

Journal of Social Sciences Research & Policy (JSSRP)**Exploring the Challenges and Effectiveness of Teacher Education Programs in Pakistan for Promoting 21st Century Skills Acquisition****Muhammad Shuaib¹, Muhammad Adnan¹, Inayat Ullah², Niaz Ali³ and Mumtaz¹***1. Assistant Professor, Department of Education, Mohi-Ud-Din Islamic University, Nerian Sharif, AJ&K.**2. Lecturer, Department of English, Mohi-Ud-Din Islamic University, Nerian Sharif, AJ&K.**3. Lecturer, Department of Education Shaheed Benazir Bhutto University Sheringal, Dir Upper, Pakistan.***ISSN:** 3006-6557 (Online)**ISSN:** 3006-6549 (Print)**Vol. 2, No. 3 (2024)****Pages:** 213-234**Key Words:**Teacher education programs,
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Effectiveness**Corresponding Author:****Dr. Muhammad Shuaib**Email: shubijan@gmail.com**License:**

Abstract: This research delves into the obstacles and efficacy of Pakistani teacher education initiatives in fostering 21st-century competencies, which are crucial given the swift advancements in technology and the economy. The results of qualitative research using teacher interviews from Pakistani colleges and schools show barriers to the advancement of 21st-century abilities. Obstacles encompass inadequate resources, inadequate training for educators, a curriculum that does not prioritize 21st-century competencies, and dependence on conventional memorization techniques. The study also identifies effective methods for improving instructors' and students' acquisition of these abilities. These include emphasizing critical thinking and problem-solving, encouraging cooperation and teamwork, providing practical learning opportunities, and incorporating technology into the classroom. As a result, this study highlights the difficulties and successful strategies found in Pakistani teacher preparation programs for teaching 21st-century competencies. In order to ensure that students learn these crucial competencies, it underlines the necessity to address these obstacles quickly and put measures into place that will better equip instructors to educate their students for the needs of the 21st century.

Introduction

The notion of effective education and 21st-century talents has attracted considerable interest in the field of education owing to its deemed significance in equipping pupils for triumph in the contemporary world (Shuaib & Mumtaz, 2024). Four essential categories of 21st-century skills communication, teamwork, creativity, critical thinking, and problem solving were defined by the Partnership for 21st Century Learning. It is acknowledged that these qualities are essential to students' personal development and their capacity to succeed in their future occupations. Global teacher education programs are essential in providing teachers with the knowledge and abilities they need to help students develop these competencies (Darling-Hammond, 2017).

In this ever-changing educational environment, teacher education programs play a critical role in providing teachers with the knowledge and abilities needed to help students develop 21st-century skills. However, there have been doubts about how well teacher education programs help people acquire these abilities, especially in developing nations like Pakistan. Given the ongoing changes in the

education sector, training teachers to successfully promote 21st-century skills has become an urgent problem. The 2015 Education for All Global Monitoring Report from UNESCO emphasizes how important it is for teacher preparation programs to change to meet the needs of the twenty-first century and how acquiring twenty-first-century skills is essential to the global education agenda (UNESCO, 2015).

This study paper looks into the difficulties these programs confront in order to determine whether teacher education programs in Pakistan are helping teachers acquire 21st-century abilities (Ingersoll, 2011) Highlight the importance of initiating teacher induction and mentorship programs, which are crucial elements of teacher education programs in fostering the development of abilities required for contemporary education.

Pakistan, a nation with a rich cultural legacy and a populace that is expanding quickly, is going through major social and economic change. It is crucial to give the next generation of workers 21st-century skills including critical thinking, problem-solving, creativity, cooperation, and digital literacy in this era of globalization and technological breakthroughs. These skills are necessary for both achieving personal achievement and making a positive impact on the socioeconomic advancement of the country (Fullan, 2007), emphasizes how the nature of education is evolving and how teacher preparation programs must change along with it to guarantee that students are ready for the twenty-first century.

Effective integration of 21st-century skills is a major challenge for the Pakistani educational system, especially in teacher preparation programs. To highlight existing gaps and possible areas for improvement, this research aims to identify and assess these problems. The mismatch between the need for 21st-century abilities and the conventional pedagogical approaches employed in teacher training programs is one significant issue. Many of Pakistan's teacher education programs still use traditional lecture-based teaching methods, which may leave educators lacking the skills and knowledge needed to help students develop 21st-century competencies. Therefore, in order to meet the needs of the twenty-first century, teacher preparation programs need to investigate cutting-edge, learner-centered strategies.

The availability and application of technology resources present another challenge. It can be difficult for instructors to consistently integrate technology into their lesson plans because different parts of Pakistan have differing degrees of access to digital tools and technology. Further requirements for the successful incorporation of technology in teacher education programs are sufficient facilities, the digital literacy of educators, and chances for continual professional growth (Aziz, 2020).

Research (Mansoor, 2018) demonstrates the obstacles Pakistani teacher education programs experience in preparing pre-service teachers for classrooms of the twenty-first century, lending more weight to these concerns. Explains the methods and obstacles Pakistani higher education has in preparing instructors for instruction in the twenty-first century (Khan, 2019). Examine the degree to which Pakistani educators are prepared to incorporate 21st-century skills into their instruction, whereas (Shah, 2018) looks into the pedagogical strategies used in Pakistani higher education to promote these skills. When taken as a whole, these studies shed light on the complex issues surrounding the inclusion of 21st-century skills in Pakistani education as well as possible solutions.

The purpose of this study is to evaluate how well Pakistan's current teacher education initiatives support teachers' learning of 21st-century competencies. The assessment process will include a thorough examination of the curricula, instructional strategies, and assessment techniques used in these programs. Finding out what works and what does not in terms of developing the necessary

abilities in pre-service and in-service teachers is the main goal. The evaluation's findings will produce evidence-based suggestions meant to improve Pakistan's teacher education programs' efficacy. Acknowledging the difficulties and efficacy of these initiatives is critical to improving the nation's educational results and providing educators with the resources they need to better prepare their pupils for the opportunities and challenges of the twenty-first century (Le-Fevre, 2018).

This study paper aims to conduct a thorough analysis of the current issues facing the Pakistani educational system. It will examine the effectiveness of programs designed to prepare teachers and make helpful suggestions for improving the integration of 21st-century skills into the nation's educational system. Through this comprehensive investigation, we hope to meaningfully contribute to the current conversation about educational reforms, ultimately establishing a strong system of teacher preparation that enables teachers to effectively foster 21st-century skills in their students. Pakistan's educational system has many challenges, such as inadequate finances, out-of-date textbooks, and poor teaching practices.

The poor quality of teacher education programs is one of the main causes of Pakistan's inadequate educational standards (Ali, 2020). While some research (Yusuf, 2015) has demonstrated the benefits of teacher education programs that support the development of 21st-century skills, other research (Bokhari, 2017) has highlighted the difficulties in putting these programs into practice. Thus, there is a pressing need to investigate the difficulties associated with Pakistani teacher education programs and their efficiency in developing 21st-century abilities. By carefully examining the challenges and achievements related to Pakistani teacher education programs that support the development of 21st-century abilities, this research paper seeks to significantly advance this field of study (Hussain, 2019).

Critical thinking, problem-solving, teamwork, communication, and digital literacy are among the 21st-century abilities that are increasingly important in the digital age (P21, 2007). These qualities are now necessary for pupils to succeed in the modern world, and it is also critical that teachers have the skills and knowledge to support their growth (Trilling B. &, 2009). The increasing focus on 21st-century skills is due to their critical importance for achieving both personal and professional success in the quickly changing modern world (Wagner T. , 2008).

These abilities cover a wide range of proficiencies that enable people to successfully traverse the complex difficulties of the twenty-first century as well as succeed in the contemporary labor market (Griffin, 2012).

Teacher Preparation: One important factor to take into account is how well prepared teachers are to teach 21st-century skills (Darling-Hammond, 2017). The paucity of comprehensive research in this field highlights the lack of practical recommendations for developing teacher preparation initiatives (Ingersoll, 2011). This shortcoming emphasizes the need for more all-encompassing methods that provide teachers with the necessary skills and techniques to help them develop 21st-century abilities in their pupils (Khan, 2019).

Effect on the Future Workforce: Teacher preparation will be significantly impacted by the focus on 21st-century abilities. Teachers need to be well-versed in a broad range of topics related to 21st-century skills so they can make educated decisions in the classroom (Darling-Hammond L. , 2017). Since it guarantees that teachers are equipped to skillfully foster these abilities in their pupils and so prepare them for the needs of the workforce, the integration of these skills into teacher education programs acquires the utmost importance.

Specific 21st-century Skills

Particular 21st-century abilities comprise a dynamic range of competencies essential to both professional and personal development. According to Partnership for 21st Century Learning (P21, 2007) these abilities include critical thinking, problem-solving, cooperation, creativity, initiative, and a growth attitude. Gaining proficiency in these areas enables people to think critically, interact with others in an effective manner, adjust to changing circumstances, and adopt a continual learning mindset all essential skills for prospering in the modern world. These skills are essential for equipping people to handle the changing needs of the twenty-first century (P21, 2007; Lingham, 2009).

Institutions of Teacher Education and Training

Since attaining independence, Pakistan has seen a notable increase in the quantity of teacher education establishments throughout the nation. In 1998, there were thirty Training Units, housed in certain high schools, and ninety primary colleges that provided PTC (Primary Teacher Certificate), CT (Certificate in Teaching), and Drawing Masters Teacher Training Programs. In addition, there were two Departments of Education, five "Institutes of Education and Research," and eighteen Colleges of Education, all of which offered different teacher preparation courses. The "laissez-faire policy" of the government has been instrumental in promoting the growth of Training Colleges throughout many areas. This strategy has made teacher education and training programs far more accessible across the country by enabling a large number of students to participate on a self-financing basis. Furthermore, Allama Iqbal Open University (AIOU) in Islamabad has become a well-known center for teacher preparation at various levels. PTC, CT, B.Ed., M.Ed., M.A. Education, and non-formal distance-learning programs in educational planning, management, and teacher education are just a few of the many programs that AIOU provides. It's important to note that AIOU's M.Phil. and Ph.D. programs have extremely difficult admissions (Amir, 2020).

Since attaining independence, teacher education and training institutes have grown significantly, which demonstrates the government's dedication to raising the standard of education in the nation. Through a wide range of educational opportunities, including both formal and online learning programs, Pakistan hopes to provide teachers with the expertise and abilities needed to give quality instruction and support the growth of the education industry. (Amir, 2020) Overall, a concerted effort to enhance teacher training programs and increase the accessibility of high-quality education across the country is reflected in the proliferation of teacher education institutions, which includes a variety of college types, Departments of Education, Institutes of Education and Research, and the significant contributions of Allama Iqbal Open University (Amir, 2020).

Overview of Teacher Education in Pakistan

Pakistan changed the structure, administration, and curricula of teacher education in the late 1960s and early 1970s. Provincial Bureaus of Curriculum were established, and teacher-training facilities were upgraded to Colleges of Elementary Education. Projects like SAP, TTP, and the Science Education Project, which were funded by donors, had little effect on the organizational structure for nearly ten years. There were major shifts in the 1990s that resulted in the creation of new pre-service and in-service education institutions as well as a major restructuring of the teacher education system (Academy For Educational development Islamabad).

Curricula, Courses and Syllabuses

The last updates to the Primary Teaching Certificate (PTC) and Certificate in Teaching (CT) programs for teachers in elementary and middle schools were made in 1995. Curriculum development is the responsibility of the Curriculum Wing of the Federal Ministry of Education, working with the curriculum

bureaus in the provinces. The Curriculum Wing also develops the Bachelor of Education (B.Ed.) and Master of Education (M.Ed.) programs, which are then sent to universities via the Higher Education Commission (HEC), formerly the University Grants Commission (UGC). Universities decide whether to implement or modify their syllabuses based on advice from their academic councils. As part of the Teacher Training Project (TTP), the Curriculum Wing of the Ministry of Education created a thorough curriculum and course plan for teacher education in September 1996 that covered all teacher-training programs (Academy For Educational development Islamabad)

Courses	Entry qualification	Duration	Preparation for teaching
PTC(10+1)	S.S.C. (10)	1 Academic year	I-V
CT(12+1)	Intermediate (12)	1 Academic year	VI-VIII
B.Ed.(14+1)	B.A./B.Sc.	1 Academic year	IX-X
B.Sc.Ed(12+3)	Intermediate (Science)	3 Academic year	IX-X
M.Ed.	B.Ed.	1 Academic year	IX-X+ Teacher Education, supervision, Administration
M.A.Ed.	B.A/BSc	1 Academic year	do

Problems with Pakistani Teacher Training:

There are numerous issues that Pakistani teacher training programs must deal with, which affects their efficacy and quality. These problems, as emphasized by (Farah, 2016) underline the urgent issues

- Financial Restraints:** The inability of teacher preparation programs to meet the demands of contemporary education is a result of their financial struggles.
- Lack of Resources:** These institutions have a serious lack of resources, which negatively affects the quality of instruction by preventing them from having enough teaching aids, infrastructure, libraries, furniture, and educational materials.
- Examination System:** These colleges frequently have poor examination systems that fall short in terms of assessing and preparing future teachers.
- Teacher Absenteeism and Ineffective Administration:** Ineffective administrative management and teacher absenteeism constitute a serious issue. These problems make it more difficult for these organizations to run smoothly.

Additional research by (Jumani, 2015) identifies further challenges,

- Attracting Qualified Candidates:** Finding people who possess the skills and drive to become successful instructors is still a difficult task. Qualified and committed applicants are needed in the teaching profession, but finding them can be challenging.
- Equipping Teachers with the Right Skills:** It is critical to guarantee that educators have the pedagogical and subject matter expertise required. Teachers who have inadequate education and training may graduate lacking the competencies required to deliver high-quality instruction.
- Lack of Resources:** Labs, libraries, and technological facilities are examples of essential resources that teacher preparation schools frequently lack. This lack hampers teachers' professional development.
- Motivation and Salary:** Teachers' motivation is greatly impacted by low remuneration. To make

ends meet, many instructors look for extra part-time jobs, which demotivates them and impedes their professional development.

e) Unequal Distribution: Because of higher salary and superior amenities, well-trained teachers prefer metropolitan schools. Because of this preference, educational outcomes differ, with pupils in rural areas frequently obtaining subpar education.

These difficulties underline the necessity of extensive reforms to deal with the lack of resources, boost teacher enthusiasm, and guarantee that educators receive the proper training to deliver high-quality instruction throughout Pakistan's many locations (Jumani, 2015).

21st Century Skills

Definitions for 21st-century knowledge and skills are widely available. This essay does not, however, seek to present a different definition or advocate for one over the other. Rather, we display two well-known instances and identify recurring themes. One commonly cited example is the Assessment and Teaching of 21st Century Skills (AT21CS) consortium, which is funded by Cisco, Intel, Microsoft, and the University of Melbourne. It divides 21st-century skills, knowledge, attitudes, values, and ethics into four groups:

Thinking Styles: These comprise critical thinking, creativity and invention, problem solving, judgment, and learning (metacognition).

Methods of Operation: This calls for cooperation and communication.

Tools for Working: Information communication technology (ICT) literacy and general knowledge are included in this.

Living in the World: This covers social responsibility, life and professional skills, civic engagement, and cultural competency.

Tony Wagner, co-director of the Harvard Change Leadership Group, provides an alternative viewpoint in his book "The Global Achievement Gap" (Wagner T. , 2008)Wagner makes the following seven survival skills recommendations for students' preparation for 21st-century life, work, and citizenship, based on his extensive interviews with leaders in the business, nonprofit, and education sectors:

1. Problem-solving and critical thinking skills.
2. Cooperation as well as leadership.
3. Flexibility and swiftness.
4. Initiative as well as business acumen.
5. Efficient written and verbal communication.
6. Obtaining and evaluating data.
7. Imagination and curiosity.

The Asia Society and the U.S. Council of Chief State School Officers as the essential skills that students need to succeed in the twenty-first century recognize global competence. They characterize it as having the ability and mindset to comprehend and take action on global issues. Students who are globally competent, in this definition, Look into the world outside of their immediate surroundings. (Asia Society , 2011)

Acknowledge viewpoints from both their own and those of others.

Effectively convey concepts to a variety of audiences.

Take steps to make things better.

Even though the definitions of these and other 21st-century skills are multidisciplinary, and applicable to many facets of modern life in a complex world, most curricula do not yet give them a designated place.

Furthermore, many lists of 21st-century skills include traits that are not strictly skills, like creativity and curiosity. Most emphasize complex thinking, learning, and communication skills, which are harder to teach and learn than rote memorization and other simpler skills, despite differences in emphasis on technology, attitudes, and values (Curriculum Development Institute, 2001).

The Rationale for 21st Century Skills

In the new millennium of the twenty-first century, globalization and technological advancement have created new demands and challenges for individuals, groups, societies, and nations to participate, compete, and innovate in the global economy. According to (Wagner T. , 2008), there have been significant changes in the world over the past 20 years, and knowledge, information, and innovation now drive the economy in a way that was associated with the Industrial Revolution (Hillman, 2012). Acknowledged that over the past 20 years, technological advancements have transformed the world into a highly interconnected global village. The problems facing the world today are neither local nor international; rather, they are worldwide or transnational. People must acquire new skills in order to collaborate and survive in this global age, as well as to comprehend the challenges of this globalized world. The interconnectedness that has resulted in the globalized world has increased mutual dependence. In the modern world, the labor market is now viewed as a global marketplace, meaning that highly skilled workers in wealthy nations compete with people with similar skills in lower-wage nations for jobs. Twenty years ago, on the other hand, employment was localized, with competition for jobs coming only from within one's own nation (Khan H. , 2019). As noted by (Kay, K. & Greenhill, V., 2011), over 80% of jobs globally are now in the service sector rather than the manufacturing sector, necessitating the need for workers with 21st-century skills. After considering the foregoing discussion, it can be said that in order for our graduates to compete and survive in the modern global world, it is imperative that they acquire specialized skills. This can be achieved by providing students in general and higher education graduates in particular with the necessary 21st-century skills and knowledge to fulfill the demands of the knowledge-based economy in the contemporary global society (Khan H. , 2019).

Effectiveness of teacher education program in Pakistan

The effectiveness of teacher education programs in Pakistan has been a topic of interest and research. Here are some key points regarding the effectiveness of teacher education programs in Pakistan.

Quality and Relevance:

Concerns regarding the standard and applicability of Pakistani teacher education programs have been raised by a number of studies. They may not sufficiently prepare teachers to meet the various learning needs of students, frequently lack practical training, and are out of step with the requirements of the educational system (Shaikh, 2014).

Pedagogical Knowledge and Skills: Pakistani teacher education programs have come under fire for prioritizing content knowledge over pedagogical abilities and instructional strategies. This may make it more difficult for educators to involve students and encourage active learning (Awan, 2015).

In-Service Training:

Pakistan has introduced in-service training programs, which are designed to give teachers continuous professional development. Research, however, indicates that these initiatives frequently struggle with a lack of funding, poor design, and a small improvement in teaching methods (Tahir, 2012).

Infrastructure and Resources: The efficiency of teacher education programs can be strongly impacted by the infrastructure and resource availability. The quality of teacher education may be hampered by a lack

of access to cutting-edge teaching resources, technology, and well-equipped training facilities (Memon, 2019)

A consistent commitment to funding top-notch programs and assisting educators at every stage of their careers is required to raise the efficacy of education and teacher education initiatives in Pakistan. This entails addressing the fundamental problems that affect the nation's educational standards and offering teachers continual opportunities for professional development. These initiatives have the potential to raise educational standards and give Pakistani teachers and students greater opportunities.

Effectiveness of Teacher Education Programs in Promoting 21st-Century Skills in Pakistan

The extent to which Pakistani teacher education programs promote 21st-century competencies has been the subject of relatively little specific research. Research suggests that Pakistani teacher education programs might not be providing sufficient preparation for teachers to effectively integrate