained and equipped with the 21st century skills such as problem-solving, data literacies and creative thinking (Lavi et al., 2021).

Workers with all these essential skills are more likely to be valued and appreciated by employers as work force (Habets et al., 2020; Rios et al., 2020).

Graduates who adhere with their organizations by completing different task with excellent performance are well equipped with the 21st century skills. For graduates it is important to develop these skills to perform better in the field as workforce. Individual with creative thinking skills can find solutions to different problems and can easily work with originality of ideas (Atmojo & Sajidan, 2020).

According to McGunagle and Zizka (2020) in present days the employers prefer those individuals who have twenty first century skills like problem solving, better verbal communication, allocation of time efficiently with ability to work in stressful situations (Mahmud & Wong 2022). Individuals need to get familiar with information and digital society to fulfill and compete with the increasing challenges of the 21st century, with a number of skills and expertise and to produce individuals who have knowledge and diplomas in 21st century skills (Wang, 2022).

It is imperative for individuals to keep and develop these important skills especially, learning and innovation skills, knowledge, media and technology skills, and life and career skills (Ataizi & Donmez, 2014; Yalcin, 2018). 21st century skills are not only technical skills but also general as well to represent different complex forms of knowledge and abilities that a student must possess to demonstrate particular form of expertise (chehimi & Alameddine, 2022).

Anagün, et al. (2016) mentioned that in the 21st Century Critical Thinking Skills are essential with reference to cope with changes, to react, analyze, evaluate and adapt new information. Consequently, the education system also needs to go beyond just providing information to learners.

Learners need to incorporate innovation and enable themselves to learn independently. This will not only facilitate them in acquiring knowledge but in effective and creative implementation of knowledge as well.

The development of creativity requires adequate digital knowledge to thrive in the society. Creativity plays a significant role in the process of transformation of ideas into reality. In the case of single assigned activities, creativity in different projects can be connected and related to different individuals by providing them appropriate education and can be developed significantly for the change and innovation. (Akdeniz et al., 2016; Ceran, et al. 2022; Özkan, 2022; Kibici, 2022).

The educational system renders the responsibility to transform students into good human capital in this respect, upon the teachers. Therefore, the institutions must focus on building communities of skilled professionals, teachers. Moreover, the learning systems and communities must be structured and designed according to the Twenty-first Century Skills (Noroozi & Sahin, 2022).

The twenty first century skills are classified into three major components, one is related to learning, and other is based on technical skills, whereas the third one emphasizes life and career skills. The subjects of English, mathematics, sciences are taken as core subjects in the learning of twenty first century (Partnership of 21st Century skills, 2018).

The Glossary of Educational Reform elaborates the Twenty-first Century Skills as a large and comprehensive set, including knowledge, skills, multiple working habits and various other working characteristics and qualities (Abbott, 2015).

A few research studies on Twenty-first Century Skills in the setting of Pakistan covers the area of teaching skills, analysis of these skills through textbook reviews, use of these skills in technical education and application of these skills in science subjects (Fatima et.al 2021; Naseer et al. 2020; Pirzada et.al, 2020; shad,2018; Talat & chahudry,2014).

A holistic intellectual and mental transformation is crucial for the students to prepare them for professional life in the competitive modern world. It is also important to live with harmoniously in a peaceful society. These abilities turn the world into a more productive and harmonious place, suitable for living (Pena, 2015).

The important skills of "Four Cs" will determine that learners are prepared in a better and effective way to enter the workforce in the job market. The origin and cultivation of the perception of twenty first century skills is deeply rooted in the strong belief that all educational institutions of learning should arrange and make possible efforts to include all important, necessary skills that are in-demand in the contemporary professional world.

National Education Association (NEA, 2014) of USA studied and also identified these four important skills and abilities in 21st century, including being innovative and creative, having critical thinking skills, an attitude of problem solving, communicating in better way and collaborating effectively.

Progress in the modern worlds means to contribute, innovate and positively compete in the global economy. According to Hillman (2012) the structure of the world has changed completely and now there is a lot of interconnectedness among societies and countries that has revolutionized the demands of life and other matters.

As Hilton and Pellegrino (2012) described in their study that contemporary students can only respond to the tasks of the new world if they are well trained in their schools and institutions to become good mangers, analytical thinkers, employees, good citizens, parents and entrepreneurs. The role of the teachers is now becoming more complicated as they are required to meet the critical demands of the modern society. The most important requirement in this regard is the establishment of quality

professional development programs for teachers, to maintain the quality and standard of teaching in the classrooms.

Keeping in view the present condition of higher education system in Pakistan as well as the changing scenario of education throughout the world, it is pertinent to prepare our students for life after graduating and completing education from colleges and universities. For this purpose, it is imperative is to inculcate and implement all these 21st century skills and characteristics in the present system of education in institutions and should be utilized in different disciplines.

This will serve as a prerequisite of a system that enables our young students to understand and think critically, by moving beyond the memorization criteria of learning. Consequently, if we do not immediately implement the 21st Century skills and create room for new skills in our education system, it will be extremely detrimental for our learners and education system in the longer run.

1.2 Rationale of the Study

The new millennium has put different challenges for people, organizations and especially educational systems of the world to produce students as future products with different skills and competencies.

The role of tertiary education has been shifted towards more practical, lifelong learning and technology driven experiences that prepare learners to cope with demands of rapidly evolving world. Multiple studies in last two decades has highlighted the importance of skills which are important for the survival in this century both individually and collectively.

Individuals in 21st century should have aspiration and ideas to learn new concepts and abilities and attributes such developing critical thinking, as team or collective work, and problem solving (Alhabahba et al., 2016; Soh et al., 2010).

The researchers and especially researchers in the arena of education are working on 21st century skills with different aspects required to develop the educational system. Themes of these research studies are on the development, practice and especially learners as good product after study. There is too much debate and discussion about how to teach these 21st century learning skills (Häkkinen et al., 2017).

These research studies provide strong background knowledge of the area, literature review and implications strategies for 21st century learning skills (Abala et al. 2017; Lavi et al. 2021; Davis, 2021). These studies focused in exploring the K-12 education with reference to 21st century skills.

21st century skills is a term coined by different experts and researchers in the field of education. OECD (2019) defined critical thinking, communication, creativity and ability to use digital tools efficiently as"21st century skills". These skills are often referred as "21st century skills" and these skills enable learners to think critically, solve different complex problems, work, collaborate and communicate effectively, adapt to rapid changes in the environment, manage work effectively and acquire new skills and information on their own (Kennedy & Sundberg, 2020). The term used by experts in education for these skills is "21st Century Learning skills". This research study analyses these skills among students.

There are substantial gaps in understanding how these skills are developed and to what extent are practically used in teaching and learning. These gaps are related to integration of four Cs in curriculum of higher education, valid assessment methods to measure students' proficiency in four Cs of learning and effective pedagogical strategies and methodologies that promote Four Cs among students in higher education. Students of 21st century are in requirement to learn and practice new relevant skills

which are demand of the modern world throughout the globe and demand of these skills are changed that 20th century (Aabala et,al. 2017).

A few research studies on twenty first century skills in the context of Pakistan covers the area of teaching skills, analysis of these skills in text book reviews, use of these skills in technical education and application of these skills in science subjects (Fatima et.al 2021; Naseer et al. 2020; Pirzada et.al, 2020; shad,2018; Talat & chahudry,2014).

Mostly researches worked on single constructs of four Cs of learning. Nazir, (2020) highlighted that creativity is an important aspect of schools all over the world and creativity is always taken as big "C" means very important ingredient for successful teaching and learning.

Amir & Fouzia (2018) mentioned project based learning is important for 21st century learning incorporation in teacher education and it is an operative and improved method for developing creativity, communication, critical thinking and collaboration skills among perspective teachers. Bashir (2013) studied about twenty first century skills development among teachers and students engaged in online collaborative learning with reference of cultural exchange program among students and teachers.

Knowledge gaps exist to have deep knowledge of how and to what extent these 21st century skills are practiced in classrooms context of higher education in Pakistan, along with other gaps related to curriculum alignment with 21st century skills, assessment methodologies and faculty training and professional development related to 21st century teaching and learning skills. This particular research study is a contribution to the existing literature on 21st century learning skills with special reference to educational system to developing country like Pakistan.

The area of learning refers to a specific domain or subjects within the learning. These areas include language and literacy, mathematics, science, social studies, the art, technology, engineering and also personal, social and emotional development. In educational system these areas are integrated and interrelated forming a holistic approach of learning. Integration of areas of learning with 21st century skills particularly learning skills of critical thinking, creativity, collaboration and communication makes a comprehensive context that prepares students for success in increasingly interconnected world (SMOLINA, et al.2023 : Johnson, 2014).

21st century learning integrates multiple dimensions and aspects of personal development that ensures role of education in making an individual academically sound and also makes them ethically and socially responsible (Akhter 2020). The four Cs of learning form a holistic learning concept that prepares students for academic, personal and professional success.

As undergraduate student is pursuing a degree at first level of higher education. Undergraduate program prepares students to enter into the workforce, whereas graduate programs are most commonly function to advance careers. An Undergraduate degree opens numerous opportunities for personal and professional growth by developing skills needed to drive economic growth.

Undergratue education enhances the job prospects and increases the earning potential .A clear purpose of undergraduate program is to enter into the workforce and perform better as product for future. Therefore keeping in view the importance of undergraduate program, in this research study the students of undergraduate level are taken as population of the study.

In mixed-method research classroom observations of these practices can give first hand and in-depth information about the practice of these skills that can help in analysis of these skills. In this research study classroom practices are analyzed to get in-depth understating of these skills in real work environment to get the first hand information about the practice of these skills among students.

The importance of classroom practices for the analysis of 21st century learning skills (Four Cs) is increasingly recognized in educational research and practice. Fullan and Quinn (2020) emphasized that appropriate classroom practices foster deep learning and ensure that students are prepared for competencies like good citizenship, collaboration, creativity, critical thinking and communication. Saavedra (2021) discussed that innovative teaching and learning practices like blended learning, flipped classrooms and collaborative learning are critical to enhance the skills required for 21st century learner to succeed.

This study analyzed and address the current situation of four Cs practices and use of technology of undergraduate students in universities. Mixed-methods nature of the study involved students who are product of the future and teachers who are direct contributors to the development of these skills among students. There was a need to study these constructs in Pakistani educational system especially at higher level. The present study investigated the extent of practice of these 21st century learning skills among students and results may be useful in different dimensions of planning and policy making for higher education in Pakistan.

1.3 Statement of the Problem

21st century skills are important for work and progress in this century. The main focus of 21st century learning is to make students as creative individuals, effective

communicators, good collaborators, problem solvers, critical thinkers, self-directed learners and well equipped with technology. Twenty first century skills are most significant and vital skills that are requirement of any educational system in the world to make individuals not only good learners but to make them a good product for practical life after study.

Today' goal of education is to prepare students as a productive and skillful individuals of society. All over the world educational systems are working on these learning skills to make students equipped individual with different skills.

As 21st century skills are also major theme of sustainable development and SDG 2030 ensure education with knowledge and skills. Pakistan higher Education Commission Vision 2025 and National Qualification Frameworks 2015 also emphasized a quality and skills based education in the country.

Research work in the context of Pakistan covers the area of teaching skills, analysis of these skills in text book reviews, use of these skills in technical education and application of these skills in science subjects. There are gaps relate to practices of four Cs in higher education and especially in social sciences.

Therefore, this study aimed at analyzing 21st century learning skills at undergraduate level particularly creativity, critical thinking, collaboration, communication and use of technology.

1.4 Objectives of the Study

1. To analyze 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology among students at Undergraduate level.

2. To analyze existing learning practices in classrooms in relation to 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology at Undergraduate level.
3. To investigate teachers' perspective about practice of 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology at Undergraduate level.

1.5 Research Questions

1. How students use Creativity in learning at Undergraduate level?

2. How students use Critical thinking in learning at Undergraduate level?

3. How students use Collaboration in learning at Undergraduate level?

4. How students use Communication skills in learning at Undergraduate level?

5. How students integrate and incorporate Technology in their learning process at Undergraduate level?

6. To what extent 21st century learning skills set: Creativity, Critical thinking, Communication and Collaboration (Four Cs), and use of technology practices are being practiced in classrooms at Undergraduate level?

7. What is teachers' perspective on 21st century Learning Skills set: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology?

1.6 Delimitations of the Study

Prime focus of present research study was to analyze the 21st century learning skills set of Four Cs i.e. creativity, critical thinking, collaboration, communication and use of technology among students at Undergraduate level. Present research study was delimited to:

- Public sector Universities of Rawalpindi and Islamabad Region.
- Undergraduate students of BS English and BS Education / B.Ed.

- Teachers Teaching BS English and BS Education/B.Ed.
- Classrooms at Undergraduate level (BS English and BS Education/B.Ed.)

1.7 Conceptual Framework of the Study

There are different frameworks that have been developed to elaborate and define twenty first century skills by different researchers after research studies. Across the studies on twenty first century skills the common themes are learning abilities (critical thinking, communication, creativity and collaboration), information communication Technology.

UNESCO report by Delor (1996) has recommended four important objectives of education in new century that is learning to know, learning to do, learning to live together and learning to be. Brown, (2015) mentioned transferable skills set featured under 21st century skills according to UNICEF three categories of life skills, these are personal skills, intrapersonal skills and cognitive skills.

As collaboration, creativity, communication and critical thinking are instilled and used in learning. Settings and climates also benefit to multiple content learning more rich and make individuals effective for future work and career. (National Education Association, 2014).

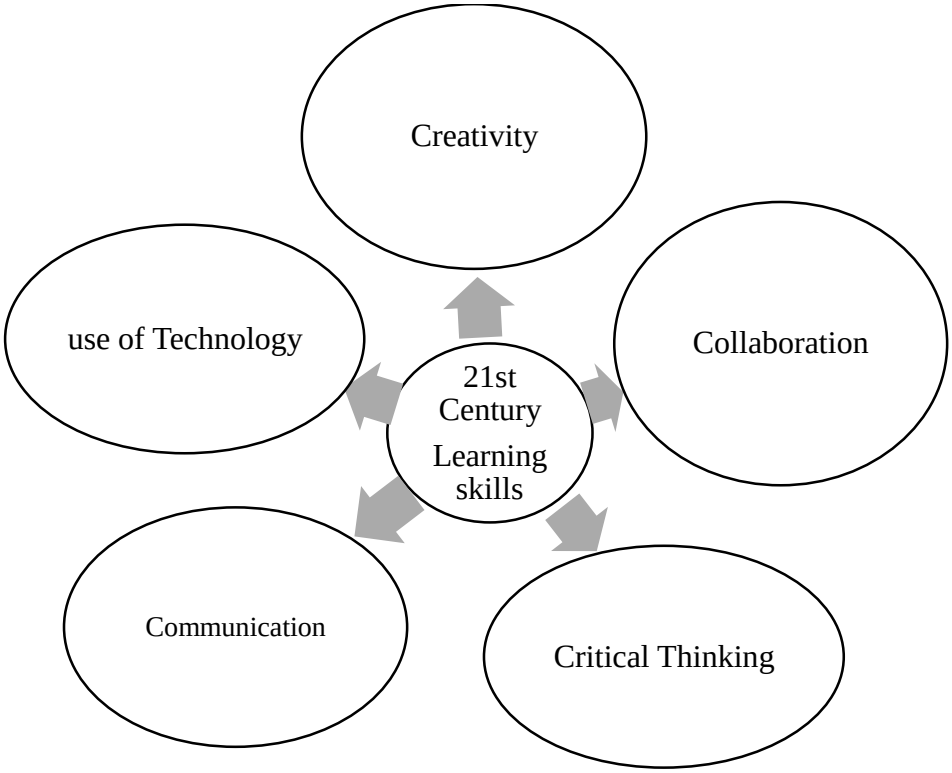
P21 framework is more widely adopted framework of 21st century skills. It has reflection of all previous frameworks related to 21 century skills. The essential and crucial learning skills identified by P21 Framework (2016) are creativity, critical thinking and problem solving, collaboration, communication and technology.

Jason Ravitz (2014) explained all these skills as following in his survey study "the *communication* (CM) defined as an aptitude to share different thoughts and ideas being the learner of the twenty first century, the *collaboration skills* (CO) means to work in teams with others and the purpose is to achieve to achieve a set goal.

The capacity to work together and collaborate with others is a progressively important educational outcome of this century learning because it is extended and larger emphasis that businesses organizations focusing on team-based work (P21, 2011).

Figure 1.1

Conceptual Framework of the study (Partnership of 21st Century skills, 2009)



The Critical thinking (CT) described as learning skills to reason effectively, make good judgments and ability of decisions making. All these research studies and frameworks for 21st century skills have common themes and attributes especially related to learning skills of twenty first century.

The concept and application of 4Cs provide a path and road map for teachers, educationist and students that is needed to transform classrooms stuck in the 20th-century industrial model (Partnership for 21st Century Framework, 2011).

This framework of twenty first century learning skills is grounded in the theory of project base learning. This skill set of learning and innovations include the Four Cs

of learning i.e. Collaboration, communication, Critical ways of thinking and creativity (P21, 2011). As well research questions are based on study and analyses of 21st century learning skills (four Cs) among learners at undergraduate level, so this model will be helpful to analyses and measure these learning skills.(P21, 2011).

1.8 Operational Definitions of Different Terms

1.8.1 Analysis

Analysis is a scientific process of examining something in order to understand its nature, to determine its essential features and explain it in detail. It is a process of breaking a complex topic or substance into a smaller part in order to gain better understanding.

1.8.2 21st Century Skills

The skills of twenty first century are a broader set of skills including knowledge, skills, working habits, life skills and multiple characteristics, believed by experts ,educators ,employers ,college professors and school reformers that that these skills are critically important for success of today' world especially in careers and workplace.

1.8.3 Learning Skills of 21st Century

Twenty first century learning skills are a set of knowledge, working habits and soft skills that include especially Four Cs skill set: critical thinking, creativity, collaboration, communication and digital literacy and these skills has been identified as essential skills for survival of life and modern work environment.

1.8.3.1 Critical Thinking Skills

Critical thinking skill refers to an ability and capability of analysis of objectives including different qualities like fairness, open mindedness and being informed and active, comprises willingness to question and entertain different doubts as well-being

independence by recognizing and assessing different values, peer pressure and the media influence.

1.8.3.2 Collaboration Skills

Collaboration skill refers to practices through which students learn how to respect others members of the group, and the spirit and essence of the teamwork make them able to generate new ideas together and make them useful for practice.

1.8.3.3 Communication Skills

Communication skills refers to activity or method of conveying different ideas or giving information to people, an act of transmitting information and messages from one place to another and from one person to another.

1.8.3.4 Creativity Skills

Creativity refers to the process and the invention of original thoughts in human activity from discipline of science to the arts, in educational sector, in business, in occupational industry and as well to normal life. The ideas behind creativity is to be original and suitable to the opportunity or problem existing.

1.8.3.5 Use of Technology

Using technology refers to use of different tools for learning to enable learners to succeed in their learning process and make different products by using an appropriate information and communication technologies.

1.9 Significance of the Study

Present study is significantly important for the students at undergraduate level, policy makers, curriculum developers and teachers. It contributes at a larger scale in the educational literature of the area of learning in 21st century. This study measured student engagement in twenty first century learning skills that include skills related to

collaboration, communication, creativity, and critical thinking. These are also called four Cs of learning.

It is highly beneficial for students at undergraduate level, especially students of BS in universities. Students of universities can directly get benefit from results of this study and different methods and techniques used and mentioned in this research study. So for learners and learning process this study has its greater importance in our educational system. In this study 21st century learning practices among learners are observed and activities in classroom.

The results of the study can be utilized to make learning process more effective by keeping in the view to develop student's creativity, thinking in critical way with innovation and to have solution of the problems in teaching practice. This research study is also beneficial for teachers and especially those teachers who are teaching BS programs in universities.

It is significant as it has analyzed the current professional teaching learning practices, and teaching methods in light of twenty first century skills parameters. It has its importance for curriculum designers. by using the results and discussions of this research study ,curriculum designers can design and select curriculum for different courses and program to make these program more and more equipped with 21st century learning techniques.

This study may be helpful for prospective teachers, who are entering and joining this profession of teaching by using the results and recommendations of this research study. This study can be utilized by the curriculum designers and developers to use the results of this study to develop curriculum according to need and requirement of these skills implication especially in teaching and learning process.

The Policy makers may be benefited from this research in a way to use its results and recommendations to formulate new educational policies to make educational system more practical and compatible with the world. Results and future practical recommendations of this research study are the actual benefit for all the stake holders of education system including students, teachers, curriculum designers and developers, policy makers at undergraduate level.

1.10 Methodology of the Study

Research methodology section consist of research design, population, and sample, instruments of the study, data collection and data analysis.

1.10.1 Study Design

As far as research study design is concerned, the present study followed mix methods design including both qualitative and quantitative methods. The research study was comprised of five constructs of important for 21st century learning skills which are creativity, critical thinking, collaboration, communication and use of technology.

1.10.2 Study Population

Population of this study consisted of BS students at Undergraduate level in BS English and BS Education, and teachers teaching these subjects at Undergraduate level. Total 3044 Undergraduate students and 210 teachers teaching BS English and BS Education/B.Edu at Undergraduate level.

1.10.3 Research Sample

Total 609 respondents constituted were quantitative sample of this research study, 372 (20%) from BS English and 237 (20%) from BS Education/B.Edu. For qualitative sample 15 undergraduate Students from BS English and BS Education/B.Ed. were selected, 10 teachers teaching at undergraduate level (BS English and BS Education/B.Edu) and 10 classrooms at undergraduate level were observed for 21st

century learning practices. Stratified random sampling technique was used for sample of this research study.

1.10.4 Research Instrument

Research instruments for this study were semi-structured interviews, survey questionnaire and classroom observations. Standardized survey questionnaire (Ravitz, 2014) is used. Permission was taken from questionnaire developer. Pilot testing was done to make instruments more appropriate and contextualized. After pilot testing and expert opinions, the instruments were administered to the sample of the study.

1.10.5 Data Collection

Data were collected by semi- structured interviews from students and teachers, survey questionnaire from students and classroom observations at undergraduate level.

1.10.6 Data Analysis

The present mix method research study employed both descriptive statistics (Percentages and Mean scores) and thematic analysis. Triangulation technique was used for data analysis.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

The major objective of the current study was to analyze the 21st century learning skills among students. This section covers the theoretical base of the twenty first century learning skills especially the four Cs of learning include creativity, critical thinking, communication and collaboration. The aspect of technology usage in the learning process discussed in detail. This section of the dissertation review s the existing literature and studies on constructs of present study. Present chapter of the study literature review also identify the previous work done by the researchers and gaps which identifies the need of 21st century skills and importance of these skills to be practice by the students at undergraduate level.

2.1 21st Century Skill

A trending concept of educational research around the globe is '21st century skills' and it is established on a mutual acceptance of the need to adjust and get used to education to meet the rapid and multipart modifications in this society. Chalkiadaki (2018) discussed that 21stcentury skills are professional capabilities that comprise of critical thinking, innovation and creativity, developed cognition and metacognition, teamwork, environmental literacy, problem-solving, global citizenship, collaboration, accountability, communication in national and international languages, self-regulation, leadership, cultural awareness, autonomy, socialization , digital and information literacy , physical well-being, acceptance and adaptability.

These skills are considered very crucial skills by educators, experts of curriculum, policy makers and different countries are taking steps to make reforms in their educational system according to these skills of twenty first century.

21stcentuy skills refers to a set of skills in individual which is important to have in this age of information to compete and qualify in work and life (Cohen, 2021). These skills are not only important to have but also need to be developed continuously.

Cansoy (2018) described that 21st Century Skills are some skills that are creativity, critical thinking, problem solving, communication, collaboration, information and process management, effective use of technology, career and life skills, and cultural awareness.

The role of higher education has been modified. Knowledge-based society of todays' world require an active participation of people that possess and can practice all these 21stcentury skills to meet the challenges globalized, Technology-focused and a modifying world (Fisser & Thijs, 2015). In 21st century it is crucial to produce new knowledge for economy /budget and society and the ability to answer openly to different complicated problems and issues, to communicate in effective manner, to utilize and apply information, as well to effort in different teams and use of technology. All these economic, public tendencies, developments and changes have significant implications for education (Erstad, 2010).

Knowledge itself is specialized, expanding and growing exponentially. The nature work is being transformed with information, message and communicative technology and as changed the meaning of social relationships.

Team work and innovation, sharing of information and making decentralized decisions are key in today's creativities and enterprises. Now ordinary skills and success is not enough for progress of students in field work, they need strong skills with high expertise. Research and development has shown especially among young people that how a new public practices and skills modification and changed due to increased use of new digital technologies (Buckingham & Willett, 2013).

Adeosun (2014) stated that there is need to welcome all new ideas and by using this technique all students will be capable to learn all these skills and apply these. New standards for 21st century are, what and how scholars and pupils should be able to do in a new way and student should be capable to make substitute of the basic skills and prospects of the past.

To meet these challenges institutions must be changed and converted in a way that will allow all students to obtain critical thinking skill, problem- solving behavior, team work, collaboration and skill of communication for successful in work pattern and life. Kay and Greenhill (2011) stated that now the demand in industry for jobs and success has been changed and organizations need 80 percent skilled workers than ever before, this is a great change and revolution in industry

The National Center for Education Statistics (NCES) identified most important abilities which are important and essential to one's success are motivation, thoroughness, self-regulation, continuity and persistence and administrative effectiveness. All these skills are vibrant and essential for an education system and success in the workplace. (Moore et al., 2015).

The capacity to collaborate with others means to work to share the tasks and activities with given resources by being more flexible and cooperative. Good communication pertains to using an idea effectively in a strong expressive way to highlight the main information. Hamilton, et.al (2013) enumerated the competencies of twenty-first century as related to cognition of a learner, personal characteristics and many other important interpersonal competencies.

According to American Management Association, the AMA (2010) survey, in future four Cs will be the most important feature of success of the organization and individual (Carroll,2013).

As stated by Wagnar (2008) according to survey of academy students and teachers entering in college were unprepared in understanding and thinking systematically, advance reading and in research. There is too much debate and discussion about how to teach all these 21st century learning skills directly to students (Häkkinen et al., 2017).

It is important to help and support students in utilization of the power of technology for advancement and for improvement of 21st century learning skills to make system of education more effective and efficient (Alismail & McGuire, 2015).

Wagner (2008) distinguished massively these different skills and considered also important to one's achievement as these skills termed" survival skills". These survival skills include problem solving, collaboration across all groups' critical thinking, and work in teams, leading by positive effect, flexibility. The initiative and entrepreneurial aspects, communication with operative oral and written skills, analysis of information, as well use of curiosity and imagination.

Boyles (2012) recognized the usefulness of these skills and the existence of the concept of "twenty first century skills" in contemporary literature, these expertise and abilities are new but important to hire graduates. The Pacific Policy Research Center (2010) also proposes numerous important 21st century proficiencies i.e. community knowledge and awareness, knowledge about worldwide awareness, knowledge about finance, health related awareness and knowledge and information about environment. These competencies are highlighted as positive response and success to meet the shifting and growing requirements of the recent employed worlds (Kay & Greenhill, 2011).

Multiple studies in last two decades highlighted the importance of skills which are important for the survival in this century both individually and collectively.

Boyles (2012) described the need and importance of education and discussed the need for highly accomplished workers. These discussions and report suggests that a college education is a great source for gaining the skills which are necessary to grow and succeed in the workplace. And as well not only for workplace but to maintain competition within the global economy.

A comprehensive definition of twenty first Century skills derived from study of Binkley et al: identifies major categories of these effective expertise. Twenty first century skills are different qualities and characteristics largely imparted or learned in a way to enhance the techniques of thinking, ways of knowledge, conducts of working and living in the world.

Essential 21st century skills, knowledge and attitude requires a complete and strong shift of people at all levels to work collaboratively and also reflect on current practices to build twenty first century pedagogy (Beetham & Sharpe, 2019).

All these skills contain a vision and inventiveness, a critical thinking approach, problem solving attitude and a decision making, learning to learn, a collaboration or teamwork, information literacy, communication, citizenship education, different life and career skills and other personal and community responsibility that is based on a positive social and cultural awareness.

Another most important aspect of education is related to deeper issues of human development as an individual and as well community progress concentrated of critical importance. According to Wagner (2008), the needs and demands of this world have changed and in turn have given rise to new concepts related to economy. These concepts are correlated with skills of knowledge, information, and innovation.

21st century teachers should consider all these needs and demands of the students in order to effectively train them to meet the plethora of challenges and problems in the future.

A very positive contribution is to be made to the more basic requirements of a society, a person and for all priorities is an urgent necessity (Senge, 2009). Themes of multiple research studies are on the development, practice and especially learners as a good product after study. As stated by Davis (2016) students entering in the workforce need to acquire latest skills of 21st century skills that lead them towards the employability and entrepreneurship.

Zajda (2010), also expresses his opinion and concern in a publication of the report that all those four concepts, and especially the critical concept "learning to be", is still hard to truly understand and effectively apply in the classroom practice. But it is important in the context of inclusive and mixed societies of the twenty-first century, where the existence of different social values result in pressure, discomfort, inefficiency and most of the time become conflicts.

This scenario of 21st century contributed to a new approach to the skills that are considered important for students of this century to be able to experience theoretical and life success. Several educational organizations have done studies, proposed and projected relevant outlines that include several skills and set of sub-skills, taking into interpretation the current social and economic conditions.

As Casner and Barrington (2006) explained twenty first century skills are most of the time denotes a set of skills that is more planned and which is plays a vital role for life, existence and learning in this new century. 21st century skills set mentioned by Zhao (2007) in the context of citizens with education must enable learners to exchange different ethnic changes and must manage numerous characteristics. Comfortable

interaction with people from diverse beliefs and positively movement across these cultures not only in virtual and physical worlds is important.

Twenty first century education gave new technique and methods in form of skills that are concerned with critical and important for students to be able to academics and life success. As the twenty-first century progresses rapidly, it is crucial for individuals to equip themselves with definite competencies and skills required in this contemporary age. These skills are named as Twenty First Century Skills, and encapsulate knowledge, skills, literacy, and expertise (Partnership of Twenty First Century skills, 2009).

Learners should be responsible for their thinking and should direct their abilities towards problem solving. Individuals in the 21st century should be well-equipped with ideas and motivation to acquire innovative concepts, abilities and attributes, such as critical thinking, team work, and problem solving (Alhabahba et al., 2016; Soh et al., 2010).

Trilling and Fadel (2009) recommended an effective communication skill and a fruitful teamwork as important fundamentals and pre requisites to achieve different goals in the twenty first century. Twelve major abilities named as twenty first century skills that in today's world are most important for students need to be successful.

The concept and idea of twenty first century skills was formerly generated in the United State of America as an effort to make and prepare citizens USA different demands and requirements of twenty first century place of work by improving educational products and realizing how to make them valuable. These skills are significant to students and teachers for today's young pupils and their upcoming careers, many countries started to progress their educational system by combining the

twenty first century requirements and expertise into the learning products (Kay & Greenhill, 2011).

Kenday et.al (2014) mentioned in a study that practical skills needed to make the part of education. These twenty first century skills involve higher and advanced order abilities among individuals like being creative and innovative, being critical thinker, a good communicator, a problem solver and collaborator (Pellegrino, 2014; P21, 2015). Bashir (2013) studied about twenty first century skills development among teachers and students engaged in online collaborative learning, this study was in the background and situation of development of the 21st century skills with reference of cultural exchange program among students and teachers.

Vgoot and Roblin (2012) mentioned creativity, collaboration and critical thinking are considered important skills in education for development. Lippman et al. (2014) research showed that these soft skills are predictor of employment among youth. Due to globalization, change in use of technology, change in the scenario of markets and other different political challenges demanded to develop all new skills and knowledge. Students of this century need better attitude to work.

All educational experts recommend to use new skills to develop high ordered thinking among students. The basic principle behind the idea related to expertise and skills of this new century is that the learners must be trained in-demand and in the light of worldwide appropriate skills. Educational institutions must arrange such skills, and teachers must use these skills effectively to teach to students (Griffin, at al., 2012). This is an age of information explosion and people need to possess the very important skills how to use information but for all this there is also necessary requirement to tell learner about how to differentiate between what type of information is important .

There is need to identify that what is unimportant being learner and information receiver and how we can combine many bits of information into a comprehensive and detailed picture of the world (Harari, 2018). Parental educational level, employment, family income and social status have significant importance on students' learning skills (Dinler, Simsar & Yalcin, 2021). Trriling and Fadel (2009) recognized the need to adapt new system of education by developing new mix skill set of students to meet the changing requirements of the society and work place.

Voogt and Roblin (2012) explained that the terms 'skills of twenty first Century and 'learning in twenty first Century ' are commonly used and heard in the United States , while the term 'competencies' is more likely be used in other parts of the world. As they connect that the requirement of the knowledge-based economies in world through schooling system.

The idea of 21st Century Skills has been presented in recent educational research, pre-service and in-service education and in curriculum development process. It is enormously in changing mode, so all our education system must also undergo constant development. As we talk about the latest situation in the world the Covid-19 as a pandemic severally effected education systems of the world with all other walks of life, these skills are needed to be measured and analyzed so that to overcome the problems by setting some positive parameters.

2.2 Need of 21st Century Skills

Sir Ken Robinson, (2011) observed that the world is becoming more complex day by day and to meet its challenges need to be more and more creative, concept is becoming gradually important and necessary in education and the workplace. Wurdinger and Qureshi (2014) explained that life skills can be expand through Project Based Learning ,as teachers can work to guide their students through a procedure of

problem solving by recognizing a problem, by developing a strategy of action , and by testing these strategies against reality, and reproducing on the plan in the process of scheming a project.

Table 2.1

Concept of Twenty First Century Skills by Different Researchers

Researcher	**Concept of Twenty First Century Skills**
Casner-Lotto, Barrington and Wright (2006)	Professionalism and work ethics, creativity and Innovation, team work and collaboration, critical thinking, written and oral communication, ethics, Application of information technology, Leadership, self -direction, diversity and Life -long Learning
Wagner , (2008)	Effective oral and written communication, collaboration, flexibility, access of information and analysis, Critical thinking/problem solving, initiative and entrepreneurialism.
Vockley and Lang, (2008)	Complex open-ended problems, multidisciplinary approach, interactive and collaborating, original use of knowledge, information, chances and opportunities, commercial thinking and creativity, attractive charge of health, financial and social responsibilities.
American Management association (2010)	Critical thinking, collaboration, creativity and communication are important skills of 21st century.
Schuele and Madison (2010)	Ethical and social responsibility, innovation, critical thinking, cultural competency, communication, team work, problem solving.
Holtzman and kraft (2011)	Adapting to change, ethical understanding, interpersonal skills, time management, and speaking /oral communication.

Boyles (2012)	Innovation and creativity, problem-solving, flexibility and adaptability, self -direction, communication, collaboration, critical thinking.
Business schooledge.com (2013)	social networking, communication both written and verbal, oral, Pl strategic planned projects, multiple financial tasks , risk, time management and personal productivity, problem solving, and inventiveness, thinking and ability to switch off ,making king connections.
Sung, Y., Turner, S. L., and Kaewichinda (2013)	Contextualization of emotional and instrumental support, career exploration, person environmental fit, work readiness skills, social and pro-social skills, self-regulated learning,
Van Larr,et al. (2017)	Technical information, creativity, critical thinking and problem solving, collaboration and communication.
Seidman ,et al. (2018)	Students' engagement, effective use of instructional technologies, emotional factors of learners' development.

Life skills evaluated and calculated include time management, self-direction, communication, responsibility, collaboration, problem solving, creativity, and other work ethics. Experts on skills agreed that the combined and a humanistic idea of learning has been delineated in the Faure and Delors Reports by UNESCO is relevant and that twenty-first century education and can contribute at a larger scale to greater humanity in a fast changing world (Elfert, 2017).

Preparing learners of this century for work, citizenship education and life. Globalization migration, transnational environmental, varying markets, and political challenges to the attainment of different services and acquired knowledge that is desirable by students to survive in this new and demanding twenty-first century.

Educators, foundations, government's companies and educational researchers refer to aptitudes and abilities as twenty-first century skills.

Deep and solid learning outcomes and products, multifaceted and multidimensional thinking and communication skills. Awareness of all these skills is not different in its terminology; researchers at Harvard University have been studying for a long period of forty years that student learning procedures and different methods must inculcate higher-order skills (Saavedra & Opfer, 2012).

Now a days than ever been before in past the people, individuals and workforce need greater skills and knowledge for survival and success. Pakistan institute of developmental economics highlighted that creativity is an important aspect of schools all over the world and creativity is always taken as big "C" means very important ingredient for successful teaching and learning at school level education (Nazir, 2020).

Amir and Fouzia (2018) mentioned that project based learning is important for 21st century learning incorporation in teacher education and it is an operative and improved method for developing creativity, communication, critical thinking and collaboration skills among perspective teachers. Students can adapt and change with working environment when they are taught about these skills and practice of all these skills.

Kolikant (2010) declares that use of digital technologies always alter the ways that people study and acquire different values about learning. They also exposed knowledge about new apparatuses and novel opportunities for being creative and collaborative. Ultimately all these new gadgets and the teaching and learning practices work together. All technologies in common and information technologies (IT) in precise, establishes main drivers, structures, necessities, and for decisive techniques

which skills are important and people need to acquire (Facer & Sandford 2010; Redecker & Punie, 2013).

Castells (2010) described that the twenty first century is a period of strict change and as well it is an astonishing time as commercial processes have become so connected ,linked and globalized that all producing an essential and better emphasis on knowledge, flexibility and collaboration (Dunning, 2000).

2.3 Higher Education in Pakistan and 21st Century Learning Skills

According to Baum and Payea (2004) declared that higher education is an important in building block for any society in the world that has a purpose for democracy. For the progress of education system , quality in teaching and learning the best practical academic environment to improve and develop self-confidence, impart a real sense of responsibility for students and strong social awareness. (Kleitman & Gibson, 2011).

McMahon (2010) concluded that higher education has supreme position and rank in financial and community development is going to be occur. Institutions of higher learning in term of economics are highly responsible and accountable for provision of advanced information and dimensions to individual that is needed to enter in government jobs, business, and other important professions (Vicente-Molina et al. 2013).

We have to implant and deliver twenty first century skills and other capabilities, competences in the current measures and categories because such an education system that only assistances learners to remember facts and figures. There is need to make and prepare learners as critical consumers of knowledge and information.

Levels of Knowledge, Skills and Competencies have been clearly defined and identified by National Qualifications Framework (NQF) that must be developed and

acquired by each graduate during education period at undergraduate level and these level must be taken into consideration by employers and human resource development policy makers.

With implications of Bologna initiative principles, the HEC (Higher Education Commission of Pakistan) made an effort to bring a multiple and qualitative improvement in universities and other higher educational institutions in the country. Higher education commission of Pakistan is regularly determined and making efforts to implement the National Qualifications Framework.

This Framework is designed to sustain and maintain the quality aspect and on ground improvement in programs of higher education offered in the country. The National Qualification Framework is a kind of instrument and a yardstick to educational organization to set their activities and programs to achieve the learning outcomes based on effective knowledge, different skills and competences.

2.4 Frameworks of 21st Century Skills

Voogt and Roblin (2012) clarified that the word 'competencies' is chosen in the world and the terms of '21st Century skills' and '21st Century learning skills' are favorite terms to be heard and used in the United States. All those countries which want to develop their system of economy and social growth already have linked their educational systems with the need and requirement of 21st century.

Ravitz and Blazevski,(2014) mentioned eight specific skills of 21st century for students .these skills are defined as creativity (to generate new ideas and find solution to complex problems) , critical thinking (to analyze complex problems, evaluate information and draw conclusions with reasoning) communication(to organize thoughts, data and findings and share with others effectively), collaboration (to work together and find solutions to different problems) to (to use of technology for learning

and produce products), self-direction (to take responsibility of their learning), global connections(to understand global and geo political issues), and local connections(to apply what they have learnt in local context).

Needs of education have been shifted from fixed or unmovable skills to the practical aptitude to learn in a positive and more vibrant environment as information technology has transformed the classroom and workplace environment? From the beginning and commencement of Partnership of 21st century, is often mentioned in literature related to education 21st century as an expert witness on defining and designing 21st Century skills in the United States educational system (P21 Framework, 2016).

2.4.1 UNESCO Framework for 21st Century Skills

As United Nations Educational Scientific Cooperation's Delors Report (1996) delivered by the International Commission on Education for the Twenty-First Century also examined the liberal and developing aspects of leanings trends of the century throughout the world .UNESCO recommended that four major pillars of education that has been be built upon are learn to know and get information , learn to do with good practice, learn to live together with other for common purpose and learning to have constructive existence in society (Duby,2020).

These four key supportive elements can contribute a lot for a learner and can support the concept and idea of learning throughout life. This idea has also been defined as "charming and appealing benefit of all the required opportunities offered by society".

As major contribution of the international research project for education and development "Assessment & Teaching of 21 st Century Skills" (ATC21S), there is an enormous collection of different researchers of field of education who defined twenty

first century skills and capacities as ways or manners of thinking, techniques and methods of work, tools for work, and living practices in the world (Binkley et al., 2012).

In the United States, the Partnership for 21st Century Skills, a joint government-corporative group has invented and developed its own definition of 21st century skills. According to their research work published on website , these skills are as comprised and followed in primary subjects and based on 21st century themes, that is communication, , collaboration, critical thinking, and information, creativity, media, and technology skills (Partnership of 21st Century Skills, 2014).

According to DeSeCo, these talents and abilities were organized and systematized under broader themes such as different facts and figures with information as a creation and as a source which include an active communication, ethical considerations and community influence and dimension of communication (Ananiadou & Claro, 2009).

Overall social changes are directly and closely connected with new developments in field of technology. And as a result the features of jobs these are required in the job market. As well the home atmosphere also seem to be observed and measured as the most important driver and dimension for demand of 21st century skills (Voogt & Roblin, 2010).

Many other areas are known in these frameworks of twenty first century skills are not new to educational research in all areas either planning for long-term or short term. Research has already been conducted and directed for years and years on many of these areas, including self-regulated teaching (Zimmerman, 2008).

2. 4.2 ATC21 (Assessment and Teaching twenty First Century) Framework

The Assessment and Teaching of twenty first Century Skills' (ATC21S) plan and project was introduced by the huge multinational corporations Cisco, Intel and

Microsoft in 2009 in cooperation with educational researchers. Both of these corporations expressed that new century skills are important to develop the ways of measuring these skills. This project was introduced and originated to cover the obstacles and barriers in understanding process of all these skills for creation of a common consideration of all these skills to enable learner to implement these abilities and progress in life (Erstad, 2009).

After appraisal of all related research projects and plans, the existing national curriculums around the world while focusing on 21st century expertise, Assessment and Teaching twenty first century produced an outline related to ten major skills. These skills have been divided in four main categories related to education and work of education: Behaviors and different practices related to work, different apparatus for work, patterns and parameters related to thinking.

The ATC21s project discovered many new ways of evaluating the 21st century skills and then connecting all these skills to the educational involvements aimed to develop and deepen the learning and empowering the scholars to improve and ripen a developed degree of skill (Griffin, Care, & McGaw, 2012).

It includes a new classroom culture that always provides learners to be part at the center of learning process and as well fully involve themselves in the social and collaborative feature of education. Twenty-first century skills consists of an ability to think critically based on rationality and to solve problem problem-solving, to use a good communication and collaborate, and use of information communication technology literacy and application of all these skills essential for learning in this century.

The answer and explanation to building and developing 21st century time these skills have an important influence on the learners to transmute and transform them into learning applications that is connected with curriculum content and process of

assessment (Jacobs &Lamb, 2010). Regan (2008) also authenticates a mixture of twenty first century skills must be a principal element of teaching and learning process and not only just placed as attachments to the curriculum.

Survival and prosperity in today student's life to be successful, effective and efficient require a very well thoughtful applications and implementations of twenty first century skills. It is vital to note and emphasize that all these twenty first century skills always playing an imperative role for students.

To be able to have grip in this information-age for jobs, all graduates are required to think extremely in depth about different issues and concerns related to practical life, as well to solve problems creatively, work in teams and groups, also learn an ever-changing technological scenario, and to communicate clearly in many mediums and areas of learnings (Friedman, 2005).

Consequences and results related education process in form of students' problem-solving, investigations and multiple provision of feedback at different level also focus and emphasis on student collaboration and cooperation in different small groups. These tasks can be presented through student presentations and class evaluation processes. Usage and application of modern Information and Communication tools; a performance-based assessment system with in the education system; and the inclusion and incorporation of Project Based Learning into the described curriculum is important to be noticed.

2.4.3 OECD Framework for 21st Century Skills

Framework based on Organization for Economic Cooperation and Development (OECD) countries (2005) is an important framework of 21st century skills. The OECD approach to new competencies and skills has been elaborated through two important initiatives: DeSeCo and PISA. DeSeCo is definition and selection of competencies

program. It provide framework that could guide the longer term assessment in the domain of new competencies. It use three clusters of key competencies: using tools interactively, interacting heterogeneous groups and acting autonomously.

It focus on the ability of the individual to think for themselves and take responsibility of their learning. PISA is a program for international studies Assessment. This study has two important features: one is innovative literacy concept that is connected to the ability and capacity of students to apply knowledge in in the key subjects' areas, to analyze, reason and communicate effectively, second is relevancy to lifelong learning (OECD, 2004).

2.4.4 P21 (Partnership for 21st Century Skills)

Partnership related 21st century holds three main subjects or skill sets that has been recognized as skills for life, skills for learning and Information, skills related to Communication Technology (ICT). These skills are based on student as a product for future life and a support by systems of education or parameters including, curriculum, professional development, standards and assessments and learning environments. The essential set of learning skills for the new time recognized by P21 Framework (2006) is the Four Cs. These four Cs help students to be creative and innovative; good communicators and collaborators; critical thinkers and problem solvers.

A comparative analysis of learning by Voogt & Roblin (2012) explain capabilities and frameworks for the 21st Century used in this area and in which 32 international valued documents have been studied and analyzed and all these documents found the reliability, consistency and a common point of view about what students of today need to know or be able to do to become a useful, an active members of the work place and the world community.

Important twenty first century skills have been identified in all frameworks described by Voogt & Roblin (2012) were use of collaboration, using good communication, Information Communication Technology (ICT) literacy and sense of citizenship education and literacy. Shear, et al. (2010) done an investigative research study of international level in an association with the Gates Foundation and William and Flora Hewlett Foundation which determined and discovered the innovative teachers' practices and pedagogies that are highly aligned with student centered teachings.

The mixed method approach of this important work and study developed a quantitative survey method which is done in eight countries of the world to gather and bring in teachers' insights of twenty first Century skills and examine different innovative and original teaching tasks and practices. The Partnership for twenty first century Learning organization (2017) presented an outline for learning process and student achievement in the 21st –century as good dynamic and productive learner.

This Outline for 21st - century Learning skills and capabilities was developed and designed in a collaboration with thousands' of educational professionals, expert teachers, and dynamic leaders in business industry to govern and regulate these skills and areas of knowledge which are desired to get success in work, life, and other aspects of having social responsibility as member of the society in the 21st –century scenario (Partnership for 21st -century Learning, 2017).

According to the Partnership for twenty first century learning (2017), the outcomes including the skills, the knowledge, and expertise which a student always master to be successful more and more in life and staff in today's growing global economy. The partnership for twenty first century learning agrees that students, teachers and administrators similar to think on traditional education. This background

and agenda exemplifies and states how a learning environments, a curriculum and instruction, career and professional development and principles, assessments processes work together with life and career skills. Learning and innovative skills, information and media, technological skills with good effective content areas to be given to students in an ideal education set up and process.

Table 2.2

Similarities among Frameworks of 21st Century Skills

ATC21S	**OECD**	**UNESCO**	**P21**
Ways of thinking include creativity and innovation, critical thinking, problem solving, and learning to learn and the development of thinking process.		Learning to know includes developing the faculties of memory, reasoning and problem solving skill.	Learning and Innovation Skills: creativity and origination, critical thinking and problem solving - Information, Media, and Technology Skills and competencies. Life and Career Skills thinking skills (content knowledge)
Ways of working include communication, collaboration and teamwork skills.	Interacting in socially diverse and heterogeneous group	- Learning to do include developing an aptitude for teamwork and initiative, and a willingness to take different risks. Learning to live together (understanding of ourselves / others)	Learning and Innovation Skills includes communication, and collaboration. Life and Career Skills thinking skills (social and emotional competencies / collective and multicultural skills.
Tools for working includes information and ICT literacy.	Using tools include an interactively mastery of language, information, knowledge, and physical tools.	Learning to do includes acquisition of complex skills.	Information, Media, and Technology Skills includes technology and advanced environment, information literacy.
Living in the real world includes local and global citizenship, aspects of life and career development, and personal and social responsibility. Binkely, et al.(2012), Vgoot, et al.(2010)	Acting autonomously includes control living and working conditions skills. OECD, (2005).	Learning to be includes intellectual, moral, cultural and physical dimensions. Vgoot &Roblin,(2010)	Information, Media, and Technology Skills include Effective citizens- flexibility and adaptableness, initiative self-direction, productivity, accountability, leadership and responsibility. P21, (2009) P21,(2014)

The framework and an outline prepared and designed from this study is envisioned to contribute for teachers who are engaged in improving students' Four Cs, capabilities. In this project, the learning policies and theoretical attitude were the non-cognitive factors that are in support towards the development of all four Cs in education. Societal skills were identified as critical to the development process of communication and collaboration skills. Along with all this an academic perseverance was also identified as an essential to the growth and expansion of critical thinking and creativity as skills of practice.

Effective learning and teaching also require project and design for dependable and authentic educational experiences that intentionally bring into play multiple disciplines and viewpoints. It includes different ways of working, contrasting habits of mind, and various types of communication (Lombardi, et.al 2007). This century requires students to be able keep up with developing and emerging technology and also be well equipped in the skills are necessary to compete, communicate, and to get success in a globalized world (Robinson, 2015).

2.5 Learning Models of Twenty First Century Skills

Learning models are the processes to organize learning activities to achieve learning objectives. Leaning models applied and practiced for 21st century leads towards the achievements of 21st century learning demands. The characteristics of 21st century learning can be adopted in 21st century learning activities. Learning models related to 21st century learning will enable the process and system of education to achieve 21st century learning. These models are helpful in achieving the objectives of twenty first century.

The characteristics of 21st century are holistic, contextual thematic, scientific, collaborative and student-centered (Kemristekdikti, 2018). Application of these

learning models help students to achieve the objectives of twenty first century learning and also help in critical thinking, creativity, communication and collaboration. There are different models of 21st century learning.

2.5.1 Discovery Learning Model

Discovery model (DL) is a model in which intuitive process help in understanding the concept, give meanings and identify the relationship. Discovery activities and tasks are carried out through observation, measurement, prediction and classification. The DL model has objectives to be active in learning process, find patterns and predict information. Formulate questions and help students to find solutions (Hosnan, 2014).

2.5.2 Cooperative learning Model

Cooperative learning (CL) model is a model in which students learn in small group of 4 to 6. In application of this cooperative model class tasks and activities will demonstrate social interaction, cooperation and communication among students. Students in this model can be divided both in homogenous and heterogeneous grouping. In cooperative learning students support each other (Gull& Shehzad, 2015). Cooperative learning model widely used by teachers and researchers to achieve the outcomes of education and for improved learning process.

2.5.3 Collaborative Learning Model

The collaborative model (Cb L) is a model of learning with grouping techniques and in this model student's work in very small groups to achieve different learning objectives. The Cb L model always emphasizes the collaboration and collaborative activities (Chan & Sher, 2014). This model highlights the active participation of the participants in small groups. The proper application of the Cb L model helps in problem solving and increase motivation among students (Smith, al.2018).

The main purpose of the collaborative model of learning is to make learning process active and built communication skills. In collaborative model the process of learning includes: setting groups of students, dividing activities, carry out activities and discussions, analysis, moving towards problem solving and then evaluation and feedback by teacher.

2.5.4 Contextual Teaching and Learning Model

Contextual teaching and learning (CL) model always encourages active involvement of the students in learning activities and process of knowledge to get the learning outcomes(Rusman,2019). The CL model includes construction of knowledge with real facts, inquire questions and find solutions, built communication and cooperation among different learning communities, reflect on activities and have constructive assessment process.

2.5.5 Problem Based Learning Model

The PBL model is very important model in twenty first century skills. This model makes students more practical and develop critical thinking among students. Most of the times the PBL model emphasize on problem solving and encourage students to find solutions of the issues based on reality (Wayness & Delton, 2018). The characteristics of problem solving model includes: issues based on facts, different point of views and their importance in the context of problem, proper utilization of gathered information and build solutions for problem.

2.5.6 Project Based Learning Model

The PjBL model is a model that involves the students' devotion and interest to solve the problem carried out in small groups or individually. Find factual and scientific solutions of the problems with in a group or on individual bases. The characteristics

includes preparation of the tasks, planning of the task and exposure. Students are responsible of the assigned and selected project.

Teachers, parents and other community members must be involved in the project and its outcomes. The practical working steps of PjBL includes: formulation of learning outcomes, teaching material and understanding of teaching material, skills training ,designing project themes, proposals and tasks to be executed along with carrying out different tasks and report of the project (Jalinus, Nawabi & Mardin,2017).

2.6 Different Research Studies on 21st Century Learning

Griffin et al. (2011) provided a clear direction for the necessity of institutes to shift and provide the necessary information to maintain a populous and masses that will contribute to the workforce of their country. According to these authors 21st century learning would have to be done so in accordance with the needs of the workforce. For the Twenty-First Century a Declaration on Higher Education by united nation scientific and cultural organization highlights and present the following role of educational institutions. These institutions should increase their capacity to meet different uncertain conditions and they should try to bring positive change that address the social needs and to promote equity and equality.

According to UNESCO students' position should be focused at the center of their concerns of lifelong perspective. Literacy in 21st century is no longer a matter of just extracting information or knowledge but it is an important process of validating and constructing the knowledge (OECD, 2021).

Jarvis (2008) mentions that learning for life may be defined as transformation of experience of different things into a large number of values, attitudes, skills and different types of knowledge, beliefs and senses. The society of twenty first century in a constant manner and continuously developing towards new changes and in

all these conditions there is very accurate and realistic requirement of the beginners to study about the concept of lifelong education and work by adopting new changes of the modern age (Mauch et. al., 2001).

Now the character and participation of the teachers in twenty first century classroom has been changed and it has been shifted as facilitator rather than being expert in the procedure of learning. And as well the focus of knowledge has been shifted from knowing to applying. Many educational systems are still working on 19th century practices rather than the 21st century learning environment in which there is need to learn how to construct and validate the knowledge (OECD, 2022).

21st century learning is a complete and continuous cycle of learning where students and learners develop their abilities and capabilities with proper method to attain and accomplish the required goals of successful life. Lemke (2003) viewed that the deep consideration of the subject area content and progress of the critical abilities for meeting the challenges of the future.

Teachers in these classrooms can build different structures that at the same time support individual students 'moralities, their defense, public connections, teamwork, and collaboration. Kesici (2008) recognized in his research study about seven major categories of teacher responsibilities in their respective classrooms while teaching in an independent classroom. These responsibilities are based on a common choice and decisions, provision of fairness to students placed education classroom and system, effective communication, fair expression of the ideas as well giving preferences to student choices.

While learning theoretical material is always taken as treasure and valuable. Students must also try to learn to make original and inventive use of what they are learning and understanding, how they will be able to relate content educated and learnt

to meet the everyday situations (Kay & Lesage, 2009). Students should take the theoretical content that is attained to relate, examine, evaluate, and should also create new dimensions of knowledge grounded on what they learned in this process. Rotherham and Willingham's emphasized better teaching as it is a crucial thing and it requires instructors in all disciplines to cooperate and work together.

For successful incorporation of twenty first century skills it requires a better curriculum and a better teaching, as well with joining the better assessments procedures into the classroom. All students, no material their position, their financial condition, or their life separate from school always merit a satisfactory education setup to make learners with all these skills desirable to be positive and a successful individual in the future (Girlando, 2013).

According to Vockley (2010) pupils learn more effectively when their efforts are combined and connected to their interested areas. And to different problems and issues they may encounter in day to day life or at work place. While to be master of important basic content and knowledge is always critical and scholars must comprehend that how to use the knowledge as they are learning (Girlando, 2013). Pupils should be able to meet and solve different practical difficulties taking information from the condition and relating it to others (Larson & Miller, 2011).

McLaughlin and Lee (2010) mentioned that learner of the current time have more and more high prospects to learn , use tools and learning settings that should best meet their requirements with a clear understanding of how to employ these advantages. Learners of today follow and follow learning by discovering, communicating, exploring and swapping ideas by using different technical means (Kolikant, 2010).

Students for periods, have supposed of core theoretical content based programs to be inappropriate in the physical world application because students are not asked to use this knowledge practically in practical situations and also the critical skills is not tied and interfered. Attainment in life and success in workplace in in this knowledge based society, is possible when an individual equipped with different work place attributes and qualities.

These skills are for learning, presence of creativity and critical thinking, collaborative, and the ability to use information and Communication Technologies in all these areas (Binkley et al., 2012). Today's student population have many different abilities and skills or different caliber in the in the same group, this condition raises experiments for instructors in education process. And on the other side of this educational aspect, all of these scholars are not ready and willing to use inquiry-based and learn in a collaborative culture.

2.7 Learning Skills of Twenty First Century

Learning skills are the important set of skills in twenty first century learning. There are a large number of different abilities that are used to make students successful and work in better way in their environment. These set of skills also identifies those who are not well prepared to meet the standards and requirement of 21st century. These skills set cover being original and also have critical thinking skills as well to solve a problem, as well to communicate in a better way and have collaboration with one another (P21, 2015).

These core and interdisciplinary subjects advance awareness about current affairs, financial knowledge, and business literacy. These practices of twenty first century should be maintained and bolstered through different standards, various methods of assessments, new instructional methodology and curriculum, and different

types of professional development with conducive environments for education and learning (Kay & Greenhill, 2011).

One such model of twenty first century skills, presented by Berry (2010) CEO and the founder of the Midpoint for Education Quality explained that learning skills of the 21st century means that students master and learn the content while constructing, blending, manufacturing and measuring the evidences from a varied variety of themes and other sources to develop respect for others and other cultures.

Virtual and digital tools can create borderless learning surroundings for all students having different ages, time and place. Powerful learning of this environment and state stresses on a well-prepared and equipped professional teacher. Such teachers can make attraction on all advancements in reasoning and can deliberately organized in teams, in and out of Cyber space.

In countries of the world the major themes, skills and knowledge can be covered by different subject names but coverage of the knowledge in languages, in science subjects, mathematics, in subjects of humanities and civics are most of the time presented with same objective and basic concepts. These skills are also called as four Cs of learning.

2.7.1 Four Cs

In the twenty first century, it is appropriate for teachers and educators to design good and productive new classroom learning activities which can smooth students to develop for future life and these activities are very interesting and popular particularly in the modern education world. These four skills are very important for the illumination of future lives of the students (Wendy, 2012).

These all 4Cs including all the basic necessities in establishing “globally competitive learners” includes better use of communication, being novel and

innovative, logical thinkers and collaborators in work and life. Teachers of this new world need to design instructions in a way that all above needs must be full filled in the current education background.

ASIE Instructional Design Model (Balakrishnan and Gann, 2016) has been developed as a substitute design and solution to answer the questions that how teachers of this century will design their instructions and what type of strategic approaches are needed. It shows how teachers will fulfill the need of their learners in the 21st-Century learning scenario. According to the Partnership for 21st Century learning (2011, the 21stcentury learning and innovation skills are the basic skills that students need to master in all areas of learning in their teaching space to remain prepared and organized for life after high school.

These four Cs contain, communication, collaboration, critical thinking, and creativity. They are so many other moveable skills in the process of learning in this new time that persons can change and communicate from one task to other projects and as well can do multiple tasks. Based on the results of different research studies, The National Education Association (2015) determined that these four Cs of 21st century learning are needed to be completely collective into the development of learning and teaching to produce good efficient people.

2.7.1.1 Definition of Four Cs

The idea or notion of 21st century skills was originated in 2007 in the United States of America as an attempt to prepare United State of America' citizens to encounter the demands of 21st century job market and prepare them for the workplace by improving all their educational results. And making them to realize how they can be beneficial with all these skills are important for today's youth future careers. Many other countries of the globe have also started to improve their educational structures

by including and applying the 21st century skills into the learning products (Kay & Greenhill, 2011).

Current studies and research projects results showed that National Education Association (2015) established the statement that these four Cs essential and required to stay fully combined into education to produce number of good citizens who will be efficient employees for the 21st century.

Learning skills are also defined by Four C's. These are the abilities that prepare a learner to collaborate, create, think critically, and communicate interactively as well as in a self-sufficient manner. Although, the concepts of being creative, critical thinker, a good communicator, and an effective collaborator is not new to education but these are now considered as basic requirements for success in the 21st century work environment. These are considered essential skills for the preparation of students for a successful career, along with knowledge and other cognitive qualities.

It is crucial to be a critical thinker, a problem solver, a good communicator and collaborator because these skills are productive and give a human being more positive things in life (Basu & Barto, 2007). Utilization of unique, novel and diverse ideas is called creativity. While thinking with different points of view and perspectives refers to thinking in a creative way, the ability and aptitude to think critically refers to finding solutions to problems in a more rational manner and by making strong judgments.

Students of todays 'world are simply touching a far the fundamentals and are also appreciating to practice the four Cs"super skills" to be more novel and creative, good communicator, effective collaborator and a critical thinker. Arora & Saxena (2015) described that these four Cs are important and fantastic abilities of 21st century are helpful in developing the abilities that students of this century need to possess for achievement in institution, careers and citizenship.

Kivun (2014) theorized that “Although the pre-21st century learning examples has provided a reasonable search of the moral perseverance of training for school leavers to make them a good product. These skills must be highly classified and particular for Industrial Age economies in 21st century. Teaching to students in a way that they develop a well-resourced and trained with the 21st century skills as the new learning model , the Partnership (P21, 2015) has raised value of these skills to “the 4Cs the “super skills” for the 21st century”.

The Partnership for 21st Century Skills is a group that was formed in 2002 in the United State of America out of apprehension that American education facing failure to produce dynamic graduates because of graduating from the system without obtaining any of the talents desirable to be dynamic individuals. Demonstrating the capability and aptitude in 21st Century Skills, students can select to meet the vital skills and component of the Choice Ready initiative.

Lin (2014) sets out all these essential skills to hold and highlight the standing of 4C in 21st century education. It is a critical effort to teach a creative skill in its best way because complex impact of these skills and other features that are connecting three important components consist of knowledge, creative thinking and motivation (Adams, 2006). If today’s world students want to contest in this international society, they must also be skilful speakers, better makers, strong thinkers, and good agents (the “Four Cs”). Today’s life is becoming attractive and more complicated as it was fifty years ago.

2.7.2 Creativity

Creativity as an attribute has been valued because of its importance in development and wellbeing of individuals both in personal and professional life and achievements (Wechsler & Nakano, 2018). Creativity is being flexible and adapting the change in the situations, an, d as well apply new ideas with imaginative abilities to solve

complex problems. Creativity is having a value among all the workplace skills. Wang at al. (2022) discussed that the project based activities and learning enhance the creativity in science education that allow students to connect knowledge with real world context. The responsibility of twenty first century teacher is to find the creative abilities of the students and then help them to use all these abilities to get maximum success.

Creativity help students to achieve goals of their practical and professional life (Saavedra & Opfer, 2012). Gordon (2022), discussed the role of creativity in the development of emotional intelligence and social skills among adolescents. Saavedra and Opfer (2012) explained in a very good way that being creative is valuable and it is awarded in civic, and other international circles because with this skills a lot of change and innovation can be made. With this ability new jobs can be created and it can also motivate individual for their progress and success journey.

A related definition also suggested by Dewitt (2007) that called creativity as manufacture of different original valuable thoughts, multiple procedures, or products used by a person or group. Creative and innovative skills denote that these enables students to generate and find different effective answers and way out to difficult analysis and inquiry about different activities (Ravitz et al., 2012).

Table 2.3

Characteristics of Effective Mastery on 4Cs Skills

Skills	**Characteristics**
Communication	1: Student will be able to perceive, get and giving feedback to other people.
	2. Student will be able to establish their thinking in a logical manner and present ideas clearly and concisely.
	3. Student will be able to comprehend how to put up a message with certain technique to communicate.
	4. Student will be able to interact with their friends positively on any topic.

Collaboration	1. Students will cooperate to achieve the same goal and will depend on each other to succeed.
	2. Students are accountable to any task given within a group
	3. Students will get involve in agreement within their group
	4. Students will be able to receive and admire the opinion of others.
Critical thinking	1. Students will be able to keep information which is relevant.
	2. Students will convey on activities to gain knowledge.
	3. Students will be able to mark decision based on information.
	4. Students will be able to be prepared, willing to accept the opinion of others.
Creativity	1. Students will be able to see present condition from numerous angles to generate the ideas
	2. Students will utilize new ideas in background and carry out a positive outcome.
	3. Students will have clear image an as well as follow the common rules.

Creativity and innovation are considered as positive aspects of the individual' personality that help him or her throughout the life to get maximum from life. Different context can pay these skills with benefits. The construct like creativity has multiple dimensions which involves intellectual characteristics ,many traits of personality and character , history of family , different educational aspects, as well cultural aspect effect creativity (Kaufman & Sternberg, 2010). In abroad range of society and in different organizations useful ideas of the individuals and practice of new thing is considered as development and these ideas benefit other team members and organization (Bledow et al., 2009).

Organizations throughout the world emphasize and search for workers who are creative individuals and who can also create new things, can bring novelty in work and can apply what they innovate. These type of workers can successfully stand with their projects and can also solve multiple issues in the organizations (Cropley & Cropley, 2005).

Robinson and Lee (2011) emphasized that it is an important element of originality, effectiveness, and ethics. Creativity can be as an indicator with learning activities and creative thinking. It is very likeminded with is related aspect with constructivist philosophy, in which learning is taken as a development of understanding through different interactions, experiences and reproduction on the experiences.

New ideas, imagination, generating, originality and problem solving are main words in various definitions of innovation and novelty which are related to the principle of 4Cs in the 21st-Century learning.

These are considered as essential features in preparing learners to be innovative for this new demands of the new time. These learning and innovation skills can be developed, developed, cultivated, by encouraging students and graduates to 'think in a better and different manner' in learning environment and developing ideas. It is an encounter for all teachers to communicate different strategies and elements to extend the learners' knowledge and to solve different issues in the course of their studies (Balakrishnan, 2016).

Brockling (2006) argues that the position and level of being a creative individual and professional is now a days connected to utilization of the entrepreneurial self. Research by Oliver *et al* (2006) on students' involvements of creativity in a broad topic and corrections to a detailed education methods in which student be creative. These activities and tasks include character- playing, discussions on different topics and posters presentations in the classes.

Different categories of teaching are also added in creative skills, such as a discourse and dialogue method of teaching like conducting discussions. These methods focus on students, thoughtfulness or views in learning process. Face to face seminars and seminars are helpful techniques to encourage students in different activities by

giving feedback. Teachers should keep in mind that how to use all these techniques used in learning process to get maximum results as outcome.

Teaching creative thinking instruments in a way are bounded in a disciplined way which is very imperative to deliver different basics for scholars to work creatively (Baille, 2003). There are numerous intelligent and intellectual mechanisms which are being used in 21st century teaching process such as a technique called six thinking hats by De Bono that can be used to kindle the originality among students and these six hat technique and model can help students and individual to think in a simple and entertaining way (Kivunja,2015).There are several creativities enchanting the process of education with special reference to teaching and learning to foster student imagination.

Beghetto (2005) proposed that the evaluation practices always effect level of students' creativeness as well. Students realize that work based on expression is more beneficial than exams in making learners more creative through the method of cooperation, with other class fellows' assessment always play a positive role to improve students' work.

In this world of global competition mechanization, a creative and innovative person has become the requirement of the professional jobs. A prominent thinker and speaker on creativity and education Sir Kenneth Robinson, is of the view that "Originality is as imperative and valuable in education system as literacy and we may treat it with the same status and usage."

So in this is the requirement of the job field as well to make students as a product more and more creative and innovative. Creativity includes two dimensions, one dimension is to be more and more creative and novel in everyday life and work and the other one is related with being creative in the field of the job market and professional

life. Both are very important aspects and dimension to live quality life and professional life.

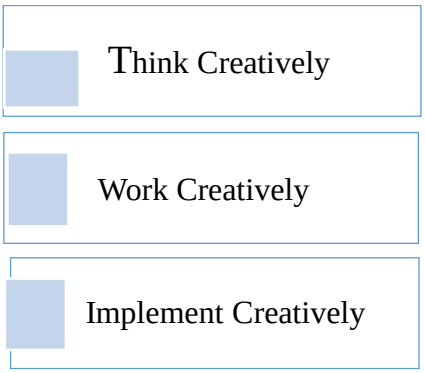
For second dimension assessment procedures for measuring the creativity are also very important (Shalley et al., 2004). Creativity can be seen as an intellectual process relationship is also studied between the existing ideas and creativities with the new innovations and creation of ideas (Houran & Ference, 2006).

There are two principles of Creativity, one is 'problem finding', and the other is 'problem solving' both require expertise and aptitudes. Dewett (2004) acknowledged two facets of creativity in an individual, the creative struggles and creative products. An individual' creativity can be defined as "a person's ability to think away from the apparent and produce something novel and appropriate" (Nayak, 2008).

2.7.2.1 Process of Creativity

Figure 2.1:

Process of Creativity in Learning (Cropley & Cropley, 2005).



2.7.3 Critical Thinking

Critical thinking are to reason, think in systematic way, inquire and most important to have the ability to make sensible and logical decisions. Critical thinking is increasingly becoming a recognized and important part in industry and labour market (OECD, 2022: Indrasiane, et al.2021: & Sommers, 2018). Critical thinking appears as

a key soft skill and 21st century competency (Hirai, et al. 2022).Analysis and evaluation process is most important that help individuals to be good citizens and as well provide better employees to work (Abdullah & Osman, 2010).

It is a methods of a logical inquiry, use of reasoning and some other kill in important for the application of these skills. Critical thinking includes different aspects as flexibility, communication, creativeness, and social awareness and context base adaptations (Johns & Kenner 2018: Sommer, 2018). Critical thinking in area of science education showed improved outcome when students are engaged in inquiry based learning (Lai, 2020).

According to Facione (2015) critical thinking is based on purpose and to make logical decisions with ability of self-regulation. Critical thinking skills enable students to find and analyze multifaceted issues, investigate questions and make evaluations on different points of view. Robinson (2023) highlighted that creativity in workplace is a highly valued skill, employers always looking for individuals who can find new perspectives and solutions to the problems. There are also systematic stages to reach a final judgment and make final decision. A person with critical thinking have value and vision to reach a point and conclude it. So that important to train well critical thinkers who needs to cultivate this skill to reach this ideal.

Problem solving is also linked with critical thinking, often the learners being critical analyze and move further, deeply engage themselves and go from lower-order thinking to high order thinking process. They engage themselves to deep thoughts that are workable for the real world (Saavedra & Opfer, 2012).The important way to enhance and create critical thinking among students is to train them to learn by their own and the other important aspect is to demand and incorporate this ability with

curriculum, as well adding the transformed ways of teaching to students (Saavedra & Opfer, 2012,).

Every student need to be academically advance in these day because its need of the hour. Although rational thinking and a problem solving attitude is taken as a dimension of the exceptional students in previous days of educational process but it has been considered as tool for every child successful learning (Roekel, 2010). Critical thinking is very important for all citizens to move effectively in social problems and issues. Today's scenario families must evaluate their lives based on the vast collection of facts and figures related to economic, health, community life and even about leisure activities to articulate reasonable plans.

The worldwide problems and issues and their effective solutions as including global warming always require a high order thinking and problem solving attitude. Socrates introduced the procedure of questioning and inquiring in educational settings and teaching, that later called the Socratic Method. It is a method and design that increase the human reasoning skills quality for life. The concept was provoked by Dewey a prominent figure in western educational programs of the 20th century and also suggested for educational system (Pardede, 2019).

Critical thinking was formerly a western educational concept but, now it is accepted and implemented as an indispensable capability of 21st century education inclusively (Rear, 2017) and now it is a strong recommendation for an educational and academic alternative to improve learning (Halverson, 2005).

Students need proper training to ask questions and to relate different information on social and web mediums like essay and storytelling to make these more practical and more relevant (Browne & Keeley, 2007). The Partnership 21, (2011) as a basic model for 21st century learning skills highlighted that critical thinking and problem

solving skills prepare students about complex life dimensions and aspects in their future lives as a citizen and professional in the job sector. Critical thinking is a process based on different steps like reasoning, use of systematic thinking, decisions and judgments and problem solving.

2.7.4 Collaboration

Collaboration is an important twenty first century skill because it is major source by which companies achieve their work objectives and targets (Saavedra & Opfer, 2012). Establishing different norms and values by teacher. When a teacher is using and developing collaborative activities, there is need to set norms in the classroom. Major focus of collaborating with others should be to promote social skills and all activities must be monitored (Jennings & Greenberg, 2009).

Collaboration is the most vital skills of this century, through which learners to work together and collaborate with one another and the purpose behind is to achieve the set goals. Through collaborating with others not only enhance how to live and work in shared way but also how to be responsible in all shared activities. Gordon (2023) highlighted that technology in learning support deeper knowledge acquisition by collaborative problem solving. Online teaching with different type of shared material can be very fast in access and help in learning process. This collaboration in classroom can be achieved by giving combine research projects and other group activities.

Turner and Baker (2023) discussed that collaborative learning environment enhance students understanding level and engagement across the subject. Collaboration include the effect of all other three skills like having creativity, thinking in logical way and also communicating successfully. UNESCO (2023) global education monitoring report highlighted the importance of global collaboration that encourage students to work together in teams across culture on different shared projects (Antoninis, et.

al.2023). Social net working groups are very helpful to students to collaborate and work with everyone. Through social media like what app, face book, you tube sharing can also be very beneficial if successfully used in learning and academic process.

According to Smaldino et al.(2012) tools for the collaboration in the process of learning such as classroom blogs writing , learning management systems and many other sources of social network for learning are helpful and contributing in to achieve the goals ,standards and demands of the 21st century.

When synthesizing and analyzing different definitions across the research literature, three important aspects differentiate collaboration skill from other related activities, such as cooperation and coordination. Brown (2011) cited Johnsons (2009) described that there are several ways of collaboration with others. One person activities can promote the success of other person while sometimes it can hinder and make problems in the success process of others, or not have any positive or negate effect on the success or failure of others.

Collaboration means a rehearsal to work together to achieve a mutual goal. It is an increasingly concept at a larger scale, day by day becoming an important educational product because all managerial and business organization moving work conditions to a team work (Dede, 2009).

Maximum works in field of education and research in 20th century which dealt the individual volume and capacity of work. But in this century to build a solid teamwork and strong productive network, there is need of collaboration skill of individual based on knowledge and abilities to achieve common objectives (Foster-Fishman, et al, 2001). Collaboration basically has been recognized worldwide as crucial approach in educational system that in implementation process combine students in

teams and projects to work for common classroom or educational objectives (Harmer & Cates, 2007).

Group work or team work mostly based on student's interaction with one another. So collaboration technique can be best used in socio cultural learning process and in this way students can learn multiple attributes to live in society (Ortega et al., 2009). An effective group work of any classrooms shows the effectiveness and zeal of every member willing to work.

In global perspective, collaboration means that students will participate in all the opportunities based on the team work and these opportunities are authentic for the objective of learning in collaboration (Sharratt & Planche, 2016).In order to be a successful, planned and creative learners there is need to have an opportunity to stimulate and initiate their own problem investigation and participation (Järvenoja & Järvelä, 2013).

Collaboration is an important technique of learning in which the coordination, group work and cooperation are involved. It is notable, as well expressed and voiced by Eggen and Kauchak (2012) that in different scenarios collaborative pedagogies are always work differently. Collaborative learning is a commonly used as an important instructional plan and strategy across many countries in the west because it is still an original concept being modified in certain countries (Zheng, et al.2014).

Collaboration is an active conversation of ideas in small group that encourage and stimulate students' critical thinking skills (Laal & Ghodsi, 2012). Johnson (2002) stated about the five basic but important factors must be kept in view while using the technique of collaborative teaching and using it for the effective learning process in classrooms as collaborative group.

These factors includes a positive interdependence and work between different group members. As well in collaborative learning environment an individual responsibility and accountability of each group member is also of great importance. Collaborative learning technique also have face-to-face interaction within the group members and in groups, in this way students collective societal skills and group processing increase. Along with all that feedback and reflection on the group tasks are also very important factor of cooperative learning.

Johnson & Johnson (2002) stated that a collaborative learning environment in which students understand have to work for common and combine objective, they also share responsibility in the groups and mutually support each other. Methodologies like the Jigsaw method can facilitates all the factors for successful collaboration as stated. When students of various abilities and ability levels as high, average and low, they collaborate in a group.

It is famous and common that when high-ability students accept the role of a helper or a teacher , by giving clarifications, explanations and other different kinds of help and support to the low-ability students, these students can benefit a great number of students with in the circle of group or in a class (Saleh, Lazonder & de Jong, 2007).Collaboration can also be taken as an equal benefit and a well-defined relationship between organizations and groups to multiple combined benefits (Mattessich, Murray-Close, & Monsey, 2001).

Collaborative practices originated in learning and teaching process can also affect the insights level of team members and in this way they can get the insights of collegiality, trust, and efficacy through internal accountability. Shared responsibility in a group and a mutual reciprocal support are main traits of well-perform group activities (Schmitz & Winskel, 2008).

2.7.5 Communication

Communication is a process of creating meaning as well as accepting and attributing it. It is basically the discussion of ideas and collaboration process among group members (Fatimayin, 2018).

Communications skills most of the times stated as skills to that enable students to establish their own related answers and discoveries so they can efficiently get information and can share by using a large variety of methods and as well as oral and in written form (Ravitz et al., 2012). Wagner specifies communication as an ability to express one person 'views clearly in a democratic manner and as well to communicate effectively across the cultures.

National Council of Teachers of English (2023), outlined different strategies for developing the communication skills in language art through collaboration and group activities (Tiwari, Rajmohan & Manan 2023). Partnership for 21st Century learning (2011) highlighted that communicational capability in a 21st-century world involves numerical, written, and oral communication for decoding and expressing the meaning of information, standards, attitudes, and purposes for a variety of choices. That is to notify and teach, motivate and encourage in a variety of procedures, in multiple settings, and surroundings that includes bilingual and diverse, using multiple media and technologies.

Cooperative learning also delivers to scholars with a chance to have discussion with different classmates , present and also give opinions, question other conceptual outlines, and are actively involved (Soraya, 2016). There are two important part of effective communication one is to have ability to present personal view point and the other one is how to accept and listen carefully about the idea of others, and this is also requirement of a learner to develop it (Farrington et al., 2014)

Communication between peers is important and it can be smooth as part of social constructivism, in this way and in this way an effective means of understanding of content can be promoted (Greenberg et al., 2003).

There are several social skills that help in the development of communication skill, if anyone have a thought before asking questions and before uttering words and speaking. Sometimes you are uncertain about different meaning, and looking into the eyes other people to have conversation with them (Malecki & Elliott, 2002).

According to Breslow (2015) there are many forms of Communication. Sometimes there is focus on writing an essay and composition that include grammar rules and punctuation. These all are types of communication and used in day to day life. In the view point of Geisinger (2016) curriculum and content of the previous century was not updated and was unable to meet the demands as the use of technology is increasing day by day across the world community and it is changing all the scenario of education. Internet is becoming less expensive day by day and connection between people virtually expanding, this is also a strong source of communication.

Ariffin and Idris (2010) described that purpose of communication is presentation of different ideas in words and also in written or on paper form, giving presentations to achieve a goal and getting support/agreement. In The World other than the Classroom described Gerald (2015) that communication is a wonderful, fantastic valued ability because it is only possible with communication to express our opinions, our queries, practical ideas and attractive answers to be shared and discussed.

In this world of competition the communication skills in different careers especially in business organizations are the most required after quality of an educated person. In this way being communicative in good ways a quality of an educated and beneficial person. Effective communication is all about receiving and using message

efficiently and successfully to your target audiences and it all necessitates a training so that graduates in higher educational can get necessary communicative abilities to get success in work and life.

Effective communication can develop both personal and professional life of an individual by enabling to understand different situations and to make better decisions. (Mukhiddinova, Sodiqova & Jurayeva, 2021). It is an important skill for citizenship skill also. Oral and written communication skills never reduce its importance. Educational institutions always need to teach their students effectively and make sure how to speak confidently and clearly.

As for written communication is concerned schools always need to continue to focus on the rules of official and unofficial writings and to guide students 'attention to use the technology available to them to help check their writing.

2.8 Literacy Skills

Literacy skills are also important sub set of 21st century skills. Digital literacy is n significant part of this set and can be divided further into three main parts, including use of technology, a good communication skills and effective media knowledge and awareness. The term literacy in digital way is also considered as a capability to use information technology for determining, discovering, finding and evaluating different type of information. Every teacher should know about information and must try to develop and integrate digital literacy in their teaching for their students.

A small level of awareness of digital literacy, novelty and creativity among workers show that all these digital and virtual skills still working as personal responsibility so that 'why not the part of the curriculum. The incorporation, integration and addition of these interaction and activities more and more reliant and dependent on

technological advancement. Use of latest technologies is a basic necessity, for knowledge and skill as human interaction increased with computers and interne.

Binkley et al. (2012) states that all important services essential for the 21st century have greatly defined in educational decisions, initiative and inventiveness most of the countries including in the world, England, and Northern Ireland, as well as developed countries of Europe and all these skills are now an important part, area and topic of discussion among educational policymaking and researchers for a long time.

2.8.1 Information Literacy

Information Literacy is an important the set of 21st century skills in which information is used to learn and discover something and also analyze the thing on the basis of information in better way. Because of the huge amount of information and multiple number of information sources the twenty first century is also called an information age. Students in their educational time and in few years cannot learn everything but an effective concept of information and literacy can help students to grow as independent learner, discover something new and also get benefit throughout life.

Most of the time students write their own research papers and also read thousands of books in this way they can learn more about information and use of information. Generally skills of using this information in positive way can be introduced and used but with relevance of students learning processes, there is need that curriculum must respond to the development of all these important skills.

Appropriate behavior for information usage is related with need of information and it also deals with awareness about best principled and ethical way to use this information with a strong and reliable medium used for information (Johnston & Webber, 2003). The information consciousness and awareness deals with knowledge

of when and why you need this information and what will be the best reliable source of information and how the individual will use and communicate this information considering its ethical manner to convey to the other persons in society.

Boekhorst (2003) also mentioned that the information movement is effected and provoked by different strands, themes and concept of the modernization , impression and impact of globalization and growth of information, with different kinds of channels, rapid use of technology with multiple number of tools and their applications and presentations. In this way information has changed communication patterns and behavior.

2.8.2 Media Literacy

In 21st century social setting has been changed and now the digital environment is everywhere in life. There is a strong and heavy wave of information that most of the time create misunderstanding and confusion everywhere, so it is very difficult in this century to remember, recall everything and also in case of remerging things it is difficult to find the reliable source on which trust (Brown, 2010).

As Duran et al. states that this universal common approach of mass media in every one's life has created an environment and a situation where media is the most powerful tool to work and mange life in society. Social media and different technological tools has given opportunity and a way to write, speak and give opinion on different matters and issues. It is important that now young people and children in different fields are consumers and makers of different media products (Jenkins, 2009).

Potter (2014) described the information and knowledge about media work as a scale or continuum, where the opportunity for improvement and advancement is always there and it can be used in a way to change. The advancement and development in technology has increased the progressiveness, open mindedness to access the

information. Information is now a primary need for the society in everyday life to handle different matters. Consuming information is becoming a new lifestyle and society is eager to get information. The information is mostly wrapped and packed into various types of media, such as print media and electronic media, the use of newspapers, various magazines, different books, radio, television, and digital media (Setiawan & Wiedarti, 2020).

2.8.3 Technology Literacy

There are number of digital reading and writing methods and techniques related to digital literacy and by using all these multiple ways and methods in words, in form of texts material, using audio, making of video, and many other forms. In (2012) by Spires and Bartlett processes of intellectual and rational thing divided in three major categories: and these are location and consumption of all related digital content, creation process of digital content and material , and then sharing all this in form of communication with other associated areas and ways.

Miller (2009) explained the conducted research about the progress of new twenty first century skills in undergraduates at high school level. According to his work these skills include including communication, collaboration, and digital literacy skills by using different tools for learning. Present educational system also need a lot of changes and variations.

Being responsible and an effective person and as well accomplishment of the role not only national but in the global citizenship perspective and context of students, there is a strong need to set new targets and also clearly focus on the development of an individuality that present an effective knowledge, skills and attitudes (Zajda, 2010).

Prensky 2001 stated that all those individual who born and grow up with technology, will always demand for a learning environment and surrounding with more

engagement and activity. Integration and amalgamation of technology that has helped an advance education system is one of the biggest changes in classrooms (Lombardi, 2007).

Using technology in the classroom also enables real-world, 21st-century experiences (Collins & Halverson, 2018). This reconceptualization and a new aspect of teaching presents a challenge and encounter for the traditional classroom teacher and also for students (Levin & Wadmany, 2008). Merging skills of the past with technology of the present is not seamless (Brown, 2004).

Technological change has grown exponentially, and both teachers and students must deal with the rapid pace. The dominant issue with the technology integration in classroom learning is reported by teachers that while their students are comfortable using technology, they, themselves, and do not feel adequately prepared to use technology in everyday lessons (Hall & weaver, 2001). Although there have been many opinions about technology transforming and a research-based basics of learning have not been challenged. The current goal of education in 21st century is to create classrooms where both teachers and students are contented and comforted by using technology to enhance teaching (Poole et al., 2007).

The Internet, along with all other technological gadgets that allows students to visualize, communicate, and simulate, has allowed more authentically and realistically engaging learning process to take place (Lombardi, 2007). This reconceptualization and transforming of teaching presents a challenge for the traditional classroom teacher and also for students (Levin & Wadmany, 2008).The current goal of education is to create and develop classrooms where both teachers and students are comfortable by using technology to enhance teaching and learning (Poole et al., 2007).

The dominant and big challenge, according to Collins and Halverson (2009) is whether modern contemporary schools will be accepting the changes technology and all skills associated with the 21st century. Some solutions include the following:

1. Reducing and eliminating the concept of uniform learning.
2. Embracing and welcoming varied knowledge sources instead of the teacher as experts.
3. Releasing and liberating the notion that students should learn a large body of facts.

Concepts, notions, procedures, methods and theories, instead provide a variety of tools, technologies, and different opportunities that allow students to accomplish relevant and meaningful tasks (Collins & Halverson, 2009).

Working in the 21st century will have both pros and cons, benefits and challenges as well. Many workers will have better incomes and salaries, better working and living conditions will potentially be more comfortable than in centuries past. Information Communication Technology shows a significant role in the 4Cs of learning skills of 21st century and integration for all these skills in learning process with effective integration. Firstly, this century of new technologies and trends in education effected the classroom environment where learners need proper knowledge and adaptability of all these tools of technology important for learning.

Secondly this communication in twenty first century is attached and involved with use of technology. As Partnership for 21st Century learning (2011) identified that communication capability and ability is an important factor of this century education, knowledge, attitudes and skills require communication with good and effective perimeter and use of technology.

Technology is an important element for the development of the 4Cs in educational context. Students of twenty first century are living in a technological and

media based rich environment in which they have complete access to information on different topic and different areas, they use new, powerful technological tools. The ability to collaborate and communicate with others is more advanced and with great chance. Being an effective individual and a profession in the 21st century, students required to be more and more collaborative and use all technical gadgets and tools.

It is highly appealing ad attractive in its context that the technology can be used in simple way to address the development. The National Education Association has described that 3Rs are very important in learning and teaching system of 21st century (NEA, 2014). And proper use of these three Rs is highly satisfactory for present students to make them more smart and employable in the world of tomorrow. Use of four Cs can make students more efficient and capable in their fields: as by using Creativity, Communication, Collaboration, Critical Thinking and Problem Solving (National Education Association, 2014).

The National Education Association (2014) highlighted in a research that four Cs are properly used and implemented the classrooms context while teaching and learning. Development proportion of various virtual programs in education are required to increase use of these effective skills (Howell, Williams & Lindsay, 2003). And each of the "Four Cs" is labelled with numerous resources and possessions that can be used effectively.

2.9 Life Skills

Life skills are very complex, multifaceted skills set and these need more care to be achieved in day to day life. Along with knowledge and thinking skills as major skills, now a days the learners are required to enhance and increase the sufficient amount of all these soft skills that will be always helpful for individuals to make them ready and embrace different multiple challenging working environments.

With These skills agreed tasks and goals can be achieved with peers and other group members, as well as can interact and positively manage work with and can meet different assignments and deadlines of the projects. 21st century is also considered and categorized with many amazing expansions in field of technology.

Silva (2009) also explains that the term of 21st century skills is not newfangled but it' importance is to be re-emphasized in a different way. From 21st century's problem solving skills always have importance and very essential in the field of teaching and learning to make it more useful and beneficial. But in present days there are many other changes and due to these growing changes and demands, demand of economies focusing on knowledge and globalization, these abilities now becoming more important (Rotherham & Willingham, 2009).

Learners of twenty first century need all these important skills to be more effective in work and other matters of life as well, there is greater need to learn how to be good global citizens. With reference to this skills and students preparation abut skills, there is strong need to educate them about the different cultural and social patterns of other nations and life styles of others. Most of the time becoming an effective global citizen and as well contributing in the world will complement the other traits and personae and skills of collaboration and communication.

In this way, people from many other cultures, diversities of different religions and cultures will definitely help each other and with their interaction a lot more can be learnt while collaborating and communicating (Davy, 2011). Rood Bari, Sahdipoor, and Ghale (2013) in their research highlighted that all these life skills training and projects have a very positive effect and can improves social growth, communicative and social adjustment. Life skills education help the learner by in different aspects by

enabling to get information, develop certain skills and behavior helpful in life. (Abiodullah, & Iqbal, M. Z., 2021).

Teacher and students both involvement is important in learning the life skills. Research based on life skill education shows that classroom activites and tasks can teach in better way the important life skills need for the survival of a learner as product in the society (Yadav & Iqbal, 2009). Life skill has been classified into three broad categories:

2.9.1 Thinking skills: Thinking skills are important skills that always improves the rationality and different faculties of the mind by using investigative ability, thinking creatively.

2.9.2 Social skills: Social skills are set of skills that comprises a multi set of skills based on rationality and interactive skills. In this skill set communication skills, organization skills, supportive skills, co-operation and team making skills and leadership skills are very important.

2.9.3 Emotional skills: Emotional skills includes knowledge and a contented behavior with other members of the society. This skill set include peer pressure management, coping abilities and self-management abilities of a person.

2.10 Leadership Skills

According to Halvorson (2014) achievement in the goals of any organization mostly depends upon the competencies and abilities of unique form of energies, managerial skills and their spiritual energy and competencies also matter a lot. The concept of 21st Century Leadership according to George (2010) is also linked with the individual traits and abilities to guide and lead in the organization.

Hitt, Haynes and Serpa (2010) also contributed and stated that the organizational environment, different projects and designs of work and actions are

related with the activity of the chosen leaders. Leaders deliberately and purposefully try to inspire all of their assistants to work in collaboration for the common objective of the any organization. .

Perrin, et al (2012) described that 21st century leadership is a methodical systematic concept and it is aligned with the leadership of such individual who is the noble and lord of his subordinates, but at the same time he can also engages the entire members of the team in the creative and productive processes of moving towards the achievement of the goals and objectives.

Simpkin et,al. (2017) are of the view that knowledge and skills has changed the leadership style in twenty first century and now there is increased the demand of organizational leaders to change themselves according to the needs of the work .

A capacity to take inventiveness and self- motivation is also considered essential and significant (Wilkens & Wilmore, 2015) and discoursed in a combine mixture of different dimensions of work and the ability to lead by influence and guidance (Wagner, 2008; Terrugi & Zuccoli, 2015).

Incorporation of twenty first century teaching practices into the classroom teaching scenarios and in pedagogical changes, teachers will be able to properly communicate according the demands of the current times (Jacobs, 2010).

Teachers always evaluate by student knowledge and learning through different types of tests and as well by asking content related questions during a lecture, but many practitioners and researchers understand that a different type assessments developed by the teachers. And during classroom teaching these skills can be helpful in learning process of different new skills and knowledge (Popham, 2008).

Binkley et al. (2010) mentioned a framework of 21st century skills include these major skills sets are divided in ways of thinking in which creativity, as well problem

solving attitude, critical analysis and thinking skills are included. Second set consist of the ways of working with on another are discussed this portion includes the collaboration and effective communication skills, tools of working also include different method and techniques that are important for the information and communication literacy.

As well living in the world also includes better insights, perceptions and behavior regarding citizenship, other interpersonal skills and respect for others living in the world. Different new method and techniques of teaching like portfolio assessment and other latest techniques can encourage students in education process. Constructive feedback is very important element learning process and if to students and educators are well aware of its use in the classroom instructions, it can maximize the benefits. Peer assessment criteria is also helpful for learning with others in the classroom and it can be highly productive when used as assessment tool in the classroom teaching (Ross & Gray, 2006).

It is obligatory for students to own 21st -century skills to be able to explain different complex issues in a continuous changing society. The mastery and proficiency of the content both in written and verbal is difficult. Students must be able to find their own assumptions and opinions from their learning. Students need to work resourcefully and effectively in different groups of people and try to produce creative ideas for solution of complex problems.

As well it is needed to communicate effectively through various stages of learning, and must try to comprehend difficult schemes and organizations that apply different policies to solve problems (Anderson, 2012).

Understanding always demand that educators must understand important learning skills: communication, critical thinking, collaboration, and creativity for

preparing learners to meet different challenges and needs of the 21st century (Cassidy et al., 2016; Fisher & Frey, 2014; Hernandez, 2017).

Guaranteeing actual twenty first century learning practices with different other stakeholders can recognize the position and quality of particular development (Grierson & Woloshyn, 2013). Institution for the advancement and excellence of the system and education it is essential that focus there must be a focus on continuous professional development (Grierson & Woloshyn, 2013; Guskey, 2014).

Another viewpoint and perspective of twenty first century thinking and learning originated and practiced by from Howard Gardner. Gardner (2010) also stated that it inspires instructors to build upon challenged relevant methods of teaching. He is of the opinioned that beginning of the 21st century requires new beginning in schooling and learning perspective also.

Having degrees or mastering in subjects is no longer adequate to make students to be successful in careers and the workforce (Robledo, 2012). It is necessary for students to keep in view the changing world requirements. While the mastery of content both in reading and writing skills is still central skills. Students must be able to work professionally and effectively with different collections of people, and produce their creative ideas for the solution of difficult problems.

According to McCarthy (2015) being deliberate with the application and teaching of this novel century skills is the key to student growth. 21st century skills are not making their way to classroom which is the basic requirement of the time. Educator's responsibility is to teach students to have expertise on theoretical content, and also to obtain, distinguish, and use the 21st -century skills which are required for success in an increasing global economy (Girlando, 2013).

A teacher must understand how to link and add the students outside experiences and interactions in the classroom learning so that students become more and more energetic and motivated in the process of learning.

2.11 Critical Summary

This chapter is comprised of literature review that covers the context and purpose of research, theoretical basis of constructs of creativity, critical thinking, communication, collaboration and use of technology. These five construct have their foundation in project related to education and partnership of 21st century skills. Different researches and frameworks are discussed in this chapter of literature review. Present research bridges the gaps by exploring and analyzing the twenty first century learning skills and importance of these skills for students.

Most of the researches are in western background that highlight the standing of the twenty first century skills set and especially focus the 21st century learning skills set to be included in the educational system. To connection and fill the gap between instructional practices and changed preferences that are changing the context of the educational system and practice, the Partnership for 21st Century Learning designed a framework necessary and productive for learners (Fisher & Frey, 2014; Hernandez, 2017).

All frameworks of the twenty first century skills suggested that these essential skills of learning including creativity, communication, collaboration and critical thinking are now crucial skills for progress and employability. Along with all these skills, it is necessary for both students and teachers teaching at all levels including schools, colleges and universities need to learn technology also.

The present chapter also discuss the importance of these skills for teaching to make learners more effective and practical learner for their future life. Now the survival

of the leaner as product is only possible if he or she has good communication skills and can interact and share ideas at is best.

Creativity as an important learning skill. Creativity means to make things and bring new ideas. These new ideas and innovations must be included in teaching and learning process to make the education system more effective and productive. All new ideas and projects must be used and merged in a way to make learner more productive by making student a global citizen. According to humanistic perspective and thoughts in educational system, a creative person has a great consciousness and ability to meet the crisis and challenges with best transformative ways (O'Hara, 2017).

A global citizen in a context that the creative idea of the learner must be practical and applicable in the world practice scenario. Critical thinking is very important learning skills by including different steps and procedures of using critical thinking. It is a greater need to train students in a way that help them to critical thinkers.

Critical thinking skills are widely recognized in curricula and in educational policy documents at all levels of education (Ab Kadir, 2017: Kuhn, 2018: & Sophie, 2021). By being critical thinkers, they will be more rational and can take better decision in their practical life. Purpose of any educational system is to make its students as rational being and product to grow and progress in practical life.

Literature on different new transformative pedagogies show that collaborative methods are very important and skills of collaboration makes students to work more effectively and efficiently in teams and groups. Cooperation and team work reduces nervousness or uneasy behavior in working environment. Cooperative Learning develops positive behavior and attitudes towards teachers in the learning process (Marjan Laal et al, 2012). When students use collaboration in their learning process to complete different tasks, they learn to cooperate and collaborate in society.

This is a century of communication and information. Being learner there is need to be more and more effective communicator to compete with other world as well. All three types of communication: verbal, on-verbal and imagery are requirement of an effective and effect educational system.

All these Four Cs are needed to be included in learning process and teachers must effort to make their activities and tasks that enhance these skills among students. Along with these Four Cs, proper use of technology is also requirement of the new time. Learners of this century must learn all the learning skills of 21st century and incorporate these skills in their learning process for the progress and a better career.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter "Research Methodology" explains the nature of research, research design which include research paradigm, research approach, research strategy, instrument details with reliability of the instruments. This chapter also contains details and information about population, sample, sample technique and data collection and brief information about data analysis technique.

3.1 Research Approach

Mixed-methods approach plays an important role in research and includes a wide range of methods (Mertens et al., 2016). This is a combination and integration of the qualitative and quantitative data (Creswell & Plabo Clark, 2018). In the present research study the researcher used mixed -methods research technique to get in depth understanding of the phenomena under investigation and validated the results with multiple instruments. A mixed- methods approach was used in sequential way to get the required data from students of BS English and BS Education by using instruments: survey questionnaire, interviews and classroom observations.

In first phase quativtive data was collected through a standardized survey from students at undergraduate level and for further in depth analysis of 21st century skills students and teachers were interviewed. To check the practice of 21st century learning skills, the researcher conducted a qualitative observation in classrooms at undergraduate level. Both quantitative and qualitative data gave an in-depth understanding of the phenomena under investigation and helped researcher to find in detailed information of different aspects and validate the result with different instruments.

3.2 Research Paradigm Emphasis

A paradigm is a standard, set of ideas and perspective, in research study it is a way of looking at something important for research study. Social scientists can use different paradigms for the inquiry of their research study. None of them is right or wrong, it can be merely less or more useful in particular situation of the research study conducted for (Morgan, 2014). Pragmatism is best suitable philosophy most of the time for mix-methods designs. There is an advantage in using mix methods research both quantitative and qualitative research.

As quantitative research provides immediate objective data while the qualitative data provides in depth analysis of the problem under the study (Johnson & Ownwekhuzie, 2004).The present research study was conducted with sequential explanatory research design in the pragmatic paradigm of research. In this research study pragmatic paradigm is used, both qualitative and quativtive methodology is used for collection of both objective and subjective point of views. Results are combined and compared for interpretation by keeping in view all the internal and external realities of the study.

3.3 Research Design

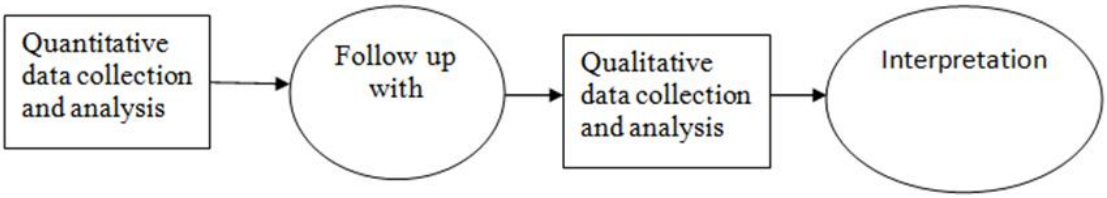
The explanatory sequential design provides a detailed and comprehensive understanding of the problem under study. The quantitative results provide general associations and inclination while qualitative results provide an in-depth understanding of the problem and individual standpoint. This design comprises two phases. One of the phase is the QUAN phase and the other phase is QUAL phase.

These two phases of QUANT and QUAL occurs into two distinct interactive phases. Phase one is collection and analysis of quantitative data and results are followed by the second phase of qualitative data collection and analysis. After collecting data

both quantitatively and qualitatively all the results are compared in relation of different aspects and constructs of the study. After comparison and integration of the both quantitative data and qualitative data the results of this sturdy are interpreted.

Figure 3.1

Sequential Explanatory Mix Methods Design (Creswell, 2014)



3.4 Population

Population in research study refers to a group of individuals or objects which have some common characteristics and are of interest to the researchers (Creswell, 2018). The population of the research study is a group that researcher want to make inferences about, and it should be mentioned clearly in the research study (Saldaña, 2021). This study was conducted in this field because these 21st century learning skills are need of the time and to make learner equipped with skills and make them compatible with world demands. Students of undergraduate level in the universities were chosen as population because they have to work in the field as future product.

Public sector universities are playing their vital role for the promotion of higher education in Pakistan, so leaners for this sector were needed to be analyzed at what extent they are using all these skills and practices related to 21st century learning skills. Teachers were also included as part of this research to get the perspective of the teachers teaching at undergraduate level, how they integrate 21st century teaching and learning practices at undergraduate level. Because teachers perspective was also important and contributed towards in-depth understanding of the study. (Table 3.1)

3.4.1 Inclusion Criteria

The study used the following inclusion criteria while selecting the undergraduate students of public sector universities for the study:

- Public sector Universities of Rawalpindi and Islamabad Region
- Undergraduate students of Humanities (BS English) and Social Sciences (BS Education.B.Ed.) both for quantitative and qualitative aspects.
- Teachers teaching Undergraduate programs (BS English and BS Education/B.Ed.) for qualitative interview.
- Classrooms of Undergraduate Program (BS English and BS Education/B.Ed.)

Total 3044 Undergraduate students of BS English and BS Education/B.Ed. (based on inclusion criteria) are population of the study. Hence, 210 teachers teaching Undergraduate program of BS English and BS Education/B.Ed. is the overall population of the study. The total population of this study was comprised of Students of English and Education/ B.Ed. at Undergraduate level and teachers teaching these subjects at Undergraduate level.

The current study' population was determined by inclusion criteria of selecting the Undergraduate students in Humanities and Social Sciences (BS English &BS Education/B.Ed., and teachers teaching at Undergraduate level (BS English and BS Education/B.Ed.). Students of Humanities (BS English) and Social Sciences (BS Education /B.Ed.) were selected as population as they all are Undergraduate students and full fill the requirement of the present research study.

All these students had equal characteristics being students of BS program and equal general degree requirements/Criteria from HEC. They also had same semesters and age. As well BS Education and B.Ed. were equal programs at Undergraduate level. The British Academy Skills Project sought out that the Arts, Humanities and Social

Sciences provide rich context of higher order skills and lifelong learning better for the work place (Lyonotte, Hunt & Baldauf, 2017).

3.1 Population and Sample of the Study

(Quantitative Survey)

Subject		I st Semester	3rd semester	5th semester	7th semester	Total
BS English	Population	445	519	417	479	1860
	Sample	89	104	83	96	372
BS Education /B.Ed.	Population	342	281	362	199	1184
	Sample	68	56	73	40	237

Population of BS English =1860 Sample BS English=372

Total Students BS Education=1184 Sample of BS Education=237

Total Population = 3044 Total Sample =609

Qualitative (Interviews and Classroom Observations)

- 15 students were interviewed out of selected sample of 609 in quantitative survey
- 10 Teachers were interviewed out of 210 Teachers teaching BS English and BS Education
- 10 (2 sessions each) classrooms observed

3.4.2 Sampling Technique and Sample

There are several sampling techniques that can be used in mixed- methods research studies. These sampling techniques can be random sampling, stratified random sampling, continent sampling, purposive sampling etc. However sampling strategy must be appropriate for research questions and data collection methods. The sample

size in mix methods research study must be large enough to give sufficient detail both for quantitative and qualitative components of the study, but not too large to prohibit the process of data collection and become impractical. The appropriate sample size depend on the research questions, sampling strategy and data collection methods (Cresswell, 2012).

3.4.2.1 Sampling Technique (Quantitative)

The sampling technique denotes to a specific group that the researcher is interested to collect the data**.** The systematic process of sample collection helps the researcher to estimate and generalize the features of the population. This systematic process permit the researcher to indicate subset of the population that depict the representation of actual population. Stratified random sampling is used to select the sample size. Proportionate random sampling requires selecting an equal proportion or parentage from each stratum, while disproportionate stratified random sampling does not require sampling within the stratum (Yin.2015).

This research study applied proportionate stratified random sampling to select the sample of the study. For finding the suitable fraction from each stratum, 20% of the total population of Undergraduate students were nominated as quativtive sample of the study. Creswell (2017) suggested 10 % of the larger population as appropriate sample size for the study. Manion &Morrison (2013), at a 95 % confidence level suggested obtaining a sample size of 536 for a population up to 5000. Therefore from population stratum of Undergraduate students in BS English (1860) and population stratum of BS education /B.Ed. (1184) of total population of Undergraduate students (3044), 20 % Undergraduate students from each stratum were taken as quantitative sample of the study. (Table 3.2).

3.4.2.2 Sampling Technique (Qualitative)

To get in-depth information and analysis of different practices of these skills in classrooms qualitative aspect is also included in the study. Students at Undergraduate level and teachers teaching at Undergraduate level were selected as sample from the targeted population were also interviewed. The researcher applied the purposeful sampling technique to get the qualitative data. This technique is also called purposive or selective sampling process.

The process enables the researcher to figure out appropriate sample useful for the study, along with all this an in-depth and powerful insight to the phenomena under study (Cresswell, 2018; Patton 2002). Purposive sampling in qualitative aspect was further linked to Homogenous sampling, which allow the researcher to select respondents who have identical characteristics and traits being useful for the phenomena under study.

In this research study 15 students were selected as sample, 10 teachers from the targeted population for interview and 10 classrooms (2 sessions each) observed qualitatively to get more in depth insight of the problem under the study. Creswell (2018) suggested a criteria of selection of qualitative respondents in research that 6 to 8 respondents are suitable from each desired or subgroup of the population.

3.4.2.3 Sample of the study

Undergraduate students of Humanities (BS English) and Social Sciences (BS Education/B.Ed.) were sample of the study. Two primary strata for the study were Undergraduate Students of BS English and students of BS Education.B.Ed. were sample of the study. Students and teachers were two main categories of the respondents. Total number of the students was 3044, 20 % of the total population from each strata was 609 respondents was as quantitative sample, 372 (20%) from BS English and 237

(20%) from BS Education/B.Edu. For qualitative sample 15 undergraduate Students from BS English and BS Education/B.Edu were selected, 10 teachers teaching at undergraduate level (BS English and BS Education/B.Edu.) and 10 classrooms (2 session each) were qualitatively observed.

Keeping in consideration the desired criteria of sampling technique 609 questionnaires were distributed among respondents by using both physical and online mode. Only 535 questionnaire filled by the students at Undergraduate level, the return rate was approximately 87%.

3.5 Research Instrumentation

This study was planned to be conducted in public sector universities of Rawalpindi and Undergraduate level. Tools for this study are used: interviews and questionnaire from students and interviews from teachers teaching undergraduate program. Research instruments for this study consisted of three types: survey questionnaire, semi- structured interviews and qualitative classroom observation. Semi-structured interviews were used both for students and teachers to get in-depth information of the problem under study. Maximum time for each interview was 45 minutes.

All ethical considerations on part of researchers kept in mind while conducting the interviews. Prior permission was taken from the participants and then recorded the interviews. Ravitz (2014) developed a survey for measuring for 21st century teaching and learning skills was adopted with prior permission of the author to investigate the 21st century learning skills of the students.

This survey is widely used to measure the teachers and students 21st century skills in different studies in the world. The survey questionnaire was based on different sections according to the requirement of the reach study. There was five major sections

based on five 21st century learning constructs. These instruments were planned and aligned with need of objectives and research questions of this study.

3.5.1 Questionnaire for Students on 21st Century Learning skills (Appendix, G)

Closed - ended questionnaire is used to get information about twenty first century skills from students to achieve objective two of the research study about the existing 21st century learning practices in the classrooms at undergraduate level .The Survey questionnaire is based on five sections.

Creativity skills section consist of items regarding use of creativity in classroom. It includes statements on use of brainstorming, generation of new ideas to confront a problem, invention of solutions to complex issues, creation of an original product and idea, visualization of situations on assigned tasks. Total five items were added on creativity in section one from item no 1to 5.

Critical Thinking skills section consists of items regarding critical thinking skills and its practice in the classroom activities by including comparison of information before completion of a task, drawing conclusion and analysis of relevant facts and information, summarization and analysis what have been taught, analysis of argument of opposite perspectives, developing a convincing arguments based on reasoning. Total six items on critical thinking were added in section two from item no 1 to 6.

Collaboration skills section consist of items related to work in pair and small groups, setting goals to create something combine and new, creation of combine products, presentation of group work in front of teacher and other class members, work for incorporation of feedback, group discussion, group assignment presentation and peer feedback. Total six items were added on collaboration in section three from item no 1 to 6.

Communication skills consist of item related to structuring of data, creating ideas by using medium other than written, preparing and presenting oral presentations, answering questions in front of audience, decision how to present work. Total five items were added on communication skills in section four from item no 1to 5.

Use of Technology consist of items related to use of internet resources for self-instruction, selection of appropriate technology tool, credibility and relevance online resource, use of technology for analysis of information, use of technology for sharing the information, collaboration and team work. Along with these statements related to use of technology for feedback, linkage with experts in local and global communities. Total eight items were added on use of technology in section 5 from item no 1 to 8.

3.5.1.1 Interpretation of Questionnaire Instrument Scale

Five point likert scale Survey questionnaire used to get information from students about these skills of 21st century learning: creativity, critical thinking, collaboration, communication and use of technology at undergraduate level. Scale was based on five sections. Different construct related statements used to inquire about the practices of these skills in their learning.

The five sections of instrument the scale was ranging 1=Almost never, A few times in a semester =2, 1-3 times per month =3, 1-3 times per week =4, Almost daily = 5.

3.5.1.2 Interpretation of the Questionnaire Instrument Results

Five point likert scale ranging 1=Almost never, A few times in a semester =2, 1-3 times per month =3, 1-3 times per week =4, Almost daily = 5 used for Creativity, Critical thinking, Collaboration, Communication and Use of Technology. The following interpretation was carried out for analysis of twenty first century learning skill set by using cut points to make analysis more precise after consulting author of the

tool. This cut point is used for descriptive statistics in research study of 21st Century skills of ALS learners in Northern Philippines (Tindowen, et al. 2017).

High degree practice of skill: 3.51-5.00

Moderate degree practice of skill: 2.51-3.50

Low degree practice of skill: 1.76 -2.50

Very Low degree practice of skill: 1.00-1.75

The mean score (average) was used to interpret the twenty first century learning skills. Five major constructs of this study: collaboration, communication, critical thinking, creativity, and technology and pedagogical practices are interpreted as students who fall within the mean score of 1.00-1.75 practices very low level of 21st century learning skills while students who fall within the mean score of 1.76 to 2.50 practiced low level of 21st century skills. Mean score 2.51 to 3.50 shows moderate level of practice of 21st century learning skills. Moreover students who fall within 3.51 -5.00 practiced at high level of 21st century learning skills.

3.5.2 Interview Protocol

A complete interview protocol is used to collect qualitative data in this research study from students and teachers. Interview protocol is a detail instrument of inquiry used by asking specific questions to get information related to the aim of the specific study (Patton, 2015). Interviews are the qualitative aspect of the study and give in-depth information about the topic and any research phenomena.

3.5.2.1 Semi -Structured Interview for students on twenty first century learning skills (Appendix, F)

Semi- Structured interviews from students are conducted to get information according to objective no 1 regarding analysis and to identify to how and to what extent students are using Four Cs of learning in 21st century along with technology. The

themes and questions are included in the interview about the analysis of twenty first century learning skills at undergraduate level. The major questions from students about construct of creativity were based on sub themes of concept of creativity, creative assignments and projects, research based projects, concept mapping /brainstorming, cross cultural activities, connectivity of class activities with real world and different challenges as learner to use creativity in learning.

Themes related to construct Critical thinking was structured as concept of critical thinking, comparison of information in different tasks, analysis of information and conclusion on different assigned tasks, information about different steps of critical thinking, making judgment on different tasks ,decision making in learning process and different challenges as learner to be critical thinker. Questions for construct of communication to interview students were based on themes of concept of communication, presentation of written product, oral presentation of written products, use of power point presentations, pamphlets, documentaries and broachers.

Use of social media, discussion method in classroom, panel discussion and challenges of good communication as learner were discussed in detail in interview. Collaboration is very important construct of 21st century learning skills set. In interview structured questions were based on sub themes for collaboration were basic concept of collaboration, pair work, small groups.

Combined research based assignments and projects, peer feedback, group discussion, think pair and share and different challenges to collaborate for different tasks in learning. Structured questions for construct of use of technology were based on use of technology in learning, use of internet resources for assignments and projects, reliability of online resources, technology for sharing and analysis of information, use of multimedia, blogs emails and other different types of resources.

3.5.2.2 Semi-Structured Interview for Teachers on Twenty First Century Learning Skills (Appendix, H)

Semi-Structured interviews from teachers also used in this research study. As well, interviews conducted for teachers helped in information gathering and data collection for regarding teachers' perspective on Four Cs of learning at undergraduate level. Information collected from teachers through interview helped to know their perspective on 21st century skills and incorporation of these skills in teaching and learning. The major themes in the structured questions for teachers were based on Four Cs, use of all these Four Cs and use of technology in classroom teaching and learning process.

First question was about understanding of Four Cs: creativity, critical thinking, collaboration, communication and use of technology as teacher in teaching process. Research question two was based on the integration of Four Cs and technology in process teaching with reference to methods, materials and in assessment process. Question number three in teacher's interview was based on different challenges of using these Four Cs of learning and use of technology as teacher in teaching process. Fourth question from teachers was related to their suggestions about different strategies to improve teaching and learning process for the effective use of all Four Cs and technology.

3.5.3 Qualitative Classroom Observation on 21st century Learning Practices (Appendix, I)

Observation is a way of collecting data through observing. It is classified as participatory study as the researcher has to immerse to the setting where the respondents are, and record different behaviors and practices by taking field notes. Qualitative methods of data collection in research studies include four main methods as

observation, interview, recording and transcription and text analysis (Thomas, et al. 2017). As in qualitative research methods, observations took their place as most essential method to recognize the phenomenon under investigation (Noel et al., 2018; Hair et al., 2019). Qualitative classroom observation used in this research study to check 21st century learning skills practice in classroom teaching and learning and get more in-depth practical aspect of the phenomena under this study. This observation was based on different practices of creativity, critical thinking, collaboration, communication and use of technology as important twenty first century skills.

3.6 Pilot Testing

Pilot study is an important part before administering the instruments for data collection. The aspect of reliability was checked by conducting a pilot study. Pilot testing determines the reliability and validity of the instrument (Cresswell, 2018). For pilot testing of this study initially data was collected from one university. 100 respondents were included in pilot testing phase. Initially the supervisor and the researcher discussed the different aspects of the instruments and results of the pilot testing and after all this procedure the experts of the field are consulted for proper validation of the instruments. The purpose of the pilot testing was to make instruments more relevant and reliable according to Pakistani context.

3.6.1 Validity of the Instruments

Validity is established when an instrument measures what it intends to measure (Manion & Morrison, 2013). As tool was adopted and according to the author the scale has high reliability and validity of the constructs.

Face validity of the instruments were taken from three experts of the field. To ensure the content validity of the instruments, the questions were framed Cleary

according to themes of twenty first century learning skills. Reliability, uniformity and clarity of the language were ensured. The experts and supervisor validated this part.

Content validity of the tool was ensured by the panel of experts. Three experts from the field of education validated and certified these tools for data collection. After the proper guidelines and validation from experts with permission these instruments are used for collection of the data in this research study. Tools for this study are properly validated. Certificates of validation of instruments are attached at end of this research in Annexures section. Construct validity denotes the specific ideas, concepts and behaviors, how a certain idea is operational. Constructs were already developed by Ravitz, (2014). The researcher still carried out the validity of the instrument with the help of the experts in field. The constructs was not changed not any new construct was added.

3.6.2 Pre Coding of the Survey Instrument

Survey instrument was pre coded before administration for pilot testing for entering data in SPSS software. Pre coding further help in the analysis of quantitative aspects of data. The following table depicts the details about no of sections, constructs, no of item and pre coding in this study.

3.6.3 Reliability of the Instruments

Cronbach' alpha coefficient is a specific and common measure of the degree to which items within the scale measures the same constructs as other items in the scale. In the present study the survey questionnaire was adopted without any major change. The reliability for the tool is α .901 and reliability for creativity is .884, for construct of critical thinking .891, for collaboration .886, for communication .882 and for construct use of technology is .981. The reliability less than .05 is considered low and .70 is the acceptable reliability.

Table 3.2

Research Instrument Details and Coding

Section	Constructs	No of items	Item Coding
Section1	Creativity	05	C R.1,C R2,C R3 ,C R4,C R5
Section2	Critical Thinking Skill	06	C T S1,C T S2,C T S3,C T S4, C T S5,C T S6
Section3	Collaboration	06	CO 1,CO2,CO 3 CO 4,CO 5,CO 6
Section 4	Communication	05	CM1,CM2,CM3,CM4, CM5
Section5	Use of Technology	08	TECH1,TECH2,TECH3,TECH4, TECH5,TECH6, TECH7,TECH8

Table 3.3

Inter and Intra Scale Reliability

Scale	Items	Cronbach's α
Creativity	05	.884
Critical Thinking	06	.891
Collaboration	06	.886
Communication	05	.882
Use of Technology	08	.981
Total Reliability		α .901

Table 3.4

Inter Item correlation of 21st Century Learning Skills scale

Scale Item	Mean	SD	Item- Rest Correlation
Creativity			
C R 1	2.577	1.0087	0.540**
C R 2	2.814	1.1844	0.585**
C R 3	2.588	.9974	0.547**
CR 4	2.629	1.1843	0.696**
CR5	2.724	1.1482	0.619**
Critical Thinking			
CTS1	2.464	1.0006	0.639**
CTS2	2.680	1.0660	0.617**
CTS 3	2.722	1.1880	0.511**
CTS 4	2.577	1.1532	0.547**
CTS 5	2.464	1.02213	0.529**
CTS 6	2.608	1.1324	0.563**
Collaboration			
COLL 1	2.546	.9792	0.594**
COLL 2	2.557	.9239	0.545**
COLL 3	2.402	1.1334	0.614**
COLL 4	2.939	.8919	0.516**
COLL 5	2.361	.9263	0.686**
COLL 6	2.608	.9526	0.584**
Communication			
COMM 1	2.258	.9925	0.442**
COMM 2	2.443	1.01203	0.548**
COMM 3	2.670	.9652	0.725**
COMM 4	2.856	1.0507	0.717**
COMM 5	2.649	.9794	0.634**

Use of Technology			
TECH 1	2.649	1.1705	0.596**
TECH2	2.596	1.2032	0.627**
TECH3	2.585	1.1111	0.670**
TECH 4	2.872	1.1094	0.516**
TECH 5	2.809	1.0804	0.542**
TECH 6	2.606	1.1474	0.648**
TECH 7	2.532	1.1887	0.646**
TECH8	2.587	1.1678	0.581**

The inter item correlation method was applied to calculate the consistency of 21st century learning skills scale. In reliable scales, Field (2009) said that the scale elements should be connected with the overall score. Threshold for the correlation was 0.3 and any value above the threshold represent acceptable correlation.

Ziljlmans et, al. (2018) also highlighted the threshold value for item-rest correlation should be 0.30 whereas it should be 0.40 for performance test in their research study. The 21st century learning skills scale values of all statements range from 0.422 to 0.717 which is higher than 0.40. Creativity skills section consisted of five items and values of all statements in this section range from 0.540 to 0.696.

Critical thinking skills section consist six items and values of all statements in this section range from 0.511to 0.639. Collaboration skills section consist of six items and values range from 0.516 to 0.686. Communication skills section consist of five items and value of all statements range from 0.422 to 0.717.Use of technology consist of nine item and values of all statements range from 0.542 to 0.670.

3.7 Data Collection Procedures

After validity and reliability analysis the instruments were administered to collect the data. Prior permission was taken from the concerned institutions and departments. Qualitative section includes the semi-structured interviews from students and teachers and qualitative classroom observation at undergraduate level and prior permission was taken from the institutions and participants. For interviews firstly, both teachers and students were contacted with permission from the institution and department. Secondly, contacted by telephonically and by using Whatapp. For interview every participant was contacted to get permission and to get prior familiarization with the interviewee.

After introduction the time and place was settled to get interviews done and interviews both from students and teachers properly recorded and noted with due permission of the participants. Along with all that the notes were also recorded for the transcribing the interview points. The quantitative procedure also firstly followed by taking prior permission from the institute and department and secondly by contacting directly to the students in their classes by self-administration and through Google form by sending in Whatapp groups. Both face to face and online mode used to get quantitative data.

3.8 Data Analysis Procedures

Data analysis is a very careful procedure that demands high attention and careful procedures with expertise of specific approaches (Cresswell, 2013). In the present study the data were analyzed in a systematic way gathered through survey, semi-structured interviews, and qualitative classroom observation. Triangulation is a useful data analysis technique in mix methods studies by analyzing multiple methods and data sources to develop a comprehensive understanding of the research problem under study

through convergence of information (Carter etal.2014). In the present research study the methodological triangulation was used by integrating and combing the data through multiple instruments: survey, semi-structured interviews and qualitative classroom observation. Interpretation of data was followed by a procedure of formulating the ideas in a specific way from findings and combing all those ideas with existing empirical studies related to the topic and area of the research.

3.8.1 Quantitative Data Analysis

Quantitative section of the present research was a survey questionnaire based on five Likert Scale. After collection of the quantitative data, the data was entered carefully in SPSS. Properly cleaned and analyzed. Descriptive statistics were used to analyze and interpret the quantitative data in accordance with research objectives and quantitative questions of the study. Mean scores were used to interpret the data in quantitative section of the study.

3.8.2 Qualitative Data Analysis

Creswell (2018) suggested for qualitative data analysis that researcher should continually check and relate to research questions and check the outcome of the analysis that are connecting back to the research questions. In qualitative analysis collective themes were acquired after coding and analysis of the collected data. This process require the mapping of the textual process and raw data. The mapping process identify the linkage between coding and research questions (Cresswell, 2013). Qualitative section was consisted of interviews from students and teachers and qualitative classroom observation.

The recorded interviews both in audio form and paper points properly analyzed and transcribed into main themes. Inductive approach was used to code different qualitative responses. The responses was highlighted, grouped and clustered in unique

sections. In qualitative data analysis both inductive and deductive approaches can be used (Cresswell, 2018). After pointing the main themes the data was further analyzed into sub themes and interpreted in the light of the research questions.

Descriptive coding was used to reassess the initial codes to obtain new grouping and themes (Saldaña, 2021). As this was a mix method study methodological triangulation approach of data interpretation was used by integrating both quantitative and qualitative data. After analysis of the data the findings and conclusions were properly drawn. And recommendations for future practice in the field and study were written.

3.9 Research Ethics

Research ethics has been followed throughout the study. Confidentiality and anonymity are the basic research ethics and must be followed in all studies. Research ethics were considered while collection of the data and throughout other procedures. Formal permission was taken from the institutions and departments of undergraduate programs.

The topic and purpose of the study was clearly explained at different level where required. The respondents both students and teachers were not questioned to mention their identity and names. Readiness of the participants was also considered. Along with all that proper citation and references were given to the researchers work.

CHAPTER 4

ANALYSIS AND INTERPRETATION OF DATA

In the present research study the quantitative data were collected through a survey from students and qualitative data were collected through in depth interview from students, interview from teachers and qualitative classroom observation at undergraduate level. After conducting semi-structured interviews from students of BS English and Education at undergraduate level following themes were generated from data analysis. Themes were generated according to the gathered data and after detailed analysis of data themes and subthemes were generated for analysis and findings.

Table 4.1

Objective Wise Detail of Analysis

Objectives	**Research Questions**	**Method**	**Type of Analysis**
Objective 1 To analyze 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology among students at Undergraduate level.	1 How students use creativity skills in learning at undergraduate level? 2 How students use critical Thinking skills in learning at undergraduate level? 3 How students use communication skills in learning at undergraduate level? 4 How students use collaboration skills in learning at undergraduate level? 5 How students use technology in learning at undergraduate level?	Qualitative	Thematic Analysis

Objective 2 To analyze existing learning practices in classrooms in relation to 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology at Undergraduate level.	6 To what extent 21st century learning skills set: Creativity, Critical thinking, Communication and Collaboration (Four Cs), and use of technology practices are practiced in classrooms at undergraduate level?	Quantitative Qualitative	Mean Score & Thematic Analysis
Objective 3 To investigate teachers' perspective about practice of 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology at Undergraduate level.	7 what is teachers' perspective on 21st century Learning Skills set: Creativity, Critical thinking, Communication and Collaboration (Four Cs), and use of Technology in classroom Teaching?	Qualitative	Thematic Analysis

Objective 1: To analyze 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology among students at Undergraduate level.

4.1 Creativity

Creativity is a major skill of twenty first century learning skill set. It has its great importance at university level education especially at undergraduate level. Students were asked about the creativity and creative tasks included and practiced in their learning.

4.1.1 Concept of creativity

Responses on concept of creativity are following. 15 participants were included in this semi-structured interview. Students were asked about the concept of creativity as learner" what creativity means to a leaner "being in 21st century. Students answered

in multiple ways according to their understanding level. What does creativity means to you as students? This is requirement of the century to make our students more and creative and innovative.

Table 4.2

Summary of Students' Interview Analysis on Creativity skills

Research Question No 1	**Major Theme**	**Sub Themes**
How students use Creativity in learning at Undergraduate level?	Creativity	Concept of creativity Use of creativity in class /Brainstorming Creativity in assignments and projects Cross-cultural activities Relevance of real world with class activities Challenges of creativity in class work as learner

Note. Table 4.2 highlights the themes drawn from the thematic analysis of students' interview on construct of creativity. Themes transcribed and generated from interviews are based on basic concept of creativity, brainstorming, creative assignments and projects, relevancy of assignments and projects with real world, cross-cultural activities and different challenges to students being creative in learning.

Mostly students expressed their understanding and knowledge about the creativity as most important skills of learning. But mostly this understanding was limited only to the concept understanding at very initial stage as they were not well aware about the concept of creativity to integrate in their different works and tasks related to the learning. But still they have understanding about the word creativity and were of the opinion that it is requirement of the survival in this century. Because most of these students show their concern about the novelty in their learning and suggested that teachers must integrate this skill in practice in their day today teaching.

For example participant A answered and discussed this question in her words:

Participant one, "creativity is like self-expression, expression of idea and thoughts."

It shows that this student is informed about the general concept of the creativity and use of creativity in learning process. According to this participant self-expression is highly important being the student at undergraduate level and in this era of 21st century. *Participant two," creativity is something unique, in other words it is more than a bookish knowledge."*

She is of the opinion when we thin in a different way this is creativity. She has a bit improved understanding of the concept of creativity and use of creativity as learner with it effectiveness. *Participant three," when we as learner are imaginative, use fantasy in our work and be unique." As a learner we need to be more and more creative "Participant nine," creativity mean something different and new from rest of the class ideas."* As students of education and English department mostly are of the opinion that this is a time of new products and leaner as well equipped and skilled product is requirement of the time.

4.1.2 Use of Creativity in class /Brainstorming

Another question related to the main theme of creativity was about the use of creativity in classroom. How well creative tasks are integrated with process teaching and learning in classroom of these students being interviewed. *Have you use creativity in your assignments? How you make your assignment more creative?* The responses was varied in this question context .some students explained in detail that how teacher integrate creative tasks for learners in their teaching and how learner make themselves creative and innovative by using different new ideas and technology as well.

As participant seven," *most of the time teachers just discuss the back ground of the content and teach by using method of reading the text."* This is the common practice in our classroom the teachers use only old /conservative methods to teach students and start lecture with ordinary introduction. As another participant quoted during interview

session that teachers mostly start with introduction of the lesson. As in words of participant eight*," Teachers start their lesson with direct introduction of the content, sometimes use story or quote an event to start the lesson and create interest, but it is very rare."*

Mostly students were of the opinion during discussion and probing in interview that in last 5 semester, very few times it happen that teacher gave the creative task or started their lecture with new approach or method to create more interest. It shows that in our classroom learning process and environment is stilled settled on old pattern of learning. *Another participant ten answered in a way, "sometimes teacher have the recap session from students at the start of the next class but it's very rare and not frequently uses."*

Such type of students responses show that they are not well equipped with creative tasks as learner to be more and more creative Mostly students are given one or two assignments based on the written content, they are not well appreciated to use their own new ideas to make the content more and more effective by mixing something new and relevant. Set content is decided and focused on which student make copy paste and as well cramming during evaluation.

4.1.3 Creativity in Assignments and Projects

Another question from students was about "how *you make your assignment more creative?* Mostly students discussed that they use internet resources to make their assignments more creative and novel. During the probing question was asked about how and how many times teacher require their students to make their project and assignment more creative and work on some new idea.

As discusses by participant one,*" mostly assignment and project are not research based" these are just given in written form from the outline content and asked*

to submit." She was of the opinion that only in 2nd semester she was given an assignment base on research to create an analysis in their own word about a poem.

Figure 4.1

Word Cloud of Creativity skills based on Students' Interview Text Analysis

Note: Word cloud image related to creativity skills was generated on Nvivo with detailed text analysis based on students 'interviews to make the concept more understandable. *Participant three," most of the times research assignments are given but only for written work on different topic not as direct field work. "Participant seven," research methodology course is being taught in 6th semester, only in this course a five marks research assignment is given, but not in all courses."*

Creativity in assignments and projects is the requirement of 21st century teaching and learning because these techniques and tasks leads students towards new things and products which are requirement of this century. As participant twelve*," whenever as learner I do something new other than routine classroom tasks feel excited."* This interest and excitement leads students towards new products and miracle in their fields when actually work in fields and jobs.

4.1.4 Cross Cultural Activities

Cross cultural activities have also a great importance for creativity and novelty. A class has variety of numbers of students belonging to different areas with different language and cultures. If we think about the class in 21st century, we also directly think how to mix all these students and encourage them to make new programs.

As Participant six mentioned about cultural activities," Such type of activities are totally missing." As Participant ten," in our classes there is no interaction between students, less cooperation among students' different areas and languages. So we remain unable to do work with other students in this reference of diversity." Such type of cross cultural tasks are greater source to bring novelty and togetherness among students. They learn not only each other's culture, values and language but also think about different available resources and do their related projects. *As participant fourteen highlighted," in semester four one project was about use different languages and culture of different provinces, in which not only dresses but food item were also sold by students of their respective areas."* In this way all class learnt new ways and dimensions of these areas and especially come with more and more understanding of their classmates.

4.1.5 Relevance of Real World with Class Activities

Purpose of a good quality education in this 21st Century is to make students more and more practical and compatible with real world. So that they become able to lead a successful and an effective life. All employment organizations as well demand from education sector to make students skilled and experts of the field, so they can become profitable to organization.

As Participant nine," class assignments and projects are only written, no field work or research work is given by the teachers."

In this way if a teacher is not giving anything who has a direct day to day life experiments, how a students can be equipped with real life knowledge and behavior to deal different matters. As participant *ten " in few courses the real world exemplary assignments are assigned to students, as in course of " pragmatic Linguistics " an assignment was awarded on the real and connotative meaning of the words ."*In such assignments students worked in pairs and find and discuss the literal and used meaning of the word or a sentence by discussing it. *As participant six, "there are few examples of real world interactive assignments, just few in all 6 semesters."*

She quoted the example of an assignment based on the topic of feminism in which a practical assignment was awarded to get interviews of the different educated and earning ladies who are well aware about their rights. Education and basic purpose of education in 21st century is to bring relevancy and productivity with the world .students are required to work as citizens of the world and every research work or the project of the learner must be relevant and fruitful not only locally but also globally.

4.1.6 Challenges of Creativity in Class work as Learner

Challenges and limitations of creativity are also discussed in this interview through a question especially with reference of the classwork. Mostly students discussed in a detailed manner about these challenges. They were especially focusing on less relevant class work, less acceptance of new ideas to be introduced in projects and assigned tasks. *As participant one," our classroom activities are mostly based on teachers lectures, written work and verbal discussion. "*

As our classrooms are generally focus day to day activities and class tasks are most of the time same in many courses. Courses in the scheme of the study are not properly mentioned in practical terms and teachers always have same teaching tasks and strategies in our common classrooms. *As Participant three," new ideas are not*

properly entertained and guided by the teachers, all work is presented in written way." Most common practice of our classrooms is that teachers only focus on written work rather than practical projects and work. In this way creativity in classroom learning suffer because student focus on selection of content and reproduction of this content.

For making our classrooms more and more creative and productive as teachers there is need to practically distribute the content and ask students to work that is in practice and have social connection as well to be more creative. *As participant eleven mentioned," mostly instructor don t like new things in their courses and students are not well appreciated and celebrated for their new ideas as learner."* Students must be given room and must be admired for their new work and tasks, in this way they will learn with great zeal and enthusiasm which will lead them towards a great success.

After analysis of students' interview it is found that students understand the concept of creativity and innovation. There were various responses related to brainstorming was expressed by students. According to students responses brain storming and concept mapping is used in undergraduate classes but at moderate level not at frequent basis as required to practice and acquire the 21st century learning skills. A few teachers recap the session and discuss the background, mostly start lecture by delivering directly content to the students.

Research based projects and assignments are given by few teachers in classes, mostly these assignments and projects are taken in just written form from available content. Practical assignments and projects with proper research are very rare to find. So element of relevancy of the tasks with real world or practice is minimized. Cross-cultural activities are not enough in classes at undergraduate level. There are several challenges and difficulties regarding creativity to students as mostly lecture based traditional teaching, more written work and less appreciation of new ideas and thoughts

by teachers. According to students' detailed qualitative responses the creativity skills are practiced mostly at the average level or at the low level of practice.

4.2 Critical Thinking Skills

Critical thinking skills are set of different skills and procedures. Students are asked about different types of process and tasks involved in critical thinking skills and its process to be critical as learner.

Table 4.3

Summary of Students' Interview Analysis of Critical Thinking skills

Research Question	Main Theme	Sub Theme
How students use Critical thinking in learning at Undergraduate level?	Critical Thinking Skills	Concept of Critical Thinking skill Process of Critical Thinking skill. Comparison of information in classroom Decision making in classroom Use of Judgment ability in classroom Challenges of being a Critical Learner.

Note. Table 4.3 highlights the themes drawn from the thematic analysis of students' interview on construct of critical thinking. Themes transcribed from interviews are based on basic concept of critical thinking includes concept of critical thinking, process of critical thinking, integration of critical thinking, decision making in classroom, use of judgment in classroom.

4.2.1 Concept of Critical Thinking

Critical thinking skills plays a significant role in modern education. It is also requirement of this 21st century especially when students move real world situation and

placed in the job market as an active member of any organization. This skills plays vital role to make a person more and more creative and innovative.

According to Participant five," critical thinking skills means to create, not copy something, and not decode. I think critical evaluation is critical thinking." While conducting the interview it is found that generally students have concept of critical thinking skills at undergraduate level. But this concept is only based on information level, students have idea about all these concept but not practiced at a larger scale. *As participant seven mentioned,"*

It is how to examine information and what is inter relation of this information. According to this participant the bit and bites of information and the sequence of this information is critical thinking skill. But this skill is not largely practiced and linked with classroom environment in terms of tasks. *As participant twelve described about critical thinking skill, "to discuss a phenomena while thinking and discussing on it."* Mostly critical thinking is taken as just simple process of thinking. Majority of learners were unaware the basic steps and procedure of thinking process. According to them thinking on a topic and finding right way to do it is critical thinking skill. But they have no proper understanding about the steps of this thinking process to explore some phenomenon.

4.2.2 Process of Critical Thinking

Procedure of critical thinking skill is very important in the mastery and development of this skill. This process include different steps in sequence as to analyze, interpret the phenomena or concept, present and evaluate the information. Responses of the students during interview highlight that students are not fully aware about the steps of critical thinking and its process as systematic thinking.

As participant ten mentioned," Not well aware about the steps of the critical thinking."

There should be proper skilled guidance for students to introduce them with different steps of critical thinking skills set. But for this need of the hour is to fully equip teacher with all these learning skills should be merged and used in main process of teaching and learning as demanded in this century.

As participant thirteen described," making comparison is the part of critical thinking skills," It highlights that pupils are not fully aware with steps of critical thinking and procedure of critical thinking skills.as well not properly introduced about these steps in the classroom by teacher. Answers of this section also show about the teaching skills in light of critical thinking skills as teachers are also not using these skills in their teaching on a larger scale. *As participant fifteen mentioned," Not well aware to analyze and interpret information."*

Analysis and interpretation is very important and essential part of the critical thinking skills process and procedure. Without these two steps of the thinking process critical thinking skill cannot be developed and enhanced among students at any level and especially at undergraduate level.

As well decision making is another step which is missing in our classroom tasks. Students are never given chance to take decisions on different tasks and selection of the content matter as part of the learning process. *As participant nine, "decision about the content and different activities are mostly decided by the instructors of the course."* But if we want to make students independent thinkers and want to enhance their critical thinking skills, there is need to give them room to be the part of the decisions and decide about their own learning.

On a question about integration of critical thinking skill in day to day classroom teaching and learning process, students' replies shows that there is no systematic procedure applied for development of this skill among students.

As participant five mentioned while answering," only 2 time comparison is given to them in their tasks in last four semesters by a single teacher."

Figure 4.2

Word cloud of critical thinking skills based on Students' Interview Text Analysis

Note: Word cloud image related to critical thinking skills was generated on Nvivo with detailed text analysis based on students 'interviews to make the concept more understandable.

4.2.3 Comparison of Information

It is very less number to give such activities of critical thinking skills that is 2 time in a semester. As a six month at undergraduate level require such activities to be practiced of and on. These activities must be integrate with course content outline and then practiced. *As participant seven described," we are not given tasks to think about, make comparisons and draw conclusions."* These are important steps of critical thinking process and students must be asked to do it.

All these tasks must be evaluated and graded as well so that students work and perform with attention and care. Other participants also discussed and mentioned that

most activities are only based on written assignment from the content and out line, not properly divided and developed to enhance the critical thinking skills. So it shows that element of proper integration of such activities is missing in our classrooms and there is need to link teaching process and content distribution with these tasks.

4.2.4 Decision Making in Class

Decision making is the most important step of critical thinking skill process. On a question regarding decision making in classroom about content and activities selection students answers show that our classroom give no freedom and power to students to choose these acuities and projects of their own choice. Ability of decision making can help students to be more successful in this century.

As participant four," mostly teachers decide about class content and related activities." It is common practice in our education system of education students given less choice on deciding the nature and content of activities. As decision making is a most powerful sub skills that can develop critical thinking skills in a student on larger scale. But it is not given importance in our conventional system of education.

As participant nine," we don't make any choice before selection of tasks and other related topics in classroom."

Students in semester system must be given choice to choose to select their tasks and to introduce new concepts. A teacher in 21st century must be trained and equipped with strategies to accept the student voice and appreciate their new ideas by relating these with main content and outline. *As participant three," a few teachers appreciate new concepts and ask to decide about projects."*

But these teachers are very few in large stream of teaching and learning process. There is need to equip all teachers to adjust their outline and as well to give good teaching practices. On a larger scale in our universities and degree awarding

institutions where undergraduate program is in process ,there is need to train teachers about 21st century skills especially four Cs of learning because these skills are need of the hour and to survive and be compatible with world. Our students and teachers both need to learn and equip these learning skills so that they can compete and excel anywhere. Our system of education must focus all these skills to get maximum results and benefits from learning process.

4.2.5 Use of Judgment Ability in Class

Judgment ability is also crucial for 21st century education and especially expansion of critical thinking skills among students. when this question about use of judgmental ability in classroom and its integration in the learning process ,they replied in a way that shows that they are asked to use this ability but at very minor scale.

As participant five," teachers give tasks and ask about to make judgment on it, these tasks can be content related evaluation, but these are once in semester by few teachers." Judgmental and comparative activities related to tasks are highly significant to increase the capability of learners to think critically. But as in this situation where these are used very rarely, a few in semester or in few classes and courses, it is becoming more difficult to make students to learn to be as critical thinker.

Mostly our classroom are based on content reproduction and in this way the power and ability of critical evaluation, judgment and decision making become very poor. *As participant seven," sometimes asked to make comparison on different tasks, but it's very rare."* There is need to have such number of continuous activities that develop student thinking abilities and especially critical thinking skills. So when they graduate and be a product to join in any organization, they have such skills of judgment, evaluation and decision making.

As participant eight, "judgment base activities exist but these are very few Number of these tasks as per course must be increased and well evaluated to make students of this 21st century more and more equipped with these sub skills of main critical thinking skill, so they can be more and more compatible with the world.

4.2.6 Challenges of Critical Thinking

There are many challenges to practice critical thinking skills in the classroom teaching and learning process. As students interviewed, there are many points highlighted by these students which are a great challenge and hinder in the process of critical thinking skill development. *As participant six," our classrooms are less interactive with teachers and mostly information based that is only in verbal manner."* If the classroom is less interactive and only based on verbal discussion it means that there is no room for practical and critical activities which develop students thinking power and especially critical thinking skills.

Mostly classroom based on same activities related to reading, writing and reproducing the content. Students are not asked to do something new for example to have your own observations about different tasks. Brainstorming as we discussed in creativity and innovation section is not used at lager scale. It is very essential to cultivate critical thinking skills. *As participant ten," syllabus is based on such content which is less relevant to the real world, so activities are also not provoking students to think and apply.* So there is need to change teaching and learning methodology by adding more and more activities related to critical thinking skills and its development among students. According to students' detailed qualitative responses s the critical thinking skills are practiced mostly at the moderate degree at undergraduate level. A moderate level means that these skills are in practice but at average level of practice.

After analysis of students' interview it is found that students are aware of concept of critical thinking in general but they are not well familiar with the process of critical thinking as included in the learning. They are well familiar with the steps involved in critical thinking. Tasks related to the critical thinking such as decision making of students about content and different tasks, judgment activities related to content, comparison tasks, and summarization tasks are used by few in number and at moderate level.

These tasks and activities are required at frequent and adequate level to enhance the 21st century learning skills. Multiple challenges related to practice of critical thinking tasks identified during interview. A mostly classes are based on verbal information that is lecture method by teacher and so that why students involvement in activities is less. Minimum practice of activities related to content is a challenge to enhance critical thinking skills at undergraduate level.

4.3 Collaboration

Collaboration is a main skill of 2twenty first century learning skill set. In this era, it is greatest demand for students to work as team to learn and work with others for being compatible with job demands.

4.3.1 Concept of Collaboration in Learning

Collaboration means team work and work together for some common purpose. 21st century learning is a learning based on collaboration and coordination. Learners are required to work on projects in groups so that they can get more and more skill of being a member of team. In the job market of 21st century this skills of collaboration and coordination is required the most.

Table 4.4

Summary of Students' interview Analysis on collaboration Skills

Research Question	Main Theme	Sub Theme
How students use Collaboration in learning at Undergraduate level?	Collaboration Skills	Concept of Collaboration in learning Pair work/small group Work Peer assessment and feedback Think/write pair and share Group Research assignments and Projects Challenges of Collaboration in learning process

Note. Table 4.4 highlights the themes drawn from the thematic analysis of students' interview on construct of collaboration. Themes transcribed from interviews are based on basic concept of collaboration includes collaboration ,pair work /small group work , peer assessment and feedback, group research assignments and projects and challenges of collaboration in learning process.

On a question about understanding of the collaboration students reply highlight that they are well aware about the term collaboration in learning process. *As participant four," when two or more than two person work together this is collaboration."*

It means students have basic idea of coordination and collaboration. They work together to accomplish their tasks *as participant nine," collaboration means group discussions.* "Mostly students took this idea of collaboration as work in small groups for discussion. Small discussion groups are small part of collaboration in learning. *As participant eleven," not well aware about the concept of collaboration in classroom.* But still there are a few students from the interview index who do not well familiar with the concept of coordination and collaboration in learning, it shows that activities based on collaboration and coordination in main process of learning in the classroom is not well entertained.

4.3.2 Pair work /Small Groups Work

Pair work and group work is the essence of collaboration in learning. In learner centered approach which is the approach of 21st century teaching and learning, pair work and small group work is essential to get connected, have good working relationship among peers. As well it is necessary for good communication skills among students as team in a class or a group. *As participant one," there is very rare pair work in class, mostly we all work individually.* The importance of pair work is unavoidable. It give a lot of practice and work experience with other person, with this technique student learn how to work mutually by giving importance to the opinion of other person.

As participant seven, "four and five members group are formed at the start of semester." Most common practice at BS level is that at the start of the semester generally groups are formed consisting on students of four or five members. Group changes are not made according to activities and need of students as per topic. Groups are form in homo genius or hatro genius way.

As participant ten," group formed in first semester for group project are still working with same members, no change at all for new semesters."

Teachers are not making diversified groups according to tasks and activities as required. Static groups are formed in classes which are not being shuffled for semesters. There is need to equip teachers and students about the technique of group formation and how important group work is. If this work is done with great skills, students can learn effectively learn and participate in team work.

4.3.3 Peer Assessment /Feed Back

Peer assessment and feedback is highly important in 21st century learning especially with reference of collaboration. But this is not a common practice in our classrooms to get peer assessment and evaluation for the learner as well sharing

feedback is also very less. *As participant two," I am not familiar as learner about peer feedback and assessment."* Students are not familiar with the concept because they don t use it and have no idea. But still positive feedback from teacher and peers is the most important thing to grow effectively. For formation of teams and group work peer assessment works highly important manner. *As participant eight," one time in last six semester's teacher get feedback from students about each other in a presentation session."*

Figure: 4.3

Word Cloud of Collaboration Skills based on Students' Interview Text Analysis

Note: Word cloud image related to collaboration skills was generated on Nvivo with detailed text analysis based on students 'interviews to make the concept more understandable.

4.3.4 Think /Write -Pair and Share

Think pair and share and write pair and share both are very important and highly effective techniques of collaboration. Student learn a lot about the team work and

cooperation by using think pair and share and as well by writing the desired task and idea and then sharing it with the rest of the group.

As participant five," sometimes teachers ask to think write and then share with others on few tasks. "As participant eight," as learner I don't have any knowledge about the concept of pair and share the work." These techniques must be familiarized with students and teachers must know how to handle these strategies and techniques with the requirement of topic and content.

4.3.5 Group Research Assignments and Projects

Researched based group projects and assignments are essential part of team work and collaboration of 21st century learning. *As participant two," group assignments and projects are given at the end of the semester." As participant four," mostly assignments are given as individual tasks and projects as groups but at the end of the semester."* These assignments and group projects must be given at good interval to get good feedback and to equip students with these skills of team work and collaboration.

4.3.6 Challenges of Collaboration

There are many challenges to collaborative work in classroom like other aspects of twenty first century learning in our context of education system. Our classroom and teachers are not well equipped with these teaching skills to transfer and transmit these learning concept to work as team. It is also very hard for teachers as well to balance individual and team work together to achieve the purpose of collaborative learning. *As participant one," in group work mostly students do not cooperate."*

These issues of cooperation and coordination in learners group can be solved by proper instructions and guidance from instructor but for this purpose teachers need to be fully trained and equipped to execute different group project works and tasks *As*

participant three," sometimes only one student is burdened to do all tasks of the group." Sometimes students have bias and negative emotions for each other in a group, there is need to teach and train them about professionalism and work relation in classroom group tasks. *As participant eight," peer student's bias effect the work."* In this situation there're is need to train teachers how to deal with groups tasks and as well equip students about the knowledge and technique to work as team by minimizing all types of biases and problem to achieve the highest objectives as team.

According to students' detailed qualitative responses s the collaboration skills are practiced mostly at the moderate degree at undergraduate level. A moderate level means that these skills are in practice but at average level of practice. After analysis of the students' interview on construct of collaboration, it is found that students well aware about the meaning and concept of collaboration. But practice of collaborative activities as pair work/group work is minimum.

Techniques like think pair and share are not used at maximum level. Mostly tasks are performed at individual level. A very few tasks in groups and pairs assigned to students. Students are not well aware with peer assessment and feedback concept. There are many challenges in practice of group work and other collaborative tasks. As in students' opinion students in group do not cooperate when tasks are in group and behave in a biased way. Mostly one or two students complete the tasks of the whole group. Activity based learning is not practiced in most of the classes, traditional lecture method is involved.

4.4 Communication

Commination plays an imperative part in learning and it is one of the most important skill in 21st century learning skill set.

4.4.1 Concept of Communication Skills

Communication is the most powerful skills of this century. It have a very vital role in the dissemination of different projects and ideas to masses. Without good communication skills survival in this century is difficult because it is the foremost requirement of the organizations that there employee must be having good communication skills.

Table 4.5

Students' Interview Analysis of Communication skills

Research Question	Main Theme	Sub Theme
How students use Communication skills in learning at Undergraduate level?	Communication Skills	Concept of Communication skills Structuring of data Power point presentation Designing phamphelets,brouchers and documentaries Use of social media for learning tasks Discussion and panel discussion in classroom Verbal/written presentations Challenges of communication skills in learning process.

Note. Table 4.5. Highlights the themes drawn from the thematic analysis of students' interview on construct of communication. Themes transcribed from interviews are based on basic concept of communication, structure of data, power point presentations, designing of pamphlets and brochures ,use of social media for learning tasks, discussion and panel discussion in classroom, verbal and written presentations and challenges of communication n learning process.

On the question of understanding about communication skills students reply was about, how to talk with others and covey their ideas. *As participant two," we can't talk, we can't survive."*

Majority of the students perceive communication is all about talk. Most of the opinion that if we are unable to talk we are not good communicator. To some extent this true but communication is not all about talk. *As participant six," conveying words to other persons as sign language, in a verbal form." As participant seven," communication is interaction, how the other person is understanding your thoughts."*

Mostly communication perception is about interaction and understanding of thoughts to other person. Students have ideas and basic information about communication skills but they have less knowledge about different ways of communication. There is need to link learning activities and tasks in a way so that all these improve the practical communication skills of students.

4.4.2 Structuring Data

On a question about strutting and presenting the information related to learning activities in the classrooms, mostly students were unaware about the proper meaning of structure the data. Structuring of data include the presentation of information in different forms: charts and graphics. *As participant thirteen," we are not well familiar about how to structure the data."*

As basic communicative skills, students must be given training and activities must be designed in a way that students learn how to properly present the written information by using different sources. By using tables, charts and other graphical presentations. *As participant ten," sometimes we present information on charts for our presentations."* As in few classes teachers demand students to use written chart to present their presentation or other related activities but these practices are very few and have not great impact on student's skills of presentation and communication.

Figure 4.4

Word Cloud of Communication Skills based on Students' Interview Text Analysis

Note: Word cloud image related to communication skills was generated on Nvivo with detailed text analysis based on students 'interviews to make the concept more understandable.

4.4.3 Power Point Presentations

Power point presentations are important part of today's learning. These skills are included in the BS scheme of study to enhance students with such skills of communication and presentation. On question of power point presentation, mostly students said that these are essential part of each course but as further discussed frequency or number of such presentation is very less.

As participant eight," oral presentation for each course of five marks is required at BS level." As once in a course for a semester, one presentation is required for five marks. There is need to link complete course outline and divide it in activities in a way

that weekly or monthly these presentations can be taken to enhance the verbal and visual communication skills of these students at undergraduate level.

As participant nine," after midterms of the selected course, one PowerPoint presentation is usually taken by the teachers." Mostly presentations are taken after midterm exams at BS level but this is not enough to equip students with powerful communication skills both verbal and nonverbal. These presentations must be embedded and designed with complete content to get complete and maximum benefits.

As participant three," Few teachers take oral presentation weekly from main content translating these into activities." Written and Oral presentation are essential part of 21st century learning because students or learners are the future employees of different organizations as they must be equipped with all communication expertise to be benefited in their life and as well good production of their organization.

4.4.4 Design pamphlets, /Brochures and Documentaries

Visual communication is a powerful weapon of this century to communication ideas and project to the world. As we see a learning requirement of this century there is need that students must be knowledge and skills with all new and powerful means of communication. *As participant two," there is no idea as learner of using pamphlets and broachers." As participant five," being learner I only know how to make a PowerPoint presentation with help of others, never used broachers and documentaries for our work presentation."*

It shows that mostly our system of education is working on conventional ideas and patterns. Our teachers are not asking students to do something different from routine and use them as mean of learning. There is need that a teacher must link learning activities with new demands and skills to make their students more and knowledgeable and skills especially with new means of commination.

4.4.5 Use of Social Media for Learning Tasks

Social media is a powerful tool of learning in 21st century. Use of social media has changed the mode and pace of learning at all levels. You tube, Whats apps, face books and many other things have changed the overall scenario of the educational as well. Students mostly use all these type of social media and other related gadgetries. On a question related to social media and student learning, student's replies were mostly about use of Whats app and YouTube but on a very smaller scale to use for learning.

As participant six," Whats app groups are commonly used to convey messages from teachers and other peers." It is in common practice that Whats app groups are used for sharing of information other related instructions to classes. As assignments and projects topic and other information is shared through Whats app. But there are so many other use of Whats app as conduction of classrooms, video presentations and sharing of articles and books can be done on this social media mode.

As participant eight," A few teacher share material related to outline in Whats app groups or to assign few tasks related to class activities." There are few teachers in few courses at BS level who use Whats app and other medium of social for their direct teaching along with main classroom teaching but these are very few in number. They are making best possible change in learning by using technology and social media but still there is need to link at a greater level all the teaching activities with new modes of learning.

As participant fourteen," face book groups are also used for learning purpose in few groups but these unofficial not suggested from teachers." There are a lot of groups on face book which can be connected with main method s and techniques for teaching and the learning process. But for this there is need to train both teachers and

learners how to effectively and efficiently use these medium with main learning and teaching process.

4.4.6 Discussion or Panel Discussion in Classroom

Discussion is a highly productive and effective method and technique of teaching. It is a great medium of communication as well and in 21st century of learning it has its own great importance. Not only day to day discussion but also the panel discussion in term of experts and as well students to learn how to conduct and manage different topics. In 21st century classroom new methods of communication and teaching are use commonly. In this way students explore ideas, meet experts, value others opinion and many other related skills acquire. Discussion move students towards intellectual agility and enhance sense of respect for others opinion.

As participant one," in few courses teachers have discussion with students but not in proper manner to conduct the discussion." A few teachers in different courses use discussion as method of teaching with main process of teaching and learning. In these classes students learn a lot of adjustment and democratic skills. These skills help learners to become more respective and flexible, there intellect level become more and more refined. *As participant seven," in classroom we are not taught in any semester about discussion as method of teaching."*

There are majority of classroom in which only conventional method of lecture and at the question answer used for learning purpose. Such classroom remain static and only teacher focused. But requirement of 21st century classroom is a vibrant and interactive classroom where peer discussion has its vital importance. *As participant ten," have no idea about discussion method for learning something and unfamiliar with panel discussion.* Students must be introduced with discussion procedures, how to plan, discuss and reach on conclusion of certain topics. Students must be aware about panel

and forum discussion because when they will go to the market place they have to do all these things.

4.4.7 Verbal Presentation /Written Presentation

Verbal and written presentations are very important part of 21st century learning and acquiring of the skills especially communication skills. Classroom learning and teaching is combination of both written and oral presentations both have their own specific value in development of communicative skills. *As participant two," mostly assignments and projects are written*."

As participant six," sometimes teachers say present the topic verbally in any given task." There is need a balance in the division of verbal and written communication in classes and different assigned tasks. Both must be used as requirement of the topic and task. Not only written and verbal communication is important but also the visual communication is of great importance in this century learning.

4.4.8 Challenges of Communication in Learning Process.

There are certain challenges of communication for our learners and our classrooms. As our teachers are not well equipped how to deal students and learners of this century. Mostly requirements of this century teaching are also not well transmitted and translated in the teaching methodology.

After discussion and probing with students in interview a few facts highlighted which are hindrance in effective communication skills development for students. *As participant three," being the learner of English language, I feel shy to present my work fluently.so most of the time I keep myself quite."*

As participant eight," sometimes teachers demotivate student to be more communicative and expressive. With few teachers it happened to me as learner. These

are many challenges in process of communication skills development specially the methodology set and defined for teaching is not suitable most able with the standards and demands of the new century. As well the behavior and training of both teacher and student can be a great challenge so there is need to equip both with training how to teach and learn communication skills.

According to students' detailed qualitative responses s the communication skills are practiced mostly at the moderate degree at undergraduate level. A moderate level means that these skills are in practice but at average level of practice. After analysis of students' interview on communication skills ,it is found that communication tasks and practices necessary for development of 21st century learning skills among skills are practiced at an average degree. Students are aware of the meaning and concept of communication but practice is not at a greater extent.

A few students present their work in form of charts and other structures of data presentation. Mostly work is presented in classes in written form. Power point presentations are taken only for once in a semester. In social media utilization students only use Whats app groups in their classes for sharing of information. Discussions and panel discussions are not used as method of teaching at undergraduate level. Discussions are included in classes at average degree in form of questions answer sessions. Challenges related to communication are identified as students feel shy to communicate and in most of the classes traditional lecture method are used to deliver the content.

4.5 Use of Technology

Technology is one the greatest revolution in all the sectors of life. It also effected the system of education and has changed the pace and scenario of the teaching and learning process.

Table 4.6

Summary of Students' Interview Analysis on Use of Technology

Research Question	Main Theme	Sub Theme
How students integrate and incorporate Technology in their learning process at undergraduate level?	Use of Technology in learning	Use of Internet resources for Assignments and Projects
		Reliability of online resources
		Use of Technology for sharing of the information
		Use of multimedia for presentations
		Use of blogs for class tasks
		Challenges of use of Technology for learning

Note. Table 4.6 highlights the themes drawn from the thematic analysis of students' interview on construct of use of technology. Themes transcribed from interviews are based on use of internet for assignments and project, use of Internet resources for Assignments and Projects, Reliability of online resources, sharing of the information, and use of multimedia, use of blogs for class tasks and challenges of use of technology for learning.

4.5.1 Use of Internet Resources for Assignments and Projects

Internet has a lot of resources in form of distribution of information. There are websites, search engines, research thesis, research articles, blogs, v logs and many more. Being a student now world is open in hands of learner. Access and excessive access of information is always at one click. Student can use any resource from anywhere in the world. Students use different websites for the collection of data to compile the assigned activities and tasks.

Now it is duty of the teachers to properly equip themselves with effective use of technology and then guide their students to choose more reliable online resource of information. *As participant four," Use different websites for collection of data for assignment."* But there is need to teach students select and identify relevant and authentic website or internet resources for completion of their different tasks. Because

mostly students do copy and paste in their assignments and other related class activities without properly analyzing the materials and resources. *As participant two," Use internet for compilation and completion of assigned class work."*

4.5.2 Reliability of the Online Resources

Reliability of the online resource of information is the greatest concern in this world of technology and internet. There are number of resources and bulk of information in hands of every one and especially students. But still the authentic and reliable information is crucial to be selected. *As participant six, "I compare information of assigned tasks on different websites."*

There is need to equip teachers about technology and section of information on different websites and as well have information about different sources reliability and authenticity so that to easily guide the students.

As participant twelve," being learner it is our responsibility to properly check the content and its relevancy." All these related sub tasks of identifying relevancy and reliability need to be taught to students to get good and effective results. But for all this need to train a teacher or instructor as well to properly guide students.

4.5.3 Use of Technology for Sharing of the Information.

Mostly technology is used in teaching and learning process not only for collection of information but for sharing of the information. Exchange of information through e mails and other mediums is very important part of use of technology. *As participant one, "books and material are exchanged sometimes through Emails." As participant nine," mostly articles are share through Whats app links."*

As participant fourteen," sometimes assignments and projects shared through face book groups and pages. All these resources are used in information sharing and play important part in the process of learning of the students. Now it all depends in which

way to successfully train both teachers and students to use this technology on maximum level and make it part of the main teaching and learning process.

4.5.4 Use of Multimedia for Presentations

Multimedia in classroom teaching and learning in today's world. There are many other gadgetries like smart board, pin board and many more. In the context of Pakistani higher education system if these gadgetries are discussed and viewed , these are less in numbers because mostly institution are not well equipped with modern classrooms. *As participant seven," as learner I used multimedia once in all six previous semesters for a presentation."*

It shows that these gadgetries are not included as important portion of daily teaching and learning process. So how we can make a learner more and more equipped with latest technology that is need of this century because this is century of gadgets and technology has changed every sphere of life. *As participant six," I have no idea how to present with multimedia."*

Figure 4.5

Word Cloud of Use of Technology based on Students' Interview Text Analysis

Note: Word cloud image related to Use of technology for learning was generated on Nvivo with detailed text analysis based on students 'interviews to make the concept more understandable.

4.5.5 Use of Blogs for Class Tasks

Blogs are a great source of basic information. There are many blogs related to different topics that can help students to write their projects and assignments. Students can use these blogs for their learning in an effective way. On a question related to use of blogs for learning process, mostly students were not familiar of the use of blogs for learning purpose and managing different written and oral tasks. *As participant eight," have no idea about what is blog and how to use it."*

They are not well aware and equipped how to use information from different sources. *As participant three," I know about blogs but never ever used these for assignments and other class tasks."* It shows students are less using these blogs and other related materials in form of essay writings for completion of their class tasks and projects.

4.5.6 Challenges of Use of Technology

There are many challenges related to technology and especially use of technology in our educational institutions. Institutions have less resources related to technology. And there are many hurdles in application and use of these technical gadgetries and linking these with main education a system and especially I the process of teaching and learning in classrooms. During interviews students also highlighted these challenges.

As participant four," there are only 2 multimedia in their institution, one is fixed in auditorium and the other is at main office move on rotation for work."

As participant seven," no classroom have multimedia and even no access of internet facility at campus." As participant nine," there are severe issues of internet and electricity, load shedding hours are high."

These are unavoidable problems that affect the practice of technology in the process of learning as well teaching get minimized due to these issue. Teachers avoid to use technical gadgetries and not link their lectures and tasks with technology. Even than available gadgetries and soft wares are difficult to use in this situation.

According to students' detailed qualitative responses technology skills are practiced mostly at the moderate degree at undergraduate level. A moderate level means that these skills are in practice but at average level of practice. After detailed analysis of students' interview it is found that students use internet to complete their tasks related to classwork and for different assignments. But reliability of online resources is not often checked before using the information.

Only a few students do it. Emails, Whats app groups and Facebook groups are used to share the information. Students use blogs rarely to complete their assignments and other content related tasks. Use of multimedia in classrooms and especially from students is not adequate.

Mostly students don't know how to use multimedia as presentations on technology related gadgets are not common. As well availability of such gadgets is not enough in classrooms for daily learning and internet availability is minimum.

Objective 03 To find out teachers perspective about practice of 21st century learning skills set of four Cs in teaching practice at undergraduate level.

4.6 Creativity

Creativity is basically an experience and interaction between classroom environment and teaching and learning process. Teacher and students both are ate part of the process and practice of creativity and inventiveness in the classroom setting.

Table 4.7

Summary of Teachers Interview Analysis on Creativity Skills

Research question	Main Theme	Sub-Themes
How teachers incorporate creativity in their teaching and learning process for students at undergraduate level.	Creativity	Concept of creativity Integration of Creativity in classroom teaching Challenges of creativity in learning and teaching process. Strategies for creativity.

Note. Table 4.7 highlights the themes drawn from the thematic analysis of teachers' interview on creativity. Themes transcribed from interviews are based on concept of creativity, integration of creativity in classroom teaching, challenges of creativity in teaching learning process and strategies for creativity.

4.6.1 Concept of Creativity Teaching and Learning process

As in light of first question of the interview," what four Cs of learning means to you as teacher." Especially focusing the concept of creativity among teachers is clear good enough on theoretical knowledge. Participant one said about creativity as*," something new"* in form of new idea as well that particular respondent added in discussion that *," it is aspect of learning beyond the rote learning."* Participant four commented," it is beyond the traditional way of teaching," participant six said in concept of creativity*," it is near to real life situation in classroom learning."*

Participant five discussed that creativity is important aspect in 21st century classroom*," creativity is more than imitation, it is based on imagination*. "Participant nine shared ideas of creativity in a way*," it is more than imitation and brings social adjustment,"* if we analyze all these comments by participants involved in interview it is obvious that teachers have a basic knowledge about creativity and its importance in learning.

Now it is essential how teachers made creativity as their daily teaching in the classroom. Participant three mentioned that, *"creativity is like understanding and it is considered as thoughtful process."* As participant seven included, *"it is based on student self-observation about daily issues and tasks."* This interview section shows that teacher have basic concept of classroom and creativity and they consider its importance.

4.6.2 Integration of Creativity in Classroom Teaching and Learning process

It is very important factor that teachers must integrate creativity in form of different activities and assignments in the classroom for 21st century effective learning. As participant two expressed that*," idea and concept based activities are mostly added by her in different course according to content,"* participant four mentioned that *,"in each course students are asked to design models and charts one or two times in a semester."* Participant three is of the view, *"brain storming is part of maximum classes."*

Participant eight is of the view*, "activities are designed in a way to demand students to present the content in form of role play or drama but it is very rare."* Teachers at their part integrate a few activities but still in traditional and limited manner. *Participant three mentioned," students are asked to perform different cultural activities with cultural dresses and languages presentations."* Integration of creativity in

classroom is very essential factor of twenty first century teaching and especially when 21st century learning is emphasized it is most important element of the teaching.

4.6.3 Challenges of Creativity in Teaching and Learning

As teachers try to integrate creativeness in their day to day classroom teaching for effective 21st century learning but still there are so many challenges and difficulties for our teachers to properly incorporate creative tasks and activities in their teaching. As participant four mentioned,*" Heavy content and long outlines are major issue in the way of being creative."* As participant six elaborated that*," semester system is very hectic and short time, as teacher we have to manage different tasks, so mostly it is difficult to be creative*."

As research based content is very less at undergraduate level in outlines. As participant eight mentioned,*" due to shortage of time and resources, it is not possible for teacher to ask their students to work on research articles*." So research based activities remain less at undergraduate level. As participant ten shared that*," students are also reluctant to read new / good books and researches, sometimes teachers suggests these resources but still students never pay attention."*

As participant five mentioned,*" there are different environmental challenges to be creative, as classrooms are not properly equipped with resources important for creative activities."*

Still teachers always try at their own to make classes at undergraduate level more and more activity based and creative. As participant two described that*." As teachers we never got any special training about creative activities and how to integrate all these in the classroom setup."* Participant seven discussed and added in a way*," our classroom physical environment is not according to 21st century classroom requirements, students strength is very high, so creative activities are not possible to*

design and managed to its true worth." Challenges for being creative as teacher are many as participant one mentioned*," there are so many other campus duties regarding administrative tasks, actual teaching suffer a lot."*

Another participant three also mentioned that same issues*," we have to complete so many managerial tasks during campus hours, so we as teachers both mentally and physically exhausted."* All these challenges are need to be properly addressed with planning.

4.6.4 Strategies for Creativity Teaching and Learning

As in interview teachers are asked to give their suggestions about the process of creativity in classroom teaching. They participated with great zeal and discussed this section or part of interview with detailed discussion. As participant three*," teachers must equip themselves with the latest knowledge and trends in teaching."* Because it the need of this century to equip, train and empower the teachers as well for effective learning in this era.

As participant four mentioned*," teachers must be generous enough to accept students' ideas and innovation."* In our culture of teaching and learning most of the time students are well encouraged and appreciated for their work especially when they bring something new with new idea. As participant five discussed that, *students also be included as stakeholder of learning process and as well teaching process in form of discussion and ideas about their choice."* Before implementation of the direct teaching in the classroom, students must be given chance to discuss outline and some basic mutual discussions and orientations are important for being creative.

As participant six mentioned," teachers also be given a respectable autonomy to add in the outline and content in each course. As participant nine*," outline and content must be more and more based on real world situation.* "As participant ten,"

teachers must be given practical training on outline development*, "content selection and integration of creative tasks because teachers professional development missing the practical teaching element most of the time."* Not only training but proper follow up and implementation is also important for 21st century teaching and learning environment. In this way learners can learn in an effective way at undergraduate level.

After interview analysis of teachers' perspective on creativity skills it is found that teachers are well aware with the general concept of creativity in teaching and learning. They are of the opinion to add maximum activities for students based on new ideas and concepts such as role play method, storytelling and brain storming and different research based activities and assignments. They highlighted that they integrate different tasks related to creativity in direct classroom teaching and learning such as research based assignments and discussions.

But they highlighted multiple challenges faced by teachers teaching at undergraduate level such as lengthy outlines in a short time of a semester, physical environment of the classes not actually meeting the requirement of 21st century classrooms and multiple managerial duties along with teaching. Certain strategies can be helpful for the effective practice of creativity in classrooms at undergraduate level such teachers' professional training on different aspects of pedagogy of 21st century and relevancy of the curriculum with real world.

4.7 Critical Thinking

Thought-provoking questions included in day to day learning and teaching will allow students to show their conceptual understanding and promote their intellectual abilities to go for solutions**.**

Table 4.8

Summary of Teachers' Interview Analysis on Critical Thinking Skills

Research question	Main Theme	Sub-Themes
How teachers incorporate critical thinking skills in their teaching and learning process for students at undergraduate level?	Critical Thinking	Concept of Critical Thinking skill Integration of Critical Thinking skill in classroom Challenges of critical Thinking skills in teaching and learning process. Strategies of critical thinking skills

Note. Table 4.8 highlights the themes drawn from the thematic analysis of s teachers' interview on critical thinking skills. Themes transcribed from interviews are based on concept of critical thinking, integration of critical thinking in classroom teaching, challenges of critical thinking in teaching learning process and strategies for critical thinking.

4.7.1 Concept of Critical Thinking skills Teaching and Learning

Critical thinking skill is very important skill in the learning skills set of 21s century learning. Critical thinking skill is a systematic procedure of thinking with different steps. It effect the learning process at a larger extent and its quality depends on the learner's way and attitude to think and perceive things with rationality. As participant two mentioned*," Critical thinking skills in teaching and learning procedure and process is to ask questions from students on different problems".*

As well participant five added*, "It is process of assessing students on different perspectives by involving them in learning process,"* As participant six included, *"it is basically angle of vision and students ability to think and decide about different things."* According to teachers it is very important skill but ignored in our educational process. It develops student's ability to think, to judge and to make decisions. As participant eight discussed in detail and viewed that*," it is about to analyze the content and fully prepare students to find the solution of day to day problems based on rationality and*

reasoning." Teachers also connected the concept critical thinking with god analytical and judgmental skills. As participant seven mentioned*," it is judgmental ability of the learner regarding learning of the concept and content."*

Teachers also commented and connected this skill with synthesis and question answer ability of the students. They agreed that this important skills must be fully included and mixed with teaching and learning process to make learning more and more useful and dynamic which is need of the hour. Mostly teachers related it with question answer sessions in classroom teaching. As participant four commented that*," mostly question and answer sessions are used to rise the critical thinking aptitude of the leaners in classrooms."* So it is taken as an important skills of learning in 21st century at undergraduate level by teachers that can make students more refined and successful in their careers.

4.7.2 Integration of Critical Thinking Skill in Teaching and Learning Process

Question during interview was asked about how to integrate critical thinking skills as a teacher in process of education with reference to methods, materials and assessment. Teachers replied in detailed manner about different activities regarding development and enhancement of critical thinking skill of the students.

As participant one detailed about*," topic of assignment are selected in which students can critically analyze different situations."* As well students are given freedom of choice for their assignments and projects in this way they can decide well what to do and how to do the assigned work. As participant three opinioned that*," activities are generated and linked with content in which students can participate fully and allowed to ask different questions on the topic and related content."*

As participant six added in a way*," activities prepared before the lecture and well connected with the content about students' involvement and to check the*

analytical and critical thinking patterns of the students." Teaching methods are selected in a way to increase the power of decision making and analysis of content. Individual and group activities are designed in such a way in which students have choice and requirement to take decision about certain activities.

As participant seven detailed, *"The activities based on concept mapping are mostly added in teaching and students practice tasks."* Not only the process of content selection but also methods are chosen in such a way to include and demand students to talk on all these aspects critically and rationally.

As participant ten detailed about the activity in class by using the content analysis and role play method on different topics*, "content analysis is included in different activities and through role paly method many topic of importance are taught*." It is not only important to teach critical thinking skills in classroom but also to link with assessment process it is equally important. But our assessment process has many flaws, still teachers at their part make effort to assess in a better way what they have taught in the classroom.

As participant five remarked on assessment and critical thinking skills*," critical questions are included in final assessment as well assignments and projects are designed in a way that can assess the students' decision making, analytical and judgmental ability as learner."* Different situations and problems of practical day to life are included as part of assessment and students are asked to find the solution of the issues and problems.

4.7.3 Challenges of critical thinking skills in Teaching and Learning process

There are many difficulties in effective implementation of critical thinking practices in teaching and learning process. There are many classroom and environmental and challenges in our educational system to use all new trend and

practices in classroom setting. Our teaching and evaluation focus is most of the time on marks and grading, in his way actual practice on these skills remain less effective.

As participant one mentioned*," it is difficult for a teacher in short semester time to give activities based on critical analysis, teachers have to finish their syllabus or outline."* As well due to bulk of access to information on different online resources students less focus on thinking with their own understanding. As participant five mentioned*," bulk of information available and fast pace of the work made students lazy and easy going, they copy paste from different sources and complete tasks."*

As well they are always in rush feeling not focusing on quality of their work. On behalf of teachers they stated that they have to do a lot of administrative and managerial duties in their campuses, in this way mostly activities based on the critical thinking skills suffer because lack of time and attention. As well the teacher-dents ratio is very high in classes at undergraduate level in universities.

A single class having 50 to 60 students in some campuses and as well having more than 1 sections. As participant seven mentioned*," I teach more than 60 students in one section, so it is difficult for me to give individual attention and discuss critically all the content with maximum students."* As participant nine discussed in detail," *students are also reluctant to work hard, make judgments and analysis."* Teachers are well equipped with training in regard of skill development especially the skills set of 21st century learning.

As participant six mentioned*," as teacher to teach undergrad program in semester system, they are not properly trained regarding pedagogy, activities integration and assessment process."* There is need to train teachers about 21st century skills and requirement of these skills for survival of life especially critical thinking skills. On a question about the step and process of critical thinking skills majority of

the teachers were unaware about systematic and procedural steps of critical thinking skill. As participant eight mentioned, *as teacher I am adding different activities based on analysis and synthesis but still unaware the systematic procedure and steps of critical thinking skills development among learners."* Teachers are consuming these 21st century skills in classroom with different capacity and ratio but still unaware of how effectively integrate in education process especially focusing methods of teaching and assessment of the learner.

4.7.4 Strategies for Critical Thinking Skills in Teaching and Learning Process

On a question about strategies and suggestions of the improvement of critical thinking skills in learners at under graduate level, teachers suggested a few important points to make critical thinking skills more and more part of the learning process. As participant one suggested,*" research based material and content must be shared to students, as well make them part to create content."* In a way when they will create content and other activities as stakeholder of the learning process they will be definitely involve and think systematically.

Even than opinion of student matter a lot when designing the outline of the course. As participant six suggested*," individual and group research project must be based on indigenous issues and problems from society.* In this way students will work more in-depth and interest. They will work with more motivated and keen way, will be more practical and critical. As participant eight highlighted, *"the physical environment of the classrooms at undergraduate level for development of all these skills is highly important."* With poor physical facilities students suffer all the time psychological way so they can focus and be critical but in negative dimension.in these situations retention is also very difficult.

Teachers training is very important aspect and factor to develop critical thinking skill, this part of teacher development is always missing. As participant ten suggested*," effective teachers' professional development programs must be linked with direct classroom pedagogy and practice about 21st century learning."* Teachers need to be encourage for new and critical ideas regarding teaching and learning process.

After analysis of teachers' interview on perspective of critical thinking skills it is found that teachers know about critical thinking skills and integrate different tasks related to critical thinking skills development. As teachers reported and discussed that they mostly include question answers and analysis based assignments.

Judgment tasks and activities in classroom teaching are included for many times. Students are given choice to make decision in selections of assignments' topics. Teachers highlighted multiple challenges related to practice of critical thinking skills in classrooms as lengthy outlines, imbalanced teacher student ration in classrooms along with large number of duties other than teaching.

4.8 Collaboration

Collaboration is very important skills of twenty first century learning. Teachers' knowledge and information about collaboration and the process of collaboration is very important for effective and quality learning.

4.8.1 Concept of Collaboration in Teaching and Learning Process

Teaching plays very important role in quality learning and 21st century teachers are required to learn about all new techniques and trends of education. On question about the concept of collaboration participant no one said*," it is to work like a team for different tasks and activities."*

Participant six said*," it is basically mingling of the students and making them as a team."* Team work is the essence of collaboration skill of learning in 21st century.

Sense of participation in tasks as pairs and team is the most important element of teaching and learning process in 21st century.

Table 4.9

Summary of Teachers' Interview Analysis on Collaboration Skills

Research question	Main Theme	Sub-Themes
How teachers incorporate collaboration skills in their direct teaching and learning course for students at undergraduate level?	Collaboration	Concept of Collaboration Integration of Collaboration skills in classroom Challenges of collaboration skills in teaching and learning process. Strategies of collaboration skills.

Note. Table 4.9. Highlights the themes drawn from the thematic analysis of s teachers' interview on collaboration skills. Themes transcribed from interviews are based on concept of collaboration integration of critical thinking in classroom teaching, challenges of collaboration in teaching learning process and strategies for collaboration.

It is the greater need of the time to prepare students to collaborate and work together because now all organizations and companies demand it for selections of the candidate. As participant five discussed*," homogeneous and heterogeneous grouping is very important for dynamic collaborative learning aspect."*

But these groups need to be rotated and merged with tasks. As participant three mention about her experience*," to make groups once at the start of the semester and after that same group members work for all tasks and classroom activities throughout the semester."* This is not effective because it create monotony in group and as well it group will not work in dynamic way after one or two tasks. In most of the courses teacher just make groups for one combine assignment but to teach collaboration in terms to work as team and work for team is only possible when this skill practiced on regular basis .

As participant four mentioned*," different competitions must be managed in classrooms in pairs and small teams to motivate students.* "As participant two discussed*," being teacher and part of the learning, we must focus on objectives and especially on learner as final product who have to work in the job market."* As participant six mentioned*," grouping in small groups and tasks with real world situations are more effective for learners.*

Grouping for presentations of tasks and projects must be done with great care a techniques must be followed. In the section of concept about collaboration participant five discussed*," teacher student rapport matters a lot in creating collaborative learning environment in classroom."* Good teacher student rapport and as well peer to peer positive relation is the key to success and development of this collaborative skill.

4.8.2 Integration of Collaborative Skill in Teaching and Learning Process

It is important how to effectively collaborate and coordinate in classroom and as well how teacher will effectively merge the collaborative activities content selection process, selection of methodology and as well how effectively link with assessment process. It is highly technical and skillful activity. Teachers try their best as with their knowledge and experience to mix and merge these skills and develop these. As participant one mentioned, *combined project for one or two times are very helpful for students learning."*

As presentations and other class assigned tasks can be managed for learning the collaborative skills and work as team for common objectives. As participant five discussed*," group assignments are given to students for two or three times in a semester."*

As participant nine elaborated the situation*," most of the times in courses in one semester's students are given individual written work or sometimes verbal presentation*

tasks." There is need to revisit the methodology of the course in light of content and then formulate the collaborative learning activities.

Mostly teachers are not well aware of the activities to link with assessment and how to manage grouping for formative and summative assessment. As our evaluation procedure is focusing in only getting good numbers and grade but such type of skills among students are missing and well not encouraged to be developed at a larger extent. Students are also in the competition to get good.

CGPAs and grade, but not focusing on skill based performance. Teachers are also not trained in a way to link all the important aspects of one course in term of objectives, methods and assessments. Responsibilities other than teaching overburdened teacher to select proper method of teaching and effective technique to teach in classroom. As participant ten mentioned in a way, *"As teacher I need training about how to collaborate as teacher and how to design activities for my learners to work as team."*

Because as teacher it is not enough to only adjust the number of students in one group, it is more and more technical in its practice. Group work requires proper follow up and assessment procedures to be followed. Execution of the project work and then assessment of students as their individual participation demands skill and efforts on part of teachers. As participant eight mention,*" group of 5to 7 students formulated at the start of the semester just for one combine presentation."* Than they work with the same group throughout semester and sometimes for so many courses.

This technique of using group work is not effective at all, it just fulfill the number of the group but not useful in its true spirit. As participant two mentioned*," having two larger group of the classes, she mixed and merged both sections and divided*

tasks." As participant eight mentioned,*" groups are formulated two times in a semester one for combine assignment and the other one was to present for formative evaluation."*

4.8.3 Challenges of Collaboration in Teaching and Learning Process

There are number of difficulties faced by teachers to successfully execute the collaborative activities in the classroom. Because when different students work to gather their differences matter a lot but it is the duty of teacher how to manage group work and collaborative tasks in balanced and effective way. For this reference teachers adopt a lot of strategies to handle such issues and challenges in efficient manners. As participant two mentioned,*" due to difference of opinions among group member, sometimes it create a lot of disturbance within group."*

In such type of situation responsibility of teacher increases and a skill require to effectively handle different opinion of students and find a consensus to work further. Sometimes students become rude for on anther on content selection or sometimes for financial issues. As participant four mentioned that, *"students have their issues on division of work, some students work dedicatedly and some work with no care."*

Again procedural execution of collaborative work especially group project require expertise both on part of teachers and students, how to follow each step and provide its linkage and feedback is difficult and challenging tasks. As participant five mentioned during interview discussion*," how to individual student as with the proportion of their work done during is very difficult."*

Proper feedback according to work is very important for group work, for this teachers require to be train for the evaluation of collaborative tasks and group work. Group work not only on teachers but on the part of student it is responsibility to manage and keep the record of small activities. As participant seven*, "it is hectic and*

challenging to keep record of small activities of group work in different courses during semester."

For this teachers have to do at of work from start to end of the project, and in our common classrooms there are larger number of students ad large groups are formulated, so it is a big challenge to keep the collaborative work on smooth tack. All these small or large issues and challenges not only effect the project quality but also the overall learning process of the student at under grade program as well.

Another important aspect of education and especially group work for collaboration is to provide an industry linkages to our projects so that help students to actual real world experiences but mostly teachers and students both are not familiar and trained to do so. As participant ten mentioned*," there is no idea how to connect student work with job market and industry to get a maximum benefit on behalf of students."* In this regard the official linkage of institution and proper planning can help teachers and students to market and launch their product as well to get good internships for students.

4.8.4 Strategies for Collaboration in Teaching and Learning Process

Teachers asked to give suggestions and recommend strategies for collaborative activities in classroom teaching that help students at undergraduate level for their effective learning process. As participant two*," professional development training programs must be link with 21st century learning aspects for teachers teaching at undergraduate level."* Not only teacher training is important but also the student training is very important in this regard.

Students must be trained and oriented with such type of content and activities that enhance their team work and collaboration skills for their future professions. Infrastructural changes are also very important as physical infrastructure and capacity

building of the campuses. Classroom total environment effect the learning process where collaborative activities are managed to enhance the skill.

As participant four mentioned,*" no of students is very high at undergraduate level and capacity of the classroom is not enough to handle such group work activities on daily basis."* Group activities and different type of energizing activities as well need a large place and space to be conducted.as well we have to move our educational system towards learner centeredness where student is equally collaborator and provider of the knowledge.

As participant five*," the part of the teacher in 21st century is only to facilitate and mentor the learning process."* Teachers have to make their activities and have to design methodology in way where learner also contribute in content development and activities by their own choice. Freedom of choice for different task selection is the important part of 21st century leaning. As participant ten*," students must be given autonomy and freedom of choice to design and decide learning activities with set proportion or margin."* These collaborative activities not only practiced only once or twice in a semester but continuity in these activities is very important.

As participant seven mentioned*," detailed collaborative activities must be covered weekly because these activities will teach them how to work for one common goal and objective."* Not only they will team work but they will learn patience and respect for other members, how to accept them as member of the project and class community.

A class is also representative of different communities and sections of the society so students will be better able with these collaborative activities to accept the concept of diversity in classroom. This acceptance of people with different cultures,

different and identities will make them a better member of the society as well. With collaborative practice students overall character building will also be possible.

As participant eight mentioned and discussed in detail*," with effect of collaborative work and task, not only learner will learn togetherness but also the confidence in themselves in a humble manner."* So overall development and better learning at undergraduate level demands that these collaborative tasks and activities must be included more and more for effective learning of the learner by focusing 21st century learning skill set.

After analysis of teachers' interview on the perspective of collaboration in classroom teaching it is found that in general terms teachers are aware of collaboration skills in teaching and learning process. They are familiar with pair work, small group work and other techniques of collaboration. Group work is added at moderate level and students are mostly asked to complete tasks in groups and pairs.

Teachers made groups at the start of the semester and these groups continue till the end of the semester and sometimes continue for two or three semesters. Teachers use activities based on think - pair and share. As well group research based assignments and projects are given to students at different times during the semester. There are different challenges in teachers' opinion related to collaboration as large amount of outline topics, students biased behavior to work in groups creating multiple issues. But there is need to train teachers about collaboration and team work so they can properly divide and monitor the work.

4.9 Communication

Oral and written communication skills never reduce its importance. Educational institutions always need to teach their students effectively and make sure how to speak confidently and clearly.

Table 4.10

Summary of Teachers' Interview Analysis on Communication Skills

Research question	Main Theme	Sub -Themes
How teachers incorporate communication skills in their teaching and learning process for students at undergraduate level	Communication	Concept of communication skills Integration of communication skills in classroom Challenges of communication skills in teaching and learning process. Strategies of communication skills

Note.4.10. highlights the themes drawn from the thematic analysis of s teachers' interview on communication skills. Themes transcribed from interviews are based on concept of communication integration of communication in classroom teaching, challenges of communication in teaching learning process and strategies for communication.

4.9.1 Concept of Communication Skills in Teaching and Learning Process

This is century of communication and communication skills of individual matters a lot in the success of an individual. These communication skills are very important for the effective learning of the learner and a strong teaching and learning environment mostly depends on the strength of these skills. A question was asked about the concept of communication skills and its classroom importance. There are different type of communication verbal communication, non-verbal and visual communication. As participant one*," it is about one how to talk and convey the concept."* There are different modes of communication in classroom and classroom teaching to design activities in a way that students be the part of every type of communication.

As participant four*," teacher talk time must less and students practice time in form of verbal discussion must be more."* In our classrooms teachers' participation is more than students' participation because the method of teaching applied and practiced

in our classrooms in mostly lecture method in which students talk time and practice time minimized.

As participant eight mentioned *,"students must present their work by using models and charts and activities are designed in this way that students have to present other than written work.* "Verbal communication is now active part of the semester system, course outline and scheme of study is designed in a way where there is requirement of assignments and verbal presentations on different projects. Students are asked to present verbally in form of group discussion, question answer sessions or by presenting on boards or through PPTs.

As participant five mentioned*," not only listening skills are important but students' spoken and unspoken skills are very important for their careers and development."*

In this way they learn effective communication skills in their respective classrooms. Teaching activities must be designed in a way that increase the students' involvement and practice of these communication skills. As participant nine discussed*," group discussion by following all the steps of the discussion process must be the part of the classroom activities."* Debate method always give greater chance to students to enhance their verbal skills and presentation of their ideas in a better manner.

In this way students as well reach a conclusion towards certain issue or problem. While designing the teaching activities always keep in mind that students are also given maximum chance to actively participate in written work, in discussion and as well they are better able to connect and present their work by using technology.

As participant six mentioned*, "Always give chance to students to present their point of view on different aspects and perspectives of the issue."* Don't discourage your student when they are sharing something in classroom and always give the chance to

explore something new and different. Let them do analysis and synthesis and them present to make their skills more and more refined. As participant three discussed*," communication between teacher and students and as well interaction and discussion between students to student is also very important."*

Teachers own communication skills matters a lot in the effectiveness of teaching system and process. As participant ten mentioned*," teachers' personal communicative skills and connectivity to ward class can make an ordinary environment more effective with reference of learning."*

So professional development programs for teachers also focus on betterment of the communicative skills of teachers and direct implementation of these skills in classroom teaching. As participant two mentioned*," in semester system presentations, assignments and discussions are important part of the teaching but the frequency of all these is very low, only one or two times in a semester.*

4.9.2 Integration of communication skill in Teaching and Learning process

Communication skills are most important and effective skills of twenty first century learning process. It is important to effectively integrate all these in classroom learning through different activities and processes. Written work, verbal discussions and presentations are essential part of semester system evaluation but the proportion and ratio of communicative activities are very less in number.

As participant two*," written is at larger scale in class tasks but still 2 times in a month verbal communication and discussion is also planned."* This ratio of verbal communication is very less and it must be increased communicative skills of students at undergraduate program. As participant six mentioned *," presentation of the group project or individual project is taken in classes for only once a semester,"* in this way students have very rare chance to properly present and discuss their ideas in detail

because these type of presentations are only to fulfill the requirement of the course evaluation and grading. Such presentations are required on weekly basis to more and more involve the student.

As participant seven discussed*," written assignments are taken for 2 times in a semester for each course but verbal presentation of the these assignments is not part of the semester, in this way written skills may be improved but discussion and verbal skills remained untouched.*" During Covid online presentation of projects and individual work are taken but these were only for short period of time. As participant three mentioned*," during Covid period students presented online in their presentations and also taken the online quizzes, for this purpose they prepared PPTS and other related material for their tasks."* combining of listening, speaking and discussion skills are very necessary.

For this purpose activities must be made in a way that develop all these skills of learners. As participant four mentioned*," to daily add question answer session in the class for discussion and verbal communication."* Student given chance to speak logically and with reasoning. As participant mentioned*," Teacher Talk Time (TTT) must be less and student talk time (STT) must be more and discussion based teaching must be on weekly basis."* in this way students will increase and develop their speaking abilities.

Not only speaking abilities but as well listening and decision making will also be improved by adding all these activities in the classroom. More and more group activities increase the range and quality of communication skills, students' interaction and coordination also increase and develop communication skills of the learner as well. The concept of group activities not only increase the team work but also increase certain communication and adjustment skills.

4.9.3 Challenges of communication skills in Teaching and Learning process

Like other 21st century skills practice and development, there are many challenges to communication skills as well. On part of teachers there are many difficulties like teachers are overworked and they remain unable to design maximum practical activities for development of the communication skills. Learner centeredness and communication skills development always demand hard work in sense of developing and designing activities according to content but in our educational system teachers also perform many administrative and managerial duties even in university level.

As participant two mentioned*," along with classes they have perform other duties like admission duty and cleanliness, in this way the focus from effective teaching shift towards the completion of tasks."* So focus and attention of the teachers divert which increase the gap in teaching learning process and activities for certain classes remained less effective. So that's why mostly teachers decide lecture method in their classes.

Teachers are reluctant to introduce activities and other new trends in their classes. As well students are shy and reluctant to share their thoughts and ideas with others in classes. Only rote learning is happening in classes which have larger part of memorization. As participant four explained,*" students are always easy going and reluctant to adopt new learning activities."* They just focus on marks and grading but not focusing on skills and behavioral changes at all.

As participant five mentioned*, "It is difficult to keep focused and attentive students on different tasks and activities."* As well there are certain problems related to evaluation system. As participant seven mentioned that, *"our evaluation system just focused on 1 or 2 graded assignments and graded presentation in a semester most of*

the times other mid-term and final term." The other activities like class discussion and participation are less and very rare graded, so student don't pay any serious attention towards activities.

Even our teachers are less trained to mix and merge activities to develop communication skills in direct classroom teaching. So these things need to merge in professional development training programs for teachers. As participant nine mentioned*," professional development training programs must focus 21st century skills training with context of classroom teaching and especially the communication skills."* when teachers will be trained enough to mix and merge the activities of communication skills in classroom , definitely students will learn more and more in this regard.

4.9.4 Strategies for communication skills in Teaching and Learning Process

There are many effective strategies that can improve the communication skills of students at undergraduate level. Effective physical environment of the classroom and as well the teaching methods and different small day to day strategies can improve the overall condition of the communication skills of learner. A teacher can engage the students in different writing activities and as well the activities of verbal presentations.

As participant two suggested*," content can be divided and presented in a way in which students daily discuss with one another."* As well the designed activities can be made more attractive and effective in which students can maintain their attention level. As participant four highlighted, *"question answer session with feedback both verbal and graded must be given to students."*

These activities required a planning and must be delivered with balanced frequency so in this way these can be effective and fruitful. Because when you as teacher just randomly select these activities, gap can be full filled. In this way few students become part of these activities and others remain unconcerned.

As participant three mentioned, *"Classroom discussion, question answer session and presentations must be integrated in a way that covers all the content and must be on weekly basis."* After interview and discussion with teachers it come to know that in most of the courses at undergraduate just have such activities two or three times in a complete semester which is very low ratio.

As participant seven mentioned*," these activities must be linked with objectives, contents and outcomes of the course and must be on frequent basis."* so that learners can practice these verbal and no verbal all type of communication in classroom scenario. Not only the verbal and non-verbal but the imagery communication is also greatest part of 21st century learning and a teacher must kept in mind all these types of communications.

Teachers must update and train themselves to effectively use all these skills for their learners. As participant eight mentioned regarding students' presentations*," power point presentation of their projects and then its complete and effective presentation must be completed by students not only once but more than one."*

Communication skills in this century are directly related with technology, effective use of technology can develop and sharpen the learner skills more and more. As well a good teacher must update his or her knowledge how to communicate in classroom to achieve all objectives and as well update as teacher about the latest technologies to be used in enhancing the teaching skill. Learners' success will depend on the commitment and concern of the teacher as well, how effectively a teacher can guide and facilitate learners.

After analysis of the teachers' perspective on communication skills it is found that teachers are well aware with the basic and general concept of the communication as 21st century learning skill. But in classrooms mostly tasks are based on written

communication skills in form of written assignments. Verbal communications are less and added 1or 2 times in a month. Group work presentation in verbal form are just once in a semester as informed by the teachers.

Discussion element is added in most of the classes for teaching. Presentation of students' work in form of medium other than written like brochures, pamphlets and documentaries is found rarely. There are multiple challenges of communication in classrooms at undergraduate level like students are reluctant in communication activities performed in classes and as well teachers are having multiple managerial activities and tasks to properly add communication based tasks on daily bases.

4.10 Use of Technology

As four Cs of learning of 21st century are directly or indirectly linked with use of technology. It covers sharing of information, keeping record of the activities and tasks performed and many other way it can be used.

Table 4.11

Summary of Teachers' Interview Analysis on Use of Technology

Research question	Main Theme	Sub-Themes
How teachers incorporate use of technology in their teaching and learning process for students at undergraduate level	Use of Technology	Concept of use of technology. Integration of technology in classroom Challenges of technology in teaching and learning process. Strategies of use of technology

Note. Table 4.11. Highlights the themes drawn from the thematic analysis of teachers' interview on use of technology. Themes transcribed from interviews are based on concept of use of technology, integration of integration of use of technology in classroom teaching, challenges of use of technology in teaching learning process and strategies for use of technology.

4.10.1 Concept of Use of Technology in Teaching and Learning process

The concept of teaching and learning without technology looks very outdated in this century. 21st century teaching and learning mostly depends on the effective use of technology.

A question was asked from teacher about the use of technology. Mostly teachers considered it very important in this century and mostly discussed it in way that it is basically use of different latest gadgetries and online tools. As participant three, *"technology is use of different new and latest gadgets."* But how these gadgets can be linked main classroom and content teaching, it is the question on which teachers have to think and then use it for achievement of the desired objectives. Mostly teachers considered technology as gadgets and use of gadgets. As participant five, *"use of electronic boards is very important for teachers and students in classrooms."*

As well other devices and gadgetries are also have their importance. Mostly teachers linked technology with use of computers. As participant eight mentioned, *"Teachers who know how to operate computer they can effectively deliver their activities and tasks related to learning very skillfully, but in institutions mostly computers and IT labs are over cowered.so students remain unable to complete tasks in which technology is most of the times utilized."*

As teachers mentioned that use of power point presentation is also good aspect of use of technology. They shared their experiences teaching during Covid days and they made a lot of PPTs related to their content. Along with different gadgets students are asked to use social media applications as well. But these applications and software are used rarely in related assignments and projects.

Participant three explained, *mostly assignments and other projects are done by the students hand written and if students are asked to use new applications and soft*

wares, they have no idea what to do. Blogs are never used and referenced by students to complete assignments and other discussion activites".

As participant ten mentioned, *"During online teaching in Covid days, she covered all her outline in power point presentations."* So it is important skill required by teachers and students to effectively use these presentation type to learn the content. As teachers mentioned that most of them don t know how to use multimedia. Importance of multimedia in classrooms discussed in detail.

As participant three mentioned*," teachers' must be trained about the use of multimedia and power point presentation."* Participant six mentioned, "One *power point presentation in group always adjusted during six month semester because in the evaluation division only one time presentation is marked and graded, in which teachers mostly take simple chart presentation sometimes require power point presentation".*

As well teachers consider email as basic use of technology to share information.as participant four mentioned*," outlines and other related material is shared with students and peer teacher mostly through emails."* Teachers also mentioned that technology can help in assessment process very effectively and can save large bulk of record in a smart way.

As participant seven mentioned*, "teachers can make students portfolios by using technology."* So teachers have knowledge about the use of technology in teaching and learning of 21st century. How practically they use it with their teaching it's another scenario but mostly teachers know about tools and gadgets used in technology.

4.10.2 Integration of Technology in Teaching and Learning process

Technology is an important factor to bring development and novelty in teaching and learning process. It is important how teachers integrate technology for their daily content delivery and teaching in classrooms. This question of integration of technology

in teaching asked from teachers during interview. Mostly replied about the use of internet and content selection by using different websites. As participant two mentioned*, "Daily lecture is prepared by using different online source like article and videos on you tube."* Participant three mentioned *" share assignments through Emails and Whats app groups",* Participant five *"use Power point presentations to teach in classes"* participant seven highlighted "*use multimedia in my daily teaching."*

Teachers use internet frequently to get links and then share with class but still there is a large number of teachers who still use old method of one book suggested for the course. There is a change in the mindset of the teachers due to the use of the social media and other online resources in form of digital libraries and other resources.as participant six mentioned,*" online digital libraries are consulted when develop the outline of the or bring some new topic in the existing outlines."* participant four, "*use digital library to get information related to the content"* Higher education commission has also updated many resources of digital access to teachers and students in many campuses.

These resources are in form of repositories, digital libraries of the university campuses and also main HEC digital library access. Now the world of knowledge is at one click and information in bulk can be shared with in seconds. As participant ten mentioned*," now access to information is not a big problem, but still the relevant information according to outline and need of the course is received by digital resources."* Role of teacher become more important and critical to train students to use effective reliable resource and then complete their tasks.

As information receiver and especially being learner we can't select anything from any source authenticity and reliability of the source matter a lot. As participant eight mentioned,*" teachers must be given complete training and expertise to use*

technology on daily basis." teachers use different gadgets and social media apps to connect with students, these apps and tools must be learned with expertise and great skills .these resources can be helpful in effective teaching and as well effective learning. Teachers must be expert in use of computer and other gadgets like multimedia to effectively present their lectures and other activities designed for learners.

As participant six mention*, "once in a semester in his course multimedia presentation is managed on the availability of this gadget*. So if teacher want and design different activities, these are not possible to be used frequently. As participant nine and eleven mentioned*," power point presentations on multimedia are part of teaching but a few times in semester*. Most of the teachers don t know how to use multimedia presentations because their classrooms are not equipped with these latest facilities. Students must be developed the reading sense with technology by using different gadgets and apps but still campuses libraries have less online resources because lack of funds and proper management.

As participant ten mentioned, *"In my course I gave assignment to my students find content related books according to outline and then mention online resources."* Teachers always need to learn new technology and then integrate it with content and outline to make teaching and learning process more effective and efficient especially with reference of 21st century skills at undergraduate level.

4.10.3 Challenges of technology in Teaching and Learning process

There are different challenges or hurdles in the use of technology in teaching and learning process. Mostly our institution don t have gadgetries and other related facilities in our campuses. As participant thee mentioned *", there is less number of computers in our institution and IT labs are only for IT students."* Mostly there are electricity issues and other related problems of internet. As participant seven clearly

stated*," as teachers we don t have proper access of internet in our campuses so it is difficult to have online digital access to online resources and connect all the material to classroom activities."* Internet is very limited to admin offices and places, teachers mostly use their own devices but still in limited access.

As participant five mentioned*," during Covid days in online teaching the biggest challenge was to manage internet access issues, the connectivity was weak and sometimes during classes disconnected."* If we want to get maximum benefit out of all these technology related things we have to give better internet facility to campuses so that make good communication and connectivity to online resources and material.

IT labs are very important part of campuses, must work on all these aspects. Mostly teachers don t have good command on computers and IT related soft wares .as participant seven explained*," we teachers don't know how apply different soft wares for teaching , whenever we design different activities ,need to get help from IT expert even to connect computer or multimedia."*

In this way teachers can't design and implement all these activities related to technology regarding communication, collaboration and creativity on frequent basis. There are some institution where these computer based and gadgetry base facilities are available but teachers don't have enough training to apply all these and link these gadgets effectively to their classrooms to get all these skills developed. As participant six mentioned*," professional development program are required on frequent bases to improve the teaching skills of teachers to use technology as in Covid online teaching, teachers was totally unable to connect with Google classrooms and to design technology based activities."*

Campuses organized many training programs related to online teaching and use of technology in teaching and learning process but these training was very limited in

numbers. Teachers teaching BS program in in these campuses got training but this training was only about how to connect Google classroom and how to end and finish the class but it was very limited in scope. As participant ten mentioned*," in Covid online session teachers in many courses learn how make proper PPTs and then link and share all these with class."*

But still online evaluation and handling of the activities was great challenge to be maintained the record and properly evaluate the activities. As participant two mentioned*," to maintain results and portfolios on Google sheet was a difficult task for all courses and to link the evaluation process with rubric and then upload it on the Google classroom."* There is need to properly update teachers with training to use technology otherwise in this century it is not possible to survive the quality of teaching and learning process at undergraduate level.

4.10.4 Strategies for use of technology in teaching and learning process

There are many different strategies to use the technology in a better way and increase the use of the gadgets and all other soft wares in an effective and efficient way. At institution level there is need to increase the number of gadgets and update the classes.

As participant two mentioned, *"Classrooms must have separate computers and multimedia in each classroom."* These are necessary things related to technology in this age, if the classrooms are with ordinary settings and physical environment, teacher will not be able to do and integrate activities for Four Cs development of students. As well teachers are not well equipped with use of these gadgets and merge and mix all these with technologies. Designing and presenting activities for learners on the basis of selected content is quite challenging tasks.

As participant five explained*," Professional Development Programs must include teachers training with aspect of technology use to enhance 21st century learning skills."* Internet facilities must be improved in campuses where undergraduate programs are being conducted. Internet facilities are very poor in all these campuses so that why both teachers and students remain unable to integrate activities in their main teaching period. Side by side things can be shared on smartphones but in direct classroom teaching these thing become very challenging.

As participant six mentioned, *"Provision of internet facilities is in not very good, only main offices have this facility, teachers can't access these facilities or somewhere these facilities are available but not working properly."* During Covid teachers faced a lot of problems and issues of internet provision and connectivity as all teachers were not having laptops and other smart gadgets so it was greatest problem to handle classes online.

Scarcity of resources is always one of the greatest issues in pour institutions and especially the technical and technological expertise are very less in number to be handled in appositive manner. Latest gadgets in classrooms like smart boards, multimedia and other devices must be properly installed and teachers must be trained how to involve their students by using these gadgets.

As participant three mentioned*," smart board and smart board application is very necessary at undergraduate level to teach students about different new skills."* Because 21st century skills demands such activities that must have connectivity and relevance with outside world , for this there is need to link with different online and offline resources and access to the world. Students have to connect with seminars and conferences in different institutions and to present learners ideas to the rest of the class

and community in effective manner, there is need for both teachers and students to effectively operate and handle the technology.

After analysis of teachers' respective on use of technology it is found that teachers aware with the dynamic role of technology in twenty first century teaching and learning. Teachers try to connect their classrooms with technology and add some activities in daily teaching related to technology. All classes are not well equipped with technology especially gadgets required for the 21st century learning activities. As well teachers are not well trained to make activities from content which involved technology. Teachers make their PPTs mostly related to content but technology can be linked with wide range of applications in classrooms as such as teaching with videos, audios, documentaries, blogs and teleconferencing by connecting with experts.

Objective 2 To examine existing learning practices in classrooms at undergraduate level in relation with 21st century learning skills set of four Cs and use of technology.

Research question: To what extent 21st century learning skills set: Creativity, Critical thinking, Communication and Collaboration (Four Cs), and use of technology practices are practiced in classrooms at undergraduate level.

Table 4.12

Mean score of Creativity skills (n_1=535)

Sr. No	In your classes, how often you are asked as students to do the following.	Mean	Degree/ Ranking	Remarks
1	Use idea creation techniques such as brainstorming	2.609	1-3 times per month	Moderate
2	Generate your own ideas about how to meet a problem	3.084	1-3 times per month	Moderate

3	Test out different ideas and work to improve them.	2.875	1-3 times per month	Moderate
4	Invent a solution to a complex, open-ended question	2.649	1- 3times per month	Moderate
5	Create an original product or performance to express their ideas.	2.598	1- 3times per month	Moderate

Table 4.12 shows mean scores of the creativity and innovation skills and ten subscales are used to check the practice of the creativeness and innovation in the classroom among learners at undergraduate level. The students reported that skill of generation of new idea to meet a problem or a question is 3.084 that is higher than the rest of the statements. All other statements related to creativity skills fall at the lower mean score although the level is still moderate having mean scores 2.609, 2.875, 2.649 and 2.598 respectively.

Table 4.13

Mean score of Critical Thinking Skills (n_1=535)

Sr.no	**In your classes, how often you are asked as students to do the following.**	**Mean**	**Degree /Ranking**	**Remarks**
1	Comparison of information from different sources	1.914	A few times a semester	Low
2	Drawing conclusion based on relevant information	2.529	A few times a month	Moderate
3	Summarizing what have been read or been taught	2.729	1-3 times per month	Moderate
4	Analysis of different standpoints or solutions to a problem	2.994	1-3 times per month	Moderate
5	Developing convincing argument or reasoning	2.606	1-3 times in a month	Moderate
6	Solution of complex problems	2.570	1-3 times in a month	Moderate

Table 4.13 Shows mean scores of the critical thinking skills. The students reported that "the analysis of different standpoints or solution to a problem" with mean score 2.994 is higher than the rest of the 21st century learning practices. The statement related to "comparison of information from different sources" reported by students with mean score of 1.914 at low degree of practice. All other statements related to critical thinking skills fall at the lower mean scores although the level is still moderate having mean scores 2.52, 2.768, 2.531, and 2.757 respectively.

Table 4.14

Mean score of Collaboration Skills (n_1=535)

Sr. no	In your classes, how often you are asked as students to do the following.	Mean	Degree/ Ranking	Remarks
1	Work in pairs or small group	2.751	1-3 times per month	Moderate
2	Work with other students to set goals and create a plan	2.800	1-3 times per month	Moderate
3	Create combine products	2.464	A few times per semester	Low
4	Present group work	2.768	1-3 times per month	Moderate
5	Work in team to include feedback	2.531	1-3 times per month	Moderate
6	Provide feedback to peers	2.757	1-3 times per month	Moderate

The table 4.14 shows the mean score of collaboration as 21st century learning skills. The students reported that" Work with other students to set goals and create a plan" with mean score 2.800 is higher than other practices and "creation of combine products" with mean score 2.464 is at low degree of practice. All other statements related to collaboration skills fall at lower mean scores although the level is still moderate having mean scores 2.751, 2.768, 2.531, and 2.757 respectively.

Table 4.15

Mean score of Communication skills (n_1=535)

Sr.No	In your classes, how often you are asked as students to do the following.	Mean	Degree/ Rank	Remarks
1	Structure data for use in written products	2.501	A few times a semester	Low
2	Convey ideas using media other than written	2.791	1-3 times per month	Moderate
3	Prepare and deliver an oral presentation to the teacher or others.	2.996	1-3 times per month	Moderate
4	Giving Answers of questions in front of an audience.	3.095	1-3 times per month	Moderate
5	Decide how to present work or demonstrate learning.	2.516	1-3 times per month	Moderate

Table 4.15 shows the mean score of the communication skills. The students reported that "giving answers of questions in front of an audience" with mean score 3.095 is higher than other practices of 21st century learning skills. Structure data for use in written products with mean score 2.501 fall at lower level of practice. All other statements fall at lower mean score although at level is moderate level having mean scores 2.791, 2.996 and 2.516 respectively

Table 4.16

Mean score of Use of Technology (n_1=535)

Sr. No	In your classes, how often you are asked as students to do the following.	Mean	Degree/ Ranking	Remarks
1	Use technology or the Internet for self-instruction	2.836	1-3 times per month	Moderate
2	select appropriate technology tools or resources for completing a task	3.114	1-3 times per month	Moderate
3	Assess the relevance of online resource.	2.762	1-3 times per month	Moderate

4	Use technology to analyze information.	2.729	1-3 times per month	Moderate
5	Use of technology for sharing of information.	3.273	1-3 times per month	Moderate
6	Use technology to support team work or collaboration.	3.002	1-3 times per month	Moderate
7	Use of technology to interact directly with experts or members of local/global communities	2.505	A few times in a semester	Low
8	Use technology to keep track of work or assignments.	2.811	1-3 times per month	Moderate

Table 4.16 shows the mean score of the use of the technology as 21st century learning skills. The students reported that the "use of technology for sharing of information" with mean score 3.273 is higher in practice than other practices and use of technology to interact directly with experts or members of local/global communities with mean score 2.505 is at low degree of practice. Other statements related to use of technology fall at lower means scores although still at the moderate level having mean scores 2.836,3.114,2.762,2.729,3.002,2.824 and 2.811 respectively.

Table 4.17

Quantitative Findings of the Study

Sr. No	Statements	Findings	Remarks
	Creativity		
CR1	Use idea creation techniques / brainstorming	M=2.609	Moderate
CR 2	Generation of own ideas to meet a problem	M=3.084	Moderate
CR 3	Test out different ideas and work to improve them.	M=2.875	Moderate
CR 4	Invent a solution to a complex, open-ended question	M=2.649	Moderate
CR 5	Create an original product or performance to express their ideas.	M=2.598	Moderate
	Critical Thinking		
CT 1	Comparison of information from different sources	M=1.914	low
CT 2	Drawing conclusion based on relevant information	M=2.529	Moderate

CT 3	Summarizing what have been read or been taught	M=2.729	Moderate
CT 4	Analysis of different standpoints or solutions to a problem	M=2.994	Moderate
CT 5	Developing convincing argument or reasoning	M=2.606	Moderate
CT 6	Solution of complex problems	M=2.570	Moderate
	Collaboration		
CO 1	Work in pairs or small groups	M=2.751	Moderate
CO 2	Work with other students to set goals and create a plan	M=2.800	Moderate
CO 3	Create combine products	M=2.464	low
CO 4	Present group work	M=2.768	Moderate
CO 5	Work in team to include feedback	M=2.531	Moderate
CO 6	Provide feedback to peers	M=2.757	
	Communication		
CM 1	Structure data for use in written products	M=2.501	low
CM 2	Convey ideas using media other than written	M=2.791	Moderate
CM 3	Prepare and deliver an oral presentation to the teacher or others	M=2.996	Moderate
CM 4	Giving Answers of questions in front of an audience	M=3.095	Moderate
CM 5	Decide how to present work or demonstrate learning	M=2.516	Moderate
	Use of Technology		
TECH 1	Use technology or the Internet for self-instruction	M=2.836	Moderate
TECH 2	select appropriate technology tools or resources for completing a task	M=3.114	Moderate
TECH 3	Assess the relevance of online resource.	M=2.762	Moderate
TECH 4	Use technology to analyze information.	M=2.729	Moderate
TECH 5	Use of technology for sharing of information.	M=3.273	Moderate
TECH 6	Use technology to support team work or collaboration(giving and receiving feedback)	M=3.002	Moderate
TECH 7	Use of technology to interact directly with experts or members of local/global communities	M=2.505	Low
TECH 8	Use technology to keep track of work or assignments.	M=2.811	Moderate

4.11 Qualitative Classroom Observation on 21st century Learning Practices (Appendix, I)

Observations as research instrument are widely used in different studies both quativtive and qualitative studies. Qualitative observations are part of observation method in this research study the researcher used qualitative observation method to investigate the 21st century learning practices in classrooms important for learners and teaching learning process in 21st century. These naturalistic classroom observations helped the researcher in this research study to get in-depth knowledge and to analyze these practices important for 21st century learning skills. The following points observed in classrooms are as given below important for 21st century learning skills and are given below:

4.11.1 Creativity Skills

In A1' teacher started lesson with welcome and students are introduced with topic by asking questions. After this short activities related to the topic were given students to think and explain according to their understanding. Teacher gave two minutes to each student to think and one minute to answer the questions related to the topic. Students were involved in this activity from the start of the session. They were thinking and sharing the information in the class and teacher was linking their answers with the topic and content. Teacher took maximum five minutes in this brainstorming activity and in this way all students thought process involved, their attention and participation was maximum.

In A2'observation teacher directly started class by giving a task related to change active voice into passive voice individually and then share loudly with other class members. Individual student was completing the tasks one by one and rest of the

class was participating by adding in the activity. This activity continued in the guidance of teacher more than ten minutes.

In B1' teacher started class by giving introduction of the topic and content based activity of ten minutes was given to students in which after reading they to make different questions from the text and then write answers of these questions. Instructions related to activity were given clearly to students before start of this activity. Each student was reading and finding the content to make questions and then writing answers. This activity last for fifteen minutes, after writing the answers to identified questions, students shared their material one by one in class. In B2'observed session of this class, teacher started the class with an activity to find vocabulary from the text and then make five sentences by using these words in pairs. Students completed this task by finding difficult words and then using these in sentences mostly related with every day examples of life. This activity duration was maximum twenty minutes which involved students by engaging their thinking process.

In C1' teacher started class by dividing students into groups and asked them to prepare twenty idioms from the content by each group. Teacher gave clear instruction and maximum fifteen minutes to this activity, in which students had to find idioms and then use these idioms to write a story. Students used these idioms in their story writing and their cognitive process involved in this activity at maximum level. In C2'class teacher designed an activity for students by dividing them into small group. One group prepared questions for the other group and students answered these questions. Teacher helped students and also graded this activity. Duration of this activity was twenty minutes. In this session braining storming technique was used by teacher to involve students and to develop their cognitive skills.

In class D1' teacher started class by asking different questions from students related to the last lecture. A few students answered the questions and rest of the class was listening. Teacher started writing headings on the white board related to the topic of the session after writing the heading teacher started teaching students by lecture method. During lecture students were asked different questions randomly which involved students thinking process but most of the time during the class, teacher was delivering the lecture.

Question answer session during the one hour class from students were only maximum ten minutes. Brainstorming activities were not as much involved as required at undergraduate level for the development of twenty first century learning skills. In D2', observation of this class brainstorming activities were missing and students were just answering questions during the lecture by the teacher.

In E1' teacher directly started delivering lecture by writing topic on the white board. Handouts of the content were in hands of the teacher and teacher started giving information to students. In this class mostly lecture was given by the teacher, activities by using brain storming technique was not part of this lecture. At the end of the session a few questions were asked from students related to content in delivered lecture. Brain storming technique was used at very minimum level.

In E2' session teacher designed an activity based on content and students were asked to read and then discuss the main theme and points of the content. After sharing the main points by students, teacher asked questions from students related to these points and students participated in discussion by giving their point of view. Brain storming involved in this activity, as students' thinking process was involved while they were reading and highlighting the main points and themes of the text.

In F1' teacher introduced topic to the students by asking a few questions related to the content. Students were having content material in their hands, as teacher already given them task in the previous class to prepare important points for discussion activity. Teacher was asking questions and students were participating in discussion one by one. Brain storming was involved but not at the maximum level as teacher was discussing more points than students.

In F2' observation it is observed that teacher just asked a few questions to recap the previous lecture and then started delivering lecture in the class. In this session mostly students were quiet and was just listening. Mostly teacher was talking to the class. No specific activity related to brain storming technique was noticed.

In G1' teacher started lecture by asking different questions from students related to the previous content discussed in the class. Teacher was asking questions and students were answering randomly and from different answers of the students discussion was generating. In this process teacher was adding relevant points in this question answer session. Brainstorming of the students involved in this session at a quite good level. In G2' teacher used an activity of one page reading of the relevant content for students and then asking them to discuss on the main theme of the content one by one.

In H1' teacher started lecture with a smile and asking questions about the content already shared to the students. Teacher asked three questions related to the content being delivered in the present session. In this way students answered and got connected to the topic and content. Students were thinking and answering the questions, in this way teacher gave brain storming activity. At the very start of the lesson students get involved in the session. In H2' teacher stared recapping about the previous lesson

and students got involved in responding to teacher and discussion with short answers and comments.

In I1' teacher started lecture by writing definitions related to the content on white board. A few minutes teacher wrote on the white board without uttering a single word. After writing teacher started explaining the text written on board for ten minutes. Teacher was teaching with traditional lecture method. No brain storming activity found at the start. Teacher was just sharing of the information to the class in first session. Only a few question asked by the teacher during the lecture. No activity related to creativity was found in this class.

In I 2'teacher mostly delivered the lecture but added one activity of writing different points but individually by the students. As well at the start teacher shared a motivational quote related to the content being taught with class and discussed it with students. It was less interactive and creative class. No idea sharing found in both session.

In J1'teacher started lecture with questions related to the content shared by the teachers in what app group. Teacher asked short questions about the content and students started thinking and replying. Seven minutes teacher asked students about different aspect of the topic .In J2 teacher read an introductory paragraph and asked about the main theme of the text. Students replied and in this way discussed the main theme of the text and topic.

Students were practicing in creative activities but these activities were not shown at moderate level of practice in all sessions. As brain storming technique was used by teachers but not in all sessions and in many sessions not used with expertise. Mostly teachers recapped the session by asking a few questions, in which learners'

creativity and thinking was involved at low degree of practice. New idea generation was at low degree of practice in these classes. As A1, A2, B1, B2, C1, C2, G1, G2, H1, H2 (55 %) classes used activity based learning and involved students in brain storming and discussion of the new ideas related to content in the class. All other sessions observed was mostly based on traditional way of teaching. No specific creative activity found.

4.11.2 Critical Thinking Skills

In A1'teacher mostly involved students through activity based learning and at the end of each activity, content relevant questions were asked by the students and also by the teacher as an overall task. In A2' session a designed question /answer session was included by the teacher in which students asked different question related to text. So questions/answers were included in both of the session observed by the researcher.

Comparison tasks are part of critical thinking skills of 21st century learning development were also. Comparison tasks were part of both sessions at moderate level. Summarization tasks an important element in development of 21st century skills and especially important part of 21st century learning skills and practices. During qualitative observations of both sessions in this class, it is found that summarizations tasks were used in this class. Teacher gave summarization task to students at the end of the activities. Students summarized different points and aspects in groups and as well added individually in both sessions.

In B1' Comparison activities were given to students and students asked different questions from each other. As well at the end of the activities teacher asked questions from students and students asked questions from teacher to clear different points related to the content being taught. In B2, teacher added comparison tasks in the continuation

of a group activity. It is found that comparison tasks were part of both sessions, as teacher involved all students and gave comparisons based on content. Summarization tasks on content were given to the students at high degree.

In C1' few activities was done by the students and at the end of each activity teacher designed different questions for students to check their learning related to the content. In both sessions observed in this class teacher linked different questions with content to clarify the themes and to check students learning and to elaborate more about the content. It is found that comparison tasks were part of both sessions, as teacher involved students and gave comparisons based on the text. Summarization aspect was added by the teacher. Teacher was asking questions and students were answering and summarizing the content and tasks as well.

In C2' summarization and comparison tasks was included during the session. Teacher asked students questions based on the summarization of the content taught in the session.

In D1' question /answers were included at the end in both observed sessions of this class question/answers were included rarely. In any of the sessions question/answers are not included as main method of technique of teaching. Mostly teacher based information delivered in class. Teacher was source of content delivery, no comparison tasks found in both of the sessions.

In D2'teacher involved students at the start but by asking a few questions about topic but mostly delivered the information based on lecture method. Summarization activities and tasks were missing in both sessions because mostly these sessions were based on teacher' lecture. Students were only asked very rare questions on different point during the class.

In E1' teacher included questions during teaching and discussion about the topic of the content. Students were reading different slides from the handout provided by in the hard copies by the teacher and teacher were asking short questions about the content. But in both sessions students were hardly asking any question about the topic being discussed and taught. So formal question/answer sessions and use of this technique was minimum in these sessions.

In E2' observation element of comparison found when students were answering different questions asked from teachers. Summarization found at low level. Students were participating in individual reading and question answers but still were not asked to properly summarize the information in both sessions. Students were answering questions or just adding comment in other students' answers.

In F1' was delivering the information most of the time in both sessions, no question/answers were designed and asked from both sides related to text or content to teach. At the end of the session students just asked questions from teacher about the presentation in next class. In F2'formal question/answer method for teaching is not observed. No significant comparison tasks found in both of the sessions. Teacher was just source of information and both sessions were based mostly on teacher' talk at high degree. No summarization task was included by the teacher for students.

In G1' Teacher used question/answer technique to teach students, teacher was involving students by asking different questions related to the text. Students were answering and discussing. In G2' teacher included question/answer session at high degree. Teacher was teaching through lecture method but was involving students through different questions. Students were maximum responding to the teachers' questions and was summarizing as well in both the sessions observed by the researcher.

In H1' teacher asked questions from students and especially during class in group activities students asked questions in cross group activity and as well from teacher. Students were sharing information in group and as well asking different questions from one another. Teacher was guiding and facilitating them where students need correction. In H2' teacher mostly involved students through question answer and used question /answer method for teaching different concept. In this way students' critical thinking was involved. Teacher also gave students tasks about comparison and summarization of the information. Students were fully involved in the class discussion and question answer activity. In this way participation of students was at high degree.

In class I1 teacher mostly used individual questions and answers in first session but students' participation was less. No question answers and other comparison activities relate to critical thinking found in first session. Mostly lecture based teaching was going on with traditional method of teaching. In I2' teacher included a few tasks related to comparison base on the text being taught activities but students performed this activity individually. No main activity or practice related to critical thinking found in both of the sessions.

In J1, teacher after giving introduction to the students about content gave a comparison task in form of text and an activity attached with the text in form of table. Students read the text, math and share the exercise with rest of the class. In J2, teacher made groups and gave different activites, activities based on the summarization and question answers related to the content was added in the session.

Critical thinking skills were observed in classroom learning based on the practices of question /answers, comparison tasks and summarization tasks. In a few classes teachers were involving students in critical thinking activities especially

question answers, comparison and summarization tasks. As session A1, H1 and H2(15%) classes used question answers as a technique to teach students at high degree, A2, B1, B2, C1, C2, G1, G2 (35%) classes used this technique at moderate level while D1 included question answers rarely. Comparison tasks were added by A1, A2, B1, B2, C1, C2, H1, H2, and E2 (45%) at moderate level. As summarization tasks were included by A1, A2, B1, B2, C1, C2, E2 and H2 (40%) used these tasks during sessions at moderate level. While H1 and used comparison activities at high level. As above analysis and discussion, it is observed that critical thinking skills practices are part of classroom learning and being used at moderate degree of practice.

4.11.3 Collaboration Skills

In A1, teacher divided class into five group and clearly gave instructions to the students. One student was chosen as leader of the group and others three as members of the group. Students sat in circle. This activity was based on text from book by searching nouns, verbs and adjectives. Students' collaboration was maximum.

In A2' teacher designed an activity based on the sentence formation and students are advised to work in pairs. Teacher made their pairs alphabetically and students performed by making sentences. Each pair made three sentences from the idioms in the text. Teacher included think pair and share activities. Teacher included group and pair activities and especially an activity based on a few points to think write pair and share. Jigsaw is a cooperative learning strategy that allow individual and small groups to learn things related to content.

This technique helps students to be more responsible while working in small groups to learn subcategory of the main topic. In this class teacher involved students mostly in activity based learning. A group activity was also marked and given feedback by the

other group. Students also graded the work of the other students and gave marks to each other' activity. Peer assessment found in this class. Class teacher was taking feedback of the students for each other on activities and question/ answers sessions. Students were involved in giving feedback.

In B1' teacher divided students in groups. Use of tense activity was started and different groups were participating. This activity last for twenty mints and students participated with passion and sense of competition. Teacher was making correction and giving instructions where students were making mistakes.

Overall students were performing in group and their participation was at high degree. In B2' observation of this class teacher divided class in three main groups A, B and C. These three groups were given selected text in groups and were required to discuss main themes and points. In this way one group students made points and they discussed with rest of the class. In this class students participated in different activities especially cross group activities. Students were giving feedback on discussion and teacher used peer assessment technique in one major activity. In second session observation the observer found activity base teaching and peer feedback was part of the class.

But it was practiced at low. Teacher included activity based learning in both sessions and teacher gave task students to write different aspects of the activity content and then share with rest of the students. Teacher used jigsaw technique in one session and students place the content on one chart placed at the corner of the classroom. Teacher gave task students to write different aspects of the activity content and then share with rest of the students.

In C1' teacher changed the physical setting of class room and divided students into groups. Each group was consist of 5 to 6 students. Jigsaw activity was done by the students and then information shared among the groups by the students. In C2' students were divided in groups, each group consisted of 3 students. They were assigned an activity to write major theme of the text and discuss with rest of the class. Students made points and teacher helped them in discussion.

Group work was moderate in this session. In this class students participated in an activity based on vocabulary. Students completed the task and exchanged their task copies within groups and graded the activity of each other. Peer assessment and feedback was found in this session. In second session of the class teacher gave an activity based on pair work technique and students of other pairs in the class gave evaluation and graded the activity.

For peer evaluation teacher gave two minutes and two marks. In observation of class three teacher included activity based on both write pair and share in both of the session and students worked in pair. Teacher divided class into five small groups and content is placed in two different places. One student in each group was writing and other members were going and collecting the information and then combining the content. In second session other method used in other than jigsaw.

In D1' no group work found in all sessions. Teacher was delivering lecture and mostly writing on the board. All students were sitting in rows. No group work was given by the teacher. In D2'observation no major pair or group activity found in this class. Mostly teacher was source of information and students were just involved by asking questions. But students' participation was low. In this class mostly teacher was delivering lecture.

Students were just listening or answering a few questions by the teacher. Teacher involved students in a short writing tasks but it was individual and no student gave any feedback to other students task or made any assessment.in second session of this class no peer feedback or assessment found. As teacher was source of information and students were only listeners most of the time. No write/think pair or share work is included in both of the observed sessions. No group work found in both of the session.

In E1' Individual discussion was part of class. Students were only replying to teachers asked questions during the information delivered by the teacher. No group work or pair work found. So collaboration in this session found at low degree. In E2'session of the class teacher was delivering the information through lecture but students were discussing one by one with teachers and other students at different points and questions asked by teacher. Collaboration found at low degree in this session.

In this class teacher was giving lecture but also students were being involved individually by asking questions. When teachers was asking questions from students and students were answering. A few students were adding and giving feedback on the answers of the other students but no peer assessment other than this involved in the session. Positive peer assessment and feedback observed. Teacher added a small activity based on written work in which students wrote and then share with rest of the class but no pair work was involved. No think pair and share activity found. Jigsaw activity found in the both of the session. Mostly class was done on reading of the text and slides provided by teacher.

In F1' teacher after delivering lecture, teacher were asking questions from students and students were replying. No group or pair activity found in the session. Mostly teacher talk time was more than students. In F2' session teacher made pair and gave

them handout based on the topic content. Students highlighted main points and shared with rest of the class. Pair work found in this class.

In this class teacher was delivering lecture and no activity base learning found. So no peer assessment and feedback from students in learning process observed and recorded in both sessions. Only lecture method was followed by traditional teaching pattern.no jigsaw technique is found.

In G1' Students' participation was not at high degree. Only teacher was delivering lecture and talking all the session. A few point raised by the teacher, on which students replied but still mostly teacher was source of information. No group work found. In G2' teacher started class by recapping the session and discussion about the assignment work. No group work or pair work found. Mostly class was based on teachers lecture. In this class teacher was involving students during the lecture by asking different questions.

Mostly students were involved in session by giving different answers and were giving feedback to other students in their comments related to content but no formal peer assessment and evaluation observed in both sessions of this class. In observation of both sessions in this class teacher included question answers from students with lecture but no formal activity of write/think pair is found in both of the sessions. No jigsaw technique was found in both of the sessions.

In H1' teacher divided students into groups by assigning them alphabetical numbers. Teacher gave clear instructions to groups about activity nature, rules and time allocated for the activity. After this teacher asked a few questions from these groups. At the correct answer teacher graded the group the group with score. Questions were highly relevant and designed according to the content being taught in the session. After

this activity students were given choice to select and write one question asked from the other groups.

All students discussed and selected the question. Students' involvement was high in these activities and each single student was participating in the class. In H2' teacher gave students pair work and gave them time. After discussing and writing the points in pair, students share their ideas and point based on the relevant content at their turn. In this activity whole class participated and work in pairs. Peer assessment and peer feedback was included in both session during activities.

In I1'teacher was source of information in both sessions. Mostly lecture method was used to teach students. No pair or small group work found in this session. In I2' teacher gave individual writing assignment to students during session, no group or small group activity found. Mostly class was based on individual work both in written and verbal inform of question answers.

In J1, teacher included collaborative activities, divided students in small groups and gave them text related activities of reading, writing and sharing among themselves. As students were sharing the teacher was providing feedback on their responses and discussion. In J2, teacher included a few activities related to the collaboration, divided students in pairs and gave them a text related comparison task in groups. After this task, they are asked to share the information with other groups.

In this research study during classroom observations collaboration skills were observed as pair work, small group work, peer assessment and peer feedback with other aspects of collaborative learning. It is observed that these practices of collaborative learning are being practiced by some teachers and learners in classrooms at undergraduate level but not by many. During observations pair work used in classroom

A1, A2, B1, B2, D1, D2, H1, H2 and J2 (45%).Group work tasks were used in A1, A2, B1, B2, H1, H2, and J1 (30%) sessions because these were based on activity based learning and students were involved in group tasks these classes also practiced more peer assessment and feedback activities.

However, the number of the sessions that included collaborative tasks throughout is less. While D1,D2,E1,E2 G1,G2,F1,F2,G1,G2,I1 and I2 (55%) did not use any specific practice related to collaborative learning as pair work, group task ,peer feedback and assessment. It showed that low level practice of collaboration skills in classroom at undergraduate level.

4.11.4 Communication Skills

In A1'observation it is observed that teacher taught most of the time activities in the class. Students' involment was maximum as well discussion in the class was also part of the class. In A2' students were also discussing the outcomes of the activities through question answers from peers and as well from teacher. So element of discussion found in this class.

In B1, teacher mostly involved students, students discussed different aspects of the topic and activities going on. In B2'observation of this class discussion and communication found at moderate level. In observation of both sessions teacher talk time was not too much. Mostly teacher was adding activities according to the content but where it was necessary teacher was providing information and feed back to the students. Teacher talk time was at high degree and students talk time was more.

In C1, Students were involved in activities based on reading, writing and sharing activities. Discussion was going on during elaboration and question answer session. Discussion found in this class. In C2' class was based on activities. Idea communication

was part of this class. Discussion found among students at moderate level. Teacher was teaching through activities and giving instructions and needed information to students. Teacher talk time was less in both of the sessions and students' talk time was more.

In D2, no write/think pair or share work is included in both of the observed. In observation of the class teacher was using lecture method as main method of teaching and mostly was teaching with traditional method. So teacher talk time was more than students talk time.

In E1, Communication from students were there as teacher was asking different question during the content delivery from the handout. Students were replying and a few other students were adding points. In E2' discussion was found but at low level. Teacher' method of teaching was based on lecture method. Students were participating through content based question/ answers but still teacher talk time was more than students' talk time.

In F1, it was totally lecture based class. No discussion found in both sessions and no formal method of discussion used in any of the sessions. In F2'in both sessions no pair work found. So no activity related to write pair or think pair and share found formally. Teacher was relying totally on traditional lecture method without any innovation in both of the sessions, so teacher talk time was more than students talk time.

In G1, it is found that teacher was delivering lecture but student involment was good enough. Mostly question answers were part of the teaching in this session. So students were answering and discussing the points of the content. In G2' discussion were part of the class, students were responding individually. Small activities related to the content were given to the students. In both sessions discussion found in this class at

moderate level. In both sessions students were participating through questions /answers during the lecture but still teacher' talk time was more than students' time.

In H1, session activity based learning was part of the class. Teachers' approach most of the time was learner centered, so students participation level was great. Students were giving their points and discussion was at high degree of practice in both of the sessions. In H2' group discussion activity was done by students and each student in the group was participating. Teacher talk time was less than students' talk time in this class. Written tasks as written communication was also part of the sessions but mostly students' participation was verbal and discussion based.

In I1, teacher mostly delivered information by lecture method. No specific activity relate to communication found as discussion or any other activity of pair and share the information. Mostly students were answering questions individually asked by the teacher during lecture and a very small written task was shared by students. In I2, teacher was delivering lecture and mostly writing information in form of points on the board. Students were just receiving the information and asking short questions where they were unable to understand. In both sessions teacher talk time was more than student talk time.

In class J1 students were participating in group activities and sharing of information in groups. Teacher was providing feedback and different instructions to students side by side. Students were involved in written and verbal communication and teachers 'talk time was at low degree. In J2, students were communicating in different activites both written and verbal but not in groups. This communication was individual and in pairs most of the time.

In this research study communication skills were observed on practices of discussion, write/pair and share tasks, written tasks, verbal presentation and teacher talk time. It is observed that communication practices related to twenty 21st century learning are not practiced at high degree. Discussion found in very few sessions by students. As in session A1, A2, H1and H2 (20%) students were involved in discussion and verbal presentation was at high level.

In session B1 and B2 it was used at average degree while in E1, E2, and I2 (25%) discussion just found in question answers during lecture. In all other sessions D1,D2,E1,E2,F1,F2,G1,G2,I1 and I2 (50%) teacher talk time was more and students communication practices were at low degree because mostly teachers were teaching with traditional lecture method.

4.11.5 Use of Technology

Technology is very important for the development of twenty first century skills. Computers and multimedia are essential for twenty first century classrooms to connect with the new methodology. It is observed in A1and A2 that teacher was teaching content for activities on multimedia. Teacher was connecting content with multimedia in both sessions. Multimedia used at least for twenty five minutes in each session.

In B1' teacher used computer and multimedia in both sessions for a few activities, at least used half an hour. In B2' teacher connected multimedia and students did exercise related to the content.

In C1' Multimedia and computer used by teacher while teaching and content is shown on the wall for reading and discussion. In C2'teacher displayed content on the wall and shown a video related to the topic to the students.

In D1 and D2, only white board used for the lecture and different points. No use of technology in both sessions.

In E1 teacher used only hard copy of power point presentation for teaching. Only medium of teaching was handouts in paper form based on different slides. In E2 students were using mobiles for reading the content. In F1 and F2, no use of technology found only white board is used in both of the sessions.

In G1 and G2, teacher used multimedia for one session and in next session students used mobile for power point presentations slides shared by the teacher before the class. In H1 and H2 in both sessions technology used as teacher flipped class through sending different material at task detail to students for physical sessions on mobiles. Also mobile phones used in the class for different activities.

In I_1 and I_2 teacher used just white board for writing points during lecture and handouts based on text material in teaching related to the topic. In J1 and J2, teacher used technology to flip the classes by sharing different material related to the content and used power point presentation to teach students. In both sessions students were using their mobiles and laptops for learning process in classes.

In this research study use of technology in classroom observation was observed in learning process. In very few classes technology was properly integrated with teaching and learning process. These classes were mostly based on the activity based learning. Technology was integrated in learning activities in A1, A2, B1, B2, C1 and C2 (30%) with multimedia by the teacher. In H1, H2, J1 and J2 (20%) teacher flipped the class and share activities and content to the students. In session G1, G2 and E2 (15%) students used mobiles for the learning but activity was just based on reading of the content by students and elaboration by teacher. Mostly classes were on traditional

method of teaching by sharing of material in form of hard copies or verbal information.

4.12 Integration of both Quantitative and Qualitative Data

4.12.1. Creativity Skills

The students' survey, students' interview and classroom observation found creativity practices related to brain storming and idea generation at moderate level. According to teachers' interviews brainstorming technique was used at high level. But classroom observations identified that brain storming and idea generation techniques were used at moderate level of practice. Cross cultural activities were found low in both students and teachers' interview analyses and also not seen in classroom observations.

Creative assignments and projects are found at moderate level in survey but in students' interview and classroom observation found at low degree of practice. Creative assignments and projects are not found in classroom observation. Teachers mentioned that the role play method is used for different task related to creativity in classrooms while this method not found in students' interview and in classroom observation. Low degree of practices are found related to creativity skills at undergraduate level. After analysis of the data gathered from different tools, it is found that no creativity skill related practice is found at high degree of practice. Mostly these practices are at low degree of practice except use of brain storming found at moderate level of practice.

4.12.2 Critical Thinking Skills

The critical thinking skills like drawing conclusion, summarization tasks and analysis of different perspectives are at moderate level of practice in students' survey and qualitative interviews of students on these skills. Classroom observations also found these practices at moderate degree. In teachers' viewpoint summarization tasks are included most of the time in teaching and learning process. Students are involved

in decision making on different problems and analyzing tasks are given to students at high degree of practice. Judgmental activities are also added in teaching for students but these activities in students' survey and classroom observation found at low degree of practice.

Question answers and summarization tasks are found at moderate level of practice in classroom observation. According to teachers' interview analysis question answer practices are used at high level in teaching and learning. Comparison tasks are found at low degree of practice both in students' survey results, classroom observation and students' interview.

4.12.3 Collaboration Skills

The findings of collaboration skills in students' survey results on pair work and small groups are at moderate level of practice while these skills found in in-depth, interviews of students and in classroom observation at low level practice. Teachers' point of view was they design pair and group activities in teaching and learning but still these group and pair work practices are not at high level. Work with others to set goals found at moderate level but not found in classroom observation.

Group work and activity based learning was found in few sessions during the direct classroom observation. In teachers' interview it was reported that they design and practice group activities. Peer feedback on different tasks and formal peer assessment found at low degree of practice in classroom observations, as same reported by students in interviews.

Activities related to think pair and share found very low in class observation as students discussed in interview the same level of practice. Creation of combine products

found at low level of practice in students' survey as well found at low degree of practice in students' interview and classroom observation.

4.12. 4 Communication skills

The results of communication skills in students' survey on the use of different mediums of communication, presentation of data other written papers were found at moderate level of practice but in depth interviews of students suggested that the use of brochures, pamphlets and documentaries were used at low level in learning. Oral presentations were found at moderate level in students' survey but in classroom observations the oral presentation practice was at low degree of practice.

Only students were presenting their opinions orally in the form of question answer session during the activities or somewhere teacher was asking question during the lecture. Discussions in general related with content and activities were found at moderate level of practice in students' interview, classroom observation and in teachers' interview analyses at average level of practice. Panel discussions were not found in students and teachers' interviews and as well in classroom observation. Question answers in front of audience or class found moderate level in students' survey and as well at moderate level of practice in students' interview analysis and classroom observations.

4.12.5 Use of Technology

The use of technology in students' survey on use of internet for completion of task were at moderate level, this practice also found at moderate level in students and teachers' in depth interviews. Selection of appropriate tools for completion of tasks related to assignments found at moderate degree in students' survey, students' interview and in teachers' interview as well. Use of technology to analyze information and to

collaborate in different tasks found at moderate degree in students' survey but low in teachers' interviews, students interview analysis and also found at low degree of practice in classroom observations.

Use of technology for giving and receiving feedback on tasks is found moderate in students 'survey, low in practice in students and teachers interviews and as well in classroom observations. Use of technology to track the work found at moderate degree of practice in teachers' interview and moderate in students' survey. Use of technology for interaction with experts was low in practice by students and found at moderate level of practice by teachers.

Teachers mostly used Emails, Whatapp and laptops for sharing of information. Over all use of technology and technology related practices were not found at moderate level in classroom observation. It is found in classroom observation that a few teachers used mobile to flip their classes through mobile phones. Overall use of technology was at moderate level in students' learning.

CHAPTER 5

SUMMARY, FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Present research study analyzed 21st century learning skills four Cs including creativity, communication, critical thinking, collaboration and use of technology for learning among students at undergraduate level. There were five major constructs studied and researched at undergraduate level among students. These constructs were creativity, critical thinking, communication, collaboration and the use of technology. The nature of research was both qualitative and quantitative, mix-methods approach was used in this study to get the in-depth analysis of these learning skills at undergraduate level among students. Total research population was 3044 students of BS English and BS Education at undergraduate level and 210 teachers teaching these BS programs. Total population of BS English students was 1860 in 5th semesters onward and students of BS Education was 1184 in 1st , 3rd , 5th and 7th semesters. Sample of the study was 609 students. 372 students of BS English program was selected as sample. As well total 237 students from BS Education 1st, 3rd, 5th and 7th semester were taken as sample of the study. 15 students and 10 teachers were interviewed in this study to get in-depth analysis of the problem and 10 classrooms were observed qualitatively.

Process of validity of instruments by experts was completed before pilot testing. Pilot testing was done for this study to check the reliability of the study that was α 0.901. It was a mix method study and sequential explanatory design of data collection was used. A triangulation approach was used for the data analysis in this

study. Thematic analysis was used to analyze the data of the qualitative section. Statistical software SPSS 21 was used to analyses the data of the quantitative section. The statistical procedure include reliability, percentages, mean and standard deviations. In this study both thematic analysis and statistical procedures helped in findings to reach the conclusion.

5.2 Findings

Objective: 1. To analyze 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology among students at Undergraduate level.

1 The findings of research question no1 "How students use Creativity in learning at undergraduate level?" are as following after detailed analysis of qualitative interviews of students: the conceptual understanding of creativity among students is good. But practical aspect of creativity in learning was not found at high degree of practice. Students reported that brainstorming activities were used at moderate level, cross cultural activities were missing. Creative research based assignments and projects were rare in practice, so the aspect of relevancy of tasks with real world was not found. (Table 4.2)

2 The findings of research question no 2 "How students use Critical thinking in learning at undergraduate level?" are as following: students' conceptual understanding of the critical thinking was better. Some students reported critical thinking skills being used in classroom learning but most students did not have awareness about process of critical thinking skills used in classroom learning. Tasks like comparison, summarization, judgment and decision making in learning are not found frequent in students' learning. (Table 4.3)

3 The findings of research question no 3 “How students use Collaboration in learning at undergraduate level?” are as following*:* students were aware with the general concept of the collaboration but techniques of collaboration in learning like pair work/small group work were not used at high degree of practice in daily learning. These were only effective in presentations or assignments only for one time in semester. Peer assessment and feedback, think pair and share was rare in practice in learning process. Group research assignments / projects were found only once in a semester. (Table 4.4)

4 The findings of Research question 4 “How students use Communication in learning at undergraduate level?” are as following*:* the students’ conceptual understanding about communication skills was good but practices on communication skills in learning was found at moderate degree. Students presenting data other than writing in the form of charts and diagrams was very rare. Use of brochures, pamphlets and documentaries in learning is almost non-existent. Use of social media for communication was just restricted to Whats app groups. Discussion method used in classes for learning was found at moderate degree of practice. Panel discussions were totally missing. Most of the times in all courses written assignments were preferred, only in a few courses teachers ask students to present content verbally. (Table 4.5)

5 The findings of Research Question 5 “How students integrate and incorporate Technology in their learning process at undergraduate level?” are as following: Majority of the students were well conscious about the importance of the technology in learning in 21st century. Majority of the students used internet and different websites for the completion of different assignments and other related tasks. Students only share information through Emails. Use of Whats app groups for sharing of information was used frequently. Students use laptops for completion of different tasks. There are

multiple challenges related to use of technology as lack of gadgets in institution due to less resources, shortage of electricity an as well non availability of internet resources.

Objective 2: To analyze existing learning practices in classrooms in relation to 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology at Undergraduate level**.**

6 The findings of creativity construct are as following: the practice of generating new ideas to confront a problem (M=3.084), at Moderate level, use of idea creation technique or brain storming (M=2.609, Moderate), examine out different ideas and work (M= 2.875, Moderate), discover a solution to multifaceted open ended question or problem (M=2.649, Moderate), creation of an original product (M=2.598, Moderate). Findings of creative scale in survey showed that majority of the responses were at moderate degree of practice. None of the statement findings showed high level/ranking of creativity practice in classrooms. (Table 4.12)

7 The findings of Critical thinking skills section of the survey was based on statements to inquire/examine the extent or degree of practices of critical thinking skill of 21st century learning skill in classroom. Findings of the critical thinking construct are as following: drawing conclusion on relevant information (M= 2.529, Moderate), summarization of what is read or taught (M=2.729 Moderate), analysis of different perspectives/ solution to problems (M= 2.994, Moderate), developing convincing arguments /reasoning (M=2.606, Moderate), solution of complex problems (M=2.570, Moderate). Findings of critical thinking skills section showed that critical thinking practices are not used on high degree/ranking. Most of the practices are at moderate level of practice only statement of comparison of information from different resources falls at lower degree of practice with mean score =1.914. (Table 4.13)

8 The findings of the collaboration skills section of the survey was based on statements to examine and inquire the collaborative practices in the classroom as twenty first century learning skills. Findings of the collaboration construct are as following: pair work or small groups (M= 2.751, Moderate), work with other students to set goals or make plans (M=2.800, Moderate), creation of combine products (M=2.464, Low), work as team to incorporate feedback (M=2.531, Moderate), provide feedback to peers (M=2.757, Moderate). Findings of the collaboration as skill of twenty first century learning shows that these collaborative practices were used at moderate level. Only creation of combine products fall at lower degree of practice with mean score 2.464. (Table 4.14)

9 The findings of the Communication skills section of the student survey was based on statements to examine the communicative practices in classrooms as twenty first century learning skills. Findings of the communication construct are as following: conveying idea by using medium other than written paper (M=2.791, Moderate), preparing and delivering oral presentation to teachers and others (M=2.996, Moderate), reply questions in front of an audience (M=3.095, Moderate), decide how to present work or demonstrate learning (M=2.516, Moderate). Findings of communication skills scale, the practices related to communication skills mostly fall at moderate degree only structuring data for oral and written presentations fall at low degree of practice with mean score of 2.501.(Table 4.15)

10 The findings of the Use of the technology section of survey was based on statements to examine the use of technology in learning process at undergraduate level. Findings of the use of technology construct are as following: use of technology or internet for self-instruction (M=2.836, Moderate), selection of appropriate tools/resources for completion of tasks (M=3.114, Moderate), reliability and application of online resource

(M=2.762, Moderate), use of technology to analyze the information (M=2.729,Moderate), use of technology for sharing information (M=3.273,Moderate),Use of technology for team work/collaboration (M=3.002, Moderate), use of technology for giving and receiving feedback (M= 2.589,Modertae), use of technology to keep track of work/assignments (M=2.811,Moderate). Findings shows that the use of technology is at moderate level among learners at undergraduate level but use of technology to interact with experts fall at low degree of practice with mean score 2.505. (Table 4.15)

11 The findings of classroom observation on creativity practices were not found at moderate level. As brain storming technique was used by teachers but not in all sessions and in many sessions not used with expertise. Mostly teachers recapped the session by asking a few questions, in which learners' creativity and thinking was involved at low degree of practice. New idea generation was at low degree of practice in these classes. As A1, A2, B1, B2, C1, C2, G1, G2, H1, H2 (55 %) classes used activity based learning and involved students in brain storming and discussion of the new ideas related to content in the class. All other sessions observed were mostly based on traditional way of teaching.

12 The findings of Critical thinking practices were found at moderate level of practice. In a few classes teachers were involving students in critical thinking activities especially question answers, comparison and summarization tasks. As session A1, H1 and H2(15%) classes used question answers as a technique to teach students at high degree, A2, B1, B2, C1, C2, G1, G2 (35%) classes used this technique at moderate level while D1 included question answers rarely. Comparison tasks were added by A1, A2, B1, B2, C1, C2, H1, H2, and E2 (45%) at moderate level. As summarization tasks

were included by A1, A2, B1, B2, C1, C2, E2 and H2 (40%) used these tasks during sessions at moderate level. While H1 and used comparison activities at high level.

13 The findings of classroom observation on collaboration practices were found at low degree of practice. Pair work used in classroom A1, A2, B1, B2, D1, D2, H1, H2 and J2 (45%).Group work tasks were used in A1, A2, B1, B2, H1, H2, and J1 (30%) sessions because these were based on activity based learning and students were involved in group tasks these classes also practiced more peer assessment and feedback activities. However, the number of the sessions that included collaborative tasks throughout is low. While D1,D2,E1,E2 G1,G2,F1,F2,G1,G2,I1 and I2 (55%) did not use any specific practice related to collaborative learning as pair work, group task ,peer feedback and assessment. It showed that low level practice of collaboration skills in classroom at undergraduate level.

14 The findings of classroom observation on communication practices related to twenty 21st century learning were not practiced at high degree. Discussion found in very few sessions by students. As in session A1, A2, H1and H2 (20%) students were involved in discussion and verbal presentation was at high level. In session B1 and B2 it was used at moderate degree while in E1, E2, and I2 (25%) discussion just found in question answers during lecture. In all other sessions D1,D2,E1,E2,F1,F2,G1,G2,I1 and I2 (50%) teacher talk time was more and students communication practices were at low degree because mostly teachers were teaching with traditional lecture method.

15 The findings of classroom observation on use of technology were found at moderate level of practice. Technology was integrated in learning activities in A1, A2, B1, B2, C1 and C2 (30%) with multimedia by the teacher. In H1, H2, J1 and J2 (20%) teacher flipped the class and share activities and content to the students. In session G1, G2 and

E2 (15%) students used mobiles for the learning but activity was just based on reading of the content by students and elaboration by teacher. Mostly classes were on traditional method of teaching by sharing of material in form of hard copies or verbal information.

Objective: 3 To investigate teachers' perspective about practice of 21st Century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology at Undergraduate level16 The findings of creativity skills in teachers' interview are following. Teachers displayed mixed understanding of creativity in teaching and learning. Most teachers reported using brain storming, ideas and concept based activities. Teachers also added that role play and drama activities were used rarely in classes. Cross-cultural activities are also less used in classes. Excessive managerial tasks, high number of students in classes are great challenge for creative practices in classrooms. (Table 4.7)

17 The findings of the Critical Thinking skills in teachers' interview are following. It was found that conceptual understanding of the teachers about critical thinking skills was high. Question answers and analysis based activities were added in class assignments and other related tasks. Judgmental activities were added frequently in teaching and learning process. Decision making on part of learners in classroom on different task was part of classes. Research based assignments and projects were added for once or twice in a semester. Short time semester /duration, large and heavy content and assessment process and teacher /students inaccurate ratio in classes were challenges identified by teachers for practices of critical thinking skills in classrooms. (Table 4.8)

18 The findings of the Collaboration skills based on analysis of teachers' interview are following. Conceptual understanding of the collaboration skills was displayed mixed. Teachers reported that in most of the classes' group work and pair tasks were added at moderate degree. Think pair and share activities were also added in classes. Group

research based assignments and projects were given to students once in a semester. Large outlines and biased behavior of students in groups were different challenges identified by teachers that effect collaboration activities in classes. (Table 4.9)

19 The findings of the Communication skills based on analysis of teachers' interview are following. Conceptual understanding of communication skills among teachers was moderate. Written tasks for learners are added most of the time in classes while verbal tasks were part of teaching and learning process on weekly bases one or two times in form of discussion. Formal verbal presentations were added in one or two times in a semester. Presentations other than written material inform of brochures, pamphlets and verbal were mostly encouraged by the students. (Table 4.10)

20 The findings of the Use of Technology based on teachers' interview analysis are following. Teachers know the importance of use of technology in teaching and learning. Mostly teachers use power point presentations for teaching. Videos, blogs are also used to teach at undergraduate level. Mostly teachers used email and Whats app to share information to students. Digital resources were used at high degree to make outlines and other activities. Teachers used research articles and YouTube, videos to teach students at moderate level. Use of laptops in teaching from teachers was high to prepare and share the content. (Table 4.11)

5.3 Discussion

This research study analyzed 21st century learning skills among students at undergraduate level. 21st century skills are very important for the survival and development of students for the future. The researcher has focused on 21st century learning skills: creativity, critical thinking, collaboration, communication and use of technology. Mixed-methods paradigm of research was utilized due to the nature of the phenomena under study. The researcher has used different tools of research including

survey, interviews and classroom observations to collect data for the in-depth understanding and knowledge of the problem under the study.

The findings of the present study on creativity skills has indicated that these creative skills were in practice at undergraduate level among students the practice but not found at high degree of practice. Majority of the skills related to creativity were found at moderate level in students' survey results and further investigated in interview from students and in classroom observations these skills were not practiced at a moderate level.

Mostly, these practices of creativity skills: idea creation techniques or brain storming, the practice of generating new ideas to confront a problem, discover a solution to multifaceted open ended question or problem, creation of an original product found at moderate level of practice in students' survey but in classroom observation these practices found at low level.

None of the practice of creativity skills was found at higher degree among students in their learning. The study Rosba et al. (2021) is consistent with this study, as it aimed to determine the creativity and critical thinking skills of the students of biology. The results of the study showed that the students have low scores of critical and creativity skills. Nissim, et al.'s (2016) study is consistent with the importance of this study related to four Cs of learning at undergraduate level. This study highlighted the importance of creativity in Higher Education Institutions and researchers agreed that creativity is a relevant and essential skills at higher level of education for successful learning among students.

Qualitative findings of students' interview on creativity skills depicted that the conceptual understanding of creativity among students was mixed. But the practical

aspect of creativity in learning was not found in high degree of practice. Brainstorming activities were found at moderate level. Cross cultural creativities were also missing.

Creative research based assignments and projects were low in practice, so the aspect of relevancy of tasks with real world not found. Creativity is one of the most crucial and critical skills of 21st century for development. (World Economic Forum, 2020). Isakson et al. explained (2011) that creative products and projects, can be considered as concrete or tangible, or intangible such as learning or developing a new skill.

The concept of creativity discussed by the students in interviews revealed that the students had general understanding of creativity but there was need to specifically identify how to use it in the classroom. As participants discussed creativity as something unique, in other words it is more than a bookish knowledge. It showed that the basic concept of the use of creativity was clear to students to some extent. The study of Allen et, al. (2013) is consistent with this premise, as it highlights the importance of encouraging creativity and creative practices as a more critical approach in Higher Education Institutions (HEIs) because HEIs are involved in process of preparing their students and graduates to build an essential competency for basic level entry in an employment.

As far as creativity skills further observed through classroom observations are concerned, most skills were found at low degree of practice. A few skills related to creativity were found at moderate level of practice. Matraeva, et al. (2020) revealed in a study that the process of formation of students' activity involves different aspects and factors on which degree of students' creativity depends, these factors are related to academic atmosphere and involvement of students in creative work. Sawyer (2012)

highlighted creativity as an important factor to the social, economic, cultural and technical development of the students.

A study conducted by Jakson, et al. (2007), also shows results about creativity which are also related to the present study. By the authors it is explained that the element of the creativity is mostly underestimated in the process of teaching and learning in higher education.

The present study indicates that the findings of critical thinking skills are as following: tasks like comparison, summarization, drawing conclusion, analysis judgment and decision making in learning are found at moderate level of practice in students' learning and not at higher degree of practice. Classroom observations also found these practices at moderate degree. A study of Khan, Jumani & Gul (2019) is consistent with present research study, since it explains that critical thinking skills developed in the majority of students and curriculum are compatible to develop the critical thinking skills but collaboration skills are not developed in the majority of students.

Question-answer tasks were found at moderate degree of practice in classroom observation. According to teachers' interview analysis question answer practices are used at high level in teaching and learning. Critical thinking is one the most important and crucial skills for the success of learners and individual in 21st century to survive in the era of globalization and digital technology (Lai, 2011: Khoiri et al. 2021).

Judgmental activities were also added in the teaching of students but these activities in students' survey and classroom observation were found at low degree of practice. The research study by Sheikh (2017) elaborates the importance of skills in problem-solving and are relevant to analytical thinking process, as it requires an application of different other skills with critical thinking such as to analyze and evaluate

the evidence of data and other beliefs to enable the student to provide answers. Comparison tasks were found at low degree of practice both in survey results, classroom observation and students' interview. Present study observed classroom practices along with students' survey and interview found that practices of critical thinking skills are practiced by learners at moderate level.

The findings of collaboration skills in students' survey results on pair work and small groups were at moderate level of practice while these skills found in in-depth, interviews of students and in classroom observation at low level practice. Shawver (2020) has conducted a study on cooperative learning to compare the grades and performance of students, the results of which showed that cooperative learning improve students' performance and increase their communication and interpersonal skills.

Teachers' point of view was that despite of designing pair and group activities in teaching and learning, they are not practiced at a higher extent. Chiruguru (2020) concluded in their research study that collaboration is becoming day by day a more essential skill of 21st century and creative thinking, collaboration and communication are higher order thinking skills that must be practiced daily in classrooms.

Group work and activity based learning was found in few sessions during the direct observation. Roldán Roa, et al. (2020) explains that students collaborate and work in small groups to complete different class projects and tasks to better understand various challenging ideas and concepts. Working with others to set goals found at moderate level in student' survey but not found in classroom observation. Activities related to think, pair and share are found at low degree of practice in class observation as students discussed in interview the same level of practice. As a cooperative learning strategy think pair and share give different benefits students as academic development,

self-esteem, peer acceptability, and increased excitement for knowledge (Patel et al., 2023).

Creation of combined products were found at low level of practice in students' survey as well found at low level of practice in students' interview and classroom observation. McGuire (2018) mentioned that Collaboration refers to capability of a learner to work together and share and collaborate in learning process. O'Grady- Jhones &Grant (2023) highlights that students who can collaborate, can also share ideas, resolve problems and accomplish goals.

Peer feedback on different tasks and formal peer assessment was found at low and low degree of practice in classroom observations, as same reported by students in interviews. Different studies considered that the peer feedback and assessment facilitate the learning and motivation (Gencha, 2018; Quynh, 2021; Wu & Schunn, 2021).

The findings of communication skills in survey on the use of different mediums presentation data other written papers in survey were found at moderate level of practice but in depth interviews of students resulted that use of brochures, pamphlets and documentaries are used at low degree of practice in learning. Oral presentation was found at moderate level in students' survey. In classroom observation, students were only presenting their opinions orally in form of question answer session during the activities or somewhere teacher was asking question during the lecture.

Discussions in general related with content and activities were found at moderate level of practice in students' interview, classroom observation and in teachers' interview analyses at average level of practice. Panel discussions were not found in students and teachers' interviews and as well in classroom observation. Sybing

(2015) reported that discussions in classrooms always provide students a platform to participate in their learning process.

Question answers in front of audience or class were found at moderate level in survey as well as moderate level of practice in students' interview analysis. In classroom analysis, very few question-answer sessions were found from students. Karoca,et al (2023) study is in consistent with this study on uncovering important 21st century skills for sustainable development of social sciences graduates. The results highlighted that communication skills are most frequently reported skills by graduates and job employers.

The findings of the use of technology in students' survey on the use of internet for completion of task was at moderate level, this practice found at average practice in students and teachers' in depth interviews. Selection of appropriate tools for completion of tasks related to assignments was also found moderate in the surveys, students' interview and in teachers' interview as well.

The use of technology to analyze information and to collaborate was found to be moderate in survey but low in teachers' interviews, students' interview analysis was also found less in practice in classroom observations. The results of Boe's (2013) study on the use of technology for learning are inconsistent with the current premise, as it reported the highest implementation of use of technology as tool for learning both among students and teachers. Different educational context of both studies may affect the results. Rathore and Sonawat (2015) discussed technology integration as access to different tools that help learner to get deep understanding and to get solution of the different problems.

The use of technology for giving and receiving feedback on tasks was found at moderate in students 'survey, in students and teachers interviews. It also tracks the work found at moderate degree of practice in teachers' interview and also moderate in students' survey. Use of technology for interaction with experts was low in practice by students and found at moderate practice by teachers. Teachers mostly used Emails, Whatapp and laptops for sharing of information.

Mostly teachers were teaching with traditional lecture method of teaching, a few were involved in activity based learning and integration of technology. It is found in classroom observation that a few teachers used mobile to flip their classes through mobile phones.

There is a significant need to integrate practices of twenty first century skills in to classroom teaching and learning at undergraduate level to increase 21st century learning skills among students. Imran, zaidai and Qureshi (2023) study on skills set require for 21st century students at university level indicated that education system of Pakistan need to reorganize different aspects of higher education to meet the needs of 211ts century skills. Agaoglu and Demlr (2020) study on integration of 21st century skills into education suggested to enhance the teacher training and activities related to four Cs of learning for acquisition 21st century skills.

In the present research study none of the 21st century learning skills found at high level of practice among students at undergraduate level. For development of these four Cs of learning among students there is need to focus four Cs of learning and practices related to these skills are required to increase and integrate in classroom teaching and learning. The Development of 21st century learning skills Four Cs demand

21st century classroom environment and practice of all activities related to 21st century learning at high degree.

5.4 Conclusion

The study attempted to analyze the 21st century learning skills among students at undergraduate level. Twenty first century learning skill set of four Cs: creativity, critical thinking, collaboration and communication along with the use and practice of technology in learning process were studied among students at undergraduate level.

The study revealed that these practices of Four Cs of learning are in practice at undergraduate level but not at high degree of practice in learning process. As in the light of framework the researcher studied all four Cs of twenty first century learning and also investigated the use of technology at undergraduate level.

As creativity in classroom include themes like “brain storming, research based assignments and projects and creation of new products etc.” Brain storming is part of learning process at moderate level but none of the practice is at high degree. Mostly creativity related practices found at low degree. Research based assignments and projects are not included frequently and practiced at low degree. It means students are not practicing these skills at higher level in their learning at undergraduate level.

This study revealed that critical thinking skills are well known at theoretical level but practice of these skills according to procedures and step is not at high level of practice. Teachers include activities of analysis, judgment, comparison and decision making at moderate degree in teaching and learning. “Analysis and comparison” activities are incorporated in teaching and learning process frequently but decision making and judgment and feedback” are not incorporated at higher level.

The study revealed that communication skills at undergraduate level in public sector universities are not as practiced at higher degree by learners at undergraduate

level. “Verbal presentations “from students are taken only once in a semester. As well “written assignments” are just taken and evaluated for twice in a semester and practiced at low degree which is not sufficient to develop the communication skills of learners. Along with all the other mediums of presentation” charts, tables and graphs “are also used very less.

“Collaborative activities” are found in practice at undergraduate level classrooms and other related tasks of learning among learners. But these are practiced at low degree and highlighted low collaborative skills of learners. As “group work, pair work and combine research projects” are not used at high degree which is insufficient in acquiring the maximum collaborative skills of twenty first century learning.

The study revealed that the use of technology among students is at moderate level of practice at undergraduate level. As “internet” for completion of tasks is used at high degree but use of technology for sharing of information and giving feedback is at moderate level.

5.5 Recommendations

This research study suggests various practical recommendations based on results of this study. This research study analyzed twenty first century learning skill set: creativity, critical thinking, collaboration, communication and use of technology. All these constructs that are related to this research study have their greater importance in successful learning process. Research studies in this area approved that 21st century learning skills are very important skills for learners, as better product of education for future needs and demands. Moreover, following are recommendations of this research study grounded on the analysis of twenty first century learning skills at undergraduate level especially in context of Higher education in Pakistan.

1. For development of creativity skills creative classroom practices like open-ended research based projects and assignments may be the added and practiced on frequent basis.
2. Peer reviews and feedback sessions may be practiced frequently for written assignments, presentations and creative projects to engage students critically with each other' work.
3. Collaborative learning practices like pair and group work may be increased for students to work and contribute from different perspectives.
4. Classroom practices on communication like presentations and public speaking may be added more and linked with formative and summative evaluation.
5. Flipped classroom tasks may be used at maximum level to foster critical thinking, collaboration, creavity and communication by allowing students to creatively apply knowledge.
6. Technology driven practices may be increased to make classrooms more dynamic and engaged to meet the diverse needs of students.
7. Universities may design programs of professional development of teachers on learner centered approaches and teaching methods to develop Four Cs in classroom teaching and learning.

5.5.1 Recommendations for Future Researchers

Further researchers may carry out research on following areas of 21st century teaching and learning:

1 Comparative study on 21st century teaching and learning in public and private sector universities.

2 An evaluative study on Professional development programs and 21st century teaching skill.

5.6 Limitations of the Study

The empirical findings of the study presented here should be viewed in the context of some limitations. First, the data were taken from students, teachers and classroom observations, and the administration point of view about 21st century learning skills was not taken into account. secondly ,only public sector universities were chosen for collection of the data, while comparison of public and private sector universities might gave a more detailed and comprehensive analysis of 21st century learning skills among skills at higher education level.

5.1 (a) A detailed analysis of students' interview (N1=535 students, N2=15 students N3= 10 Teachers, N4=10 Classrooms)

Sr.	Objective	Findings	Conclusion	Recommendations
2	To analyze 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology among students at Undergraduate level. RQ1. How students use creativity in learning at undergraduate level? RQ2. How students use critical Thinking in learning at undergraduate level? RQ3.How students use collaboration in learning at undergraduate level? RQ 4 How students use communication in learning at undergraduate level? RQ 5 How students use technology in learning at undergraduate level?	Thames that emerged from detailed interviews from students on 21st century skills analysis on research question one was concepts about creativity and use of creativity in classroom ,brainstorming, creativity in assignments and projects ,relevant classroom activities with real world ,use of different cross-cultural activities and different challenges of being creative as learner. Themes that emerged from research question two knowledge about critical thinking skills, process of critical thinking skills, decision making in classroom activities, analysis based activities, judgment and different challenges related to critical thinking skills. Themes that emerged from research question three were collaboration, team work, work in small groups, peer assessment and feedback, think pair and share, group research assignments and projects and different challenges in using collaboration in classroom. Themes emerged from research question four were concept of communication in learning, structuring or presenting the data or information, power point presentations, designing pamphlets, broachers and documentaries, discussions, use of social media in learning, verbal and written presentations and challenges of good communication. Themes emerged from research question five were use of internet to complete assignments and research projects, reliability of online resources, use of technology for sharing information, multimedia presentations, use of blogs and different challenges in using technology as tool for learning.	The interview probed from students to get in-depth information and knowledge of 21st century learning skills Four Cs (Creativity, Critical thinking, Collaboration, Communication) and use of Technology for learning. The study revealed that students have basic concepts of creativity, critical thinking, communication and collaboration but use of practices related to these construct are not used frequently used. As mostly activities and related to these skills are practiced only for once or twice in a semester.	For development of creativity skills creative classroom practices like open-ended research based projects and assignments may be the added and practiced on frequent basis. Peer reviews and feedback sessions may be practiced frequently for written assignments, presentations and creative projects to engage students critically with each other' work. Collaborative learning practices like pair and group work may be increased for students to work and contribute from different perspectives. Classroom practices on communication like presentations and public speaking may be added more and linked with formative and summative evaluation.

5.1 (b) A detailed analysis of students' survey (N1=students 535, N2=15 students, N3=10 Teachers, N4=10 Classrooms)

Sr.	Objective	Findings	Conclusion	Recommendations
2	To analyze existing learning practices in classrooms in relation to 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology at Undergraduate level. RQ 6 To what extent 21st century learning skills set: Creativity, Critical Thinking, Communication and Collaboration (Four Cs), and use of technology practices are practiced in classrooms at Undergraduate level?	Creativity as 21st century learning skill followed by different related statements. Findings of creativity construct are as following: use of idea creation technique such as brain storming (M=2.609, moderate), generating new ideas to confront a problem (M=3.084, Moderate), examine out different ideas and work (M= 2.875, Moderate), discover a solution to multifaceted open ended question or problem (M=2.649, Moderate), creation of an original product (M=2.598, Moderate). Findings of the critical thinking construct are as following: comparison of information from different resources (M=1.914, Low), drawing conclusion on relevant information (M= 2.529, Moderate), summarization what read or taught (M=2.729 Moderate), analysis of different perspectives /solution to problems (M= 2.994, Moderate), developing convincing arguments /reasoning (M=2.606, Moderate), solution of complex problems (M=2.570, Moderate). Findings of the collaboration construct are as following: pair work or small groups (M= 2.751, Moderate), work with other students to set goals or make plans (M=2.800, Moderate), creation of combine products (M=2.464, Low), work as team to incorporate feedback (M=2.531, Moderate), provide feedback to peers (M=2.757, Moderate). Findings of the communication construct are as following: structuring data for use in written products (M=2.501, Low), conveying idea by using medium other than written paper (M=2.791,	As creativity in classroom include themes like "brain storming, research based assignments and projects and creation of new products etc." All these techniques are practiced in learning process by students and teachers as well in pedagogy for direct teaching but in low and moderate degree. "Research based assignments and projects "are not included on frequent bases as "brain storming" used by teachers in different classes. None of the practice is at high ranking. It means students are not using these skills in their learning at higher level at undergraduate level. This study revealed that critical thinking skills are well known at theoretical level but practice of these skills according to procedures and step is not at its best level. Teachers include activities of analysis, judgment, comparison and decision making but not at higher degree. " analysis and comparison" activities are incorporated in teaching and learning process frequently but other like" decision making and judgment and feedback" are not incorporated at higher level. In classroom observation creativity skills related practices were not at high degree of practice at undergraduate level. Brain storming and new idea generation	Flipped classroom tasks may be used at maximum level to foster critical thinking, collaboration, creavity and communication by allowing students to creatively apply knowledge. Technology driven practices may be increased to make classrooms more dynamic and engaged to meet the diverse needs of students. Universities may design programs of professional development of teachers on learner centered approaches and teaching methods to develop Four Cs in classroom teaching and learning.

	Moderate), preparing and delivering oral presentation to teachers and others (M=2.996, Moderate), reply questions in front of an audience (M=3.095, Moderate), decide how to present work or demonstrate learning (M=2.516, Moderate). Findings of the use of technology construct are as following: use of technology or internet for self-instruction (M=2.836, Moderate), selection of appropriate tools/resources for completion of tasks (M=3.114, Moderate), reliability and application of online resource (M=2.762, Moderate), use of technology to analyze the information (M=2.729, Moderate), use of technology for sharing information (M=3.273,Moderate),Use of technology for team work/collaboration (M=3.002, Moderate), use of technology for giving and receiving feedback(M=2.824,Modertae), use of technology to interact with experts(M=2.505,Modearte), use of technology to keep track of work/assignments(M=2.811,Moderate). Themes for classroom observation on creativity skills practices were brain storming, new idea generation, creative assignments and projects, cross cultural activities. Themes on critical thinking skills practices were question answers, summarization tasks, comparison tasks, decision making by students. Themes for collaboration skills practices were pair work, small group work, peer assessment and peer feedback. Themes on communication skills practices were discussion, verbal presentation, write-pair and share and teacher talk time. Themes use of technology were use of technology in learning.	practices were used at moderate level. Cross cultural practices were not missing. In classroom observation critical thinking skills practices were found at moderate level of practice. In classroom observation a few collaboration practices like pair /group work were at moderate level. Other practices like peer assessment and peer feedback was at low degree of practice. In classroom observation communication skills were not practiced at a higher degree. A few practices like discussion was in use but mostly were at low degree of practice. Use of technology in classes were found at moderate level of practice.	

5.1 C Detailed Anaylsis of Teachers' Interview (N1= 535 students, N 2 =10 Teachers, N= students 15, N4= 10 classroom

Sr.	Objectives	Findings	Conclusion	Recommendations
3	To investigate teachers' perspective about practice of 21st century learning skills set of Four Cs: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology at Undergraduate level. RQ 7 What is teachers' perspective on 21st century Learning Skills set: Creativity, Critical Thinking, Communication, Collaboration and Use of Technology?	Themes of teachers' perspective on creativity were concept of creativity as new thing, a thoughtful process, integration of idea based activities, role play, debate sand dramas, discussions, models, charts, different cultural activities and challenges like excessive managerial tasks, heavy content, large number of students in class and less equipped classrooms. Themes of critical thinking based on teachers interview were concept of critical thinking , integration of critical thinking in different activities ,ability to think and decide ,make judgments on different activities , question answer sessions, concept mapping, different challenges like inappropriate teacher-student ratio in classes, short time of a semester and lengthy content and assessment process. Themes of collaboration based on teachers' interview were concept of collaboration, team work, heterogeneous/homogeneous grouping, pair work, combined projects, group assignments and verbal presentations, different challenges of collaboration in groups. Themes of teachers' perspective on communication were verbal discussions, models and chart presentations, listening abilities, verbal	The interview probed teachers perspective on 21st century learning skills Four Cs (Creativity, Critical thinking, Collaboration, Communication) and use of technology for learning. The in-depth interview from teachers revealed that teachers have basic information of these learning skills. They are integrating activities to develop these skills among students but these activities and practices are not enough in their frequency to develop these skills at maximum level among students. Activities related to these constructs are integrated in direct classroom teaching and learning process only for two or three times a semester. There are multiple challenges faced by teachers to properly integrate these activities in teaching.	Universities may design programs of professional development of teachers on learner centered approaches and teaching methods to develop Four Cs in classroom teaching and learning.

	and non-verbal presentation skills, power point presentations, written assignments and challenges of communication like excessive managerial work of teachers and students' reluctant behavior for effective communication skills. Themes of teachers' perspective on use of technology for learning were concept of technology, use of different gadgets, computers, audios, videos on YouTube, digital libraries, use of multimedia for presentation, online access to information and different challenges of technology like inappropriate internet services and lack of training to use technology/gadgets.	

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APPENDICES

Appendix A

Certificate of Approval of the Study and Supervisor

NATIONAL UNIVERSITY OF MODERN LANGUAGES
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF EDUCATION

ML.1-4/2020/Edu

Dated: 30-07-2020

To: Musarrat Riaz,
775-Ph.D/Edu/F18

Subject: **APPROVAL OF Ph.D THESIS TOPIC AND SUPERVISOR**

1. Reference to Letter No, ML.1/2/2020-Edu, dated 06-07-2020, the Higher Authority has approved the topic and supervisor on the recommendation of Faculty Board of Studies vide its meeting held on 14th May 2020.

   a. **Supervisor's Name & Designation**
   Dr. Marium Din
   Assistant Professor,
   A/HOD Department of Education, NUML, Islamabad.

   b. **Topic of Thesis**

   "Analysis of 21st Century Learning Skills among Students at Undergraduate Level."

2. You may carry out research on the given topic under the guidance of your Supervisor and submit the thesis for further evaluation within the stipulated time. It is inform you that your thesis should be submit within described period by 31 **August 2023** positively for further necessary action please.

3. As per policy of NUML, all MPhil/PhD thesis are to be run on turnitin by QEC of NUML before being sent for evaluation. The university shall not take any responsibility for high similarity resulting due to thesis run from own sources.

4. Thesis are to be prepared strictly on NUML's format that can be had from (Coordinator, Department of Education)

Telephone No: 051-9265100-110 Ext: 2090
E-mail: ftabassum@numl.edu.pk

30/07/202

Dr. Marium Din
A/Head,
Department of Education

Distribution: Ms. Musarrat Riaz (Ph.D Scholar)

Dr. Marium Din (Thesis Supervisor)

Appendix B

Certificate of Validity of Research Instruments (Expert 1)

CERTIFICATE OF VALIDITY

ANALYSIS OF 21ST CENTURY LEARNING SKILLS AMONG STUDENTS AT UNDERGRADUATE LEVEL

By Ms. Musarrat Riaz

PhD Scholar, Department of Education National University of Modern Languages, Islamabad, Pakistan

It is hereby certified that the tools developed by the scholar towards her thesis have been assessed by me and I found that the tools have been designed adequately to analyze 21st century leaning skills among students at undergraduate level. It is considered that the research instruments developed for the research above titled according to the objectives and research questions, assure adequate construct and content validity according to the purpose of research and can be used for data collection purpose with fair amount of confidence.

Signature:

Name: Dr. Farhana Khurshid

Designation: Assistant Professor

Department of Education

Institute: Fatima Jinnah Women University, Rawalpindi.

Date:

Dr. Farhana Khurshid
Assistant Professor
Department of Education
Fatima Jinnah Women University
The Mall, Rawalpindi

Appendix C

Certificate of Validity of Research Instruments (Expert 2)

CERTIFICATE OF VALIDITY

ANALYSIS OF 21ST CENTURY LEARNING SKILLS AMONG STUDENTS AT UNDERGRADUATE LEVEL

By Ms. Musarrat Riaz

PhD Scholar, Department of Education National University of Modern Languages, Islamabad, Pakistan

It is hereby certified that the tools developed by the scholar towards her thesis have been assessed by me and I found that the tools have been designed adequately to analyze 21st century leaning skills among students at undergraduate level. It is considered that the research instruments developed for the research above titled according to the objectives and research questions, assure adequate construct and content validity according to the purpose of research and can be used for data collection purpose with fair amount of confidence.

Signature: _____

Dr. M. Imran Yousuf
Associate Professor
Division Of Continuing Education
PIR MEHR ALI SHAH
Arid Agriculture University
RAWALPINDI

Name: Dr. Imran Yusuf

Designation: Associate Professor

Chairman, Department of Education

Institute: Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi.

Date:

Appendix D

Certificate of Validity of Research Instruments (Expert 3)

CERTIFICATE OF VALIDITY

ANALYSIS OF 21ST CENTURY LEARNING SKILLS AMONG STUDENTS AT UNDERGRADUATE LEVEL

By Ms. Musarrat Riaz

PhD Scholar, Department of Education National University of Modern Languages, Islamabad, Pakistan

It is hereby certified that the tools developed by the scholar towards her thesis has been assessed by me and I found, it have been designed adequately to analyze 21st century leaning skills among students at undergraduate level. It is considered that the research instruments interview guide and questionnaire developed for the research above titled according to the objectives and research questions, assure adequate construct and content validity according to the purpose of research and can be used for data collection purpose with fair amount of confidence.

Name: Dr. Samra Afzal

Designation: Assistant Professor

Institute: Department of Educational Sciences

National University for Modern Languages, Islamabad.

Signature: _____

Date:

Appendix E

COVER LETTER OF QUESTIONNAIRE

ANALYSIS OF 21ST CENTURY LEARNING SKILLS AMONG STUDENTS AT UNDERGRADUATE LEVEL

Dear Respondent,

I am a Ph.D. Scholar at the Department of Education, National University of Modern Languages, Islamabad. I am working on a research thesis topic, "Analysis of 21st Century Learning Skills among Students at Undergraduate Level". The questionnaire in hand is to collect data for my Ph.D. research work. You are requested to fill in the questionnaire attached. It is assured that your responses will be kept confidential and will not be disclosed to any person or authority. Moreover, the information shall only be used for research purposes.

Musarrat Riaz

Ph.D. (Education) Scholar

Department of Educational Sciences

NUML Islamabad.

Appendix F

SEMI-STRUCTURED INTERVIEW FOR STUDENTS

I am a Ph.D. scholar and conducting a research on **"Analysis of 21st Century learning skills among students at undergraduate level"**. I request you to share your experiences/views through participation in this study. Your response will be kept confidential and used only for research purpose. Your assistance in this research study will be highly appreciated.

Structured Questions for Students Interview

Creativity

What does creativity means to you as student?

How your teacher start your lesson? Examples

Have you used concept mapping in your learning?

Are assigned different Research based Assignments/projects?

How participate in cross cultural activities?

How you connect your class activities to real world situation?

What are the difficult situations when you use new ideas in your class tasks, especially assignments and projects?

Critical Thinking

What does critical thinking means to you as student?

Do you know about different steps involved in critical thinking process?

Do you make comparison of information with different resources?

Are you allowed to draw your conclusion as student on different tasks?

Do you analyze information before completion of assigned class tasks?

Do you make judgments on different assigned tasks and work?

Do you make decision on different situations?

What type of problem you face when the above mentioned things you use in different learning tasks?

Communication

What does communication means to you as student?

How you present data in written products?

Do you use oral presentations for written assignments and projects?

Do you use power point presentations, how you make your PPTs?

Do you design and use pamphlets, broachers and documentaries by your own for learning tasks?

How you use social media for your learning tasks?

Do you have of discussion or panel discussion in classroom?

What are the difficulties while you are communicating?

Collaboration

What does collaboration means to you as student?

Do you work in pairs?

Do you work in small groups?

Do you asked to give peer feedback?

Have you assessed the work of the class mates/peer assessment?

Do you have pair / group discussion in the classroom? How?

Do you know about think-pair and share?

Do you work on group research assignments and projects .How many times?

What are the difficult situations to work in group?

Use of Technology

What does use of technology in learning means to you as student.

How you use internet resources for your assignments and projects?

Do you check reliability of the online resources for different tasks?

Do you use technology for sharing of the information: How?

Do you use technology to analyze the information: How?

Do you use multimedia for presentations?

Do you use blogs for class tasks: How?

Appendix G

QUESTIONNAIRE FOR STUDENTS ON 21ST CENTURY LEARNING SKILL

Name (optional): _____

Semester: ☐ **1** ☐ **3** ☐ **5** ☐ **7**

Subject: ☐ **BS English** ☐ **BS Education**

Section 1

CREATIVITY SKILLS refer to students being able to generate and refine solutions to complex problems or tasks based on synthesis, analysis and then combining or presenting what they have learned in new and original ways.

Sr. No	In your classes, how often you are asked as students to do the following. Please Tick one option	Almost never (1)	A few times a semester (2)	1-3 times per month (3)	1-3 times per week (4)	Almost daily (5)
1	Use idea creation techniques such as brainstorming or concept mapping?	☐	☐	☐	☐	☐
2	Generate your own ideas about how to confront a problem or question?	☐	☐	☐	☐	☐
3	Test out different ideas and work to improve them?	☐	☐	☐	☐	☐
4	Invent a solution to a complex, open-ended question or problem?	☐	☐	☐	☐	☐
5	Create an original product or performance to express their ideas?	☐	☐	☐	☐	☐

Section 2

Critical Thinking Skills refer to students being able to analyze complex problems, investigate questions for which there are no clear-cut answers, evaluate different points of view or sources of information, and draw appropriate conclusions based on evidence and reasoning.

Sr.No	In your classes, how often you are asked as students to do the following. Please tick one appropriate option.	Almost never (1)	A few times a semester (2)	1-3 times per month (3)	1-3 times per week (4)	Almost daily (5)
1	Compare information from different sources before completing a task or assignment.	☐	☐	☐	☐	☐
2	Draw your own conclusions based on analysis of facts, or relevant information?	☐	☐	☐	☐	☐
3	Summarize or create your own interpretation of what you have read or been taught.	☐	☐	☐	☐	☐
4	Analyze opposite arguments, perspectives or solutions to a problem.	☐	☐	☐	☐	☐
5	Develop a convincing argument based on supporting evidence or reasoning?	☐	☐	☐	☐	☐
6	Try to solve complex problems or answer questions that have no single correct solution or answer.	☐	☐	☐	☐	☐

Section 3

COLLABORATION SKILLS refer to students being able to work together to solve problems or answer questions, to work effectively and respectfully in teams to accomplish a common goal and to assume shared responsibility for completing a task.

Sr.No	In your classes, how often you are asked as students to do the following. Please tick one appropriate option.	Almost never (1)	A few times a semester (2)	1-3 times per month (3)	1-3 times per week (4)	Almost daily (5)
1	Work in pairs or small groups to complete tasks together.	☐	☐	☐	☐	☐
2	Work with other students to set goals and create a plan for your team.	☐	☐	☐	☐	☐
3	Create combine products by using contribution from each other	☐	☐	☐	☐	☐
4	Present group work to the class, teacher or others?	☐	☐	☐	☐	☐
5	Work as team to incorporate feedback on group task	☐	☐	☐	☐	☐
6	Provide feedback to peers or asses others work.	☐	☐	☐	☐	☐

Section 4

COMMUNICATION SKILLS refer to students being able to organize their thoughts, data and findings and share these effectively through a variety of media, as well as orally and in writing.

Sr.No	In your classes, how often you are asked as students to do the following. Please Tick one appropriate answer.	Almost never (1)	A few Times a sem. (2)	1-3 times per month(3)	1-3 times per week (4)	Almost daily (5)
1	Structure data for use in written products or oral presentations (e.g., creating charts, tables or graphs)	☐	☑	☐	☐	☐
2	Convey ideas using media other than a written paper (e.g., posters, video, blogs, etc.)	☐	☐	☐	☐	☐
3	Prepare and deliver an oral presentation to the teacher or others	☐	☐	☐	☐	☐
4	Answer questions in front of an audience	☐	☐	☐	☐	☐
5	Decide how to present work or demonstrate learning	☐	☐	☐	☐	☐

Section 5

USE Of TECHNOLOGY FOR LEARNING refers to students being able to manage their learning and produce products using appropriate information and communication technologies.

Sr. No	In your classes, how often you are asked as students to do the following. Please tick one appropriate option.	Almost never (1)	A few times sem. (2)	1-3 times per month (3)	1-3 times per week (4)	Almost daily (5)s
1	Use technology or the Internet for self-instruction (e.g., Kahn Academy or other videos, tutorials, self-instructional websites, etc.)?	☐	☐	☐	☐	☐
2	select appropriate technology tools or resources for completing a task	☐	☐	☐	☐	☐
3	Evaluate the credibility and relevance of online resource.	☐	☐	☐	☐	☐
4	use technology to analyze information (e.g., databases, spreadsheets, graphic programs, etc.).	☐	☐	☐	☐	☐
6	Use technology to support team work or collaboration.(giving and receiving feedback)	☐	☐	☐	☐	☐
7	Use technology to interact directly with experts or members of local/global communities.	☐	☐	☐	☐	☐
8	Use technology to keep track of work on extended tasks and assignments.	☐	☐	☐	☐	☐

Appendix H

SEMI- STRUCTURED INTERVIEWS FOR TEACHERS

TEACHERS PERSPECTIVE ON FOUR CS OF 21ST CENTURY LEARNING

Q1: What does four Cs of 21st Century Learning/Technology Means to you as a teacher?

Creativity: _____

Critical Thinking: _____

Communication: _____

Collaboration: _____

Use of Technology:_____

Q: 2.How you integrate four Cs of Learning/ Technology In your teaching practice regarding methods, materials and assessment?

Creativity: _____

Critical Thinking: _____

Communication: _____

Collaboration: _____

Use of Technology:_____

Q3: what are the Challenges of four Cs of learning /Technology in your classroom?

Creativity: _____

Critical Thinking: _____

Communication: _____

Collaboration: _____

Use of Technology: _____

Q4: What are the effective strategies for promoting four Cs of learning /Technology in classrooms?

Creativity: _____

Critical Thinking: _____

Communication: _____

Collaboration: _____

Use of Technology: _____

Appendix I

Qualitative Observation on 21st century Learning skills (Practices)

Time: 45 Minutes
Level: Undergraduate

Themes	Descriptive Notes	Reflective Notes
Creativity Skills		
Idea generation techniques /Braining storming		
creative Assignments/projects		
open ended questions		
Cross-cultural activities		
Relevant activities to real world		
Critical Thinking Skills		
Comparison Tasks		
summarization tasks		
Decision making		
Judgmental Tasks		
Question Answers		
Analysis tasks		
Collaboration		
Pair work /Small group work		
Peer Assessment		
Peer Feedback		
Group research based assignments/tasks		
Communication		
verbal Communication		
Discussion tasks		
Panel discussion		
use of pamphlets, brochures/documentaries		
written communication		
Use of Technology		
Technology in classroom Teaching/ Learning		
Completion of Assignments		
Sharing of information		
Multimedia presentations		

Appendix J

QEC Report for Plagiarism

National University of Modern Languages
Quality Enhancement Cell
Sector H-9, P.O. Shaigan, Islamabad, Pakistan
Tel: +92-51-9265100 Ext 2246/2247
Web: www.numl.edu.pk

Dated: July 13, 2023

Faculty of Social Sciences

Subject: Turnitin Similarity Index Report of PhD Thesis of Ms Musarrat Riaz (Educational Sciences) 1st Attempt

This is to state that **PhD** thesis of **Ms Musarrat Riaz** has been run through **Turnitin Software on July 13, 2023**. Paper ID is 2130471316 and similarity index is **07%** (with quotes). This is within the limit prescribed by the Higher Education Commission.

- The subject similarity index report is attached for further processing, please.

(Dr. Khushbakht Hina)
Director
Quality Enhancement Cell

Dean/FSS

14/07/2023

HOD Edu. Sciences

Appendix K

Musarrat Riaz 19/02/2021

to jason.ravitz

helo,
i am phd scholar from pakistan. working on 21st century learning skills of students.
i want to use use your instrument for my work and as further need your guidance for my research work.
thanku,
Musarrat

Jason Ravitz 21/02/2021

to me

Musarrat,
I am very happy you find the survey useful.
There is more information on a website I made:
evaluationbydesign.com/survey21cs

You have permission to use the survey and I would be happy to give you guidance if I can.
Please let me know if you have any questions.

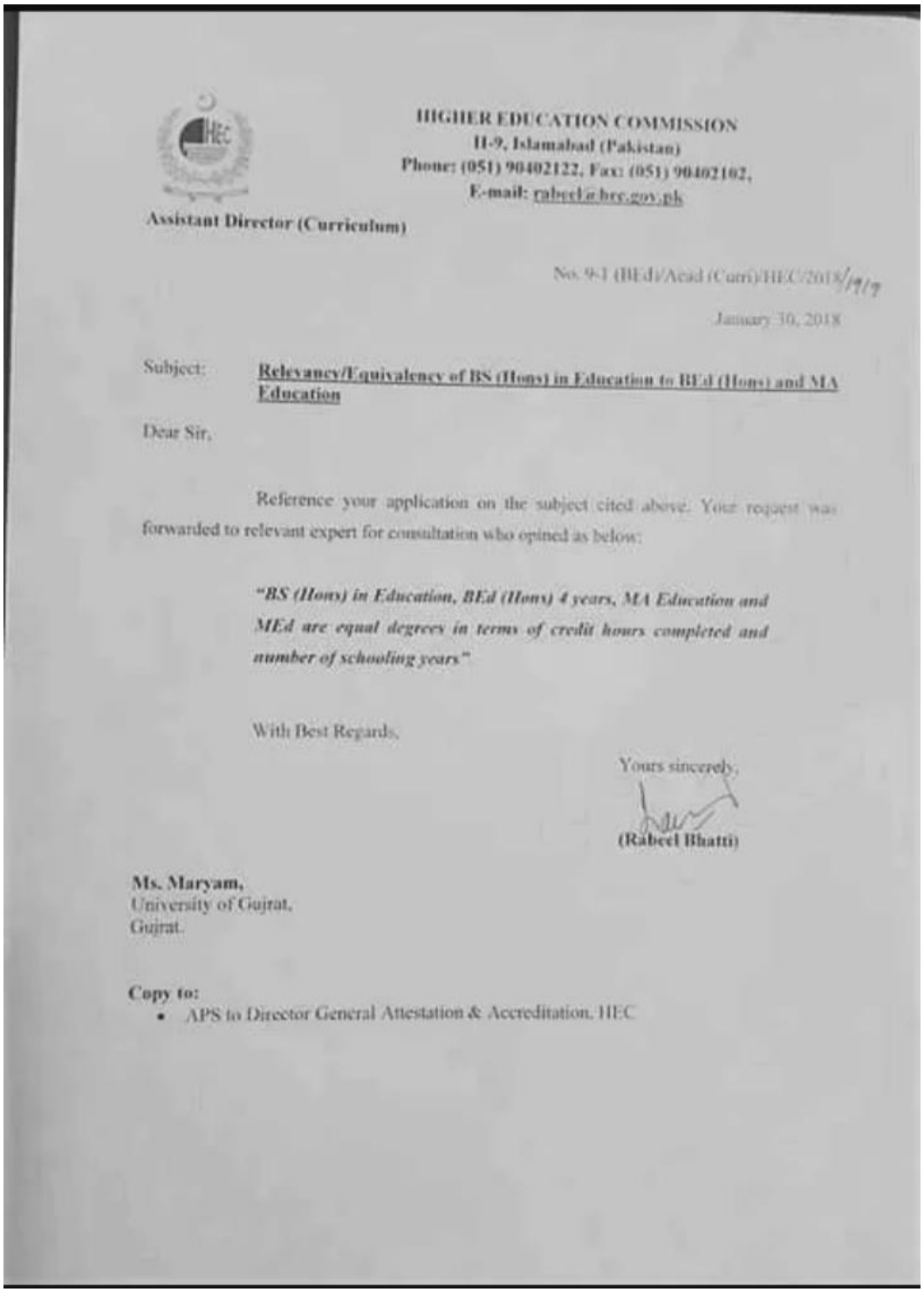
Best wishes ~ Jason Ravitz

Appendix L

List of the Universities

- Pir Mehr Ali Shah agricultural University Rawalpindi
- Rawalpindi Women University, Rawalpindi
- University of Chakwal
- National University for Modern Languages,Islamabd
- International Islamic University, Islamabad
- Fatima Jinnah Women University, Rawalpindi.

Appendix M



HIGHER EDUCATION COMMISSION
H-9, Islamabad (Pakistan)
Phone: (051) 90402122, Fax: (051) 90402102,
E-mail: rabeel@hec.gov.pk

Assistant Director (Curriculum)

No. 9-1 (BEd)/Acad (Curr)/HEC/2018/1917

January 30, 2018

Subject: **Relevancy/Equivalency of BS (Hons) in Education to BEd (Hons) and MA Education**

Dear Sir,

Reference your application on the subject cited above. Your request was forwarded to relevant expert for consultation who opined as below:

"BS (Hons) in Education, BEd (Hons) 4 years, MA Education and MEd are equal degrees in terms of credit hours completed and number of schooling years"

With Best Regards,

Yours sincerely,

(Rabeel Bhatti)

Ms. Maryam,
University of Gujrat,
Gujrat.

Copy to:
- APS to Director General Attestation & Accreditation, HEC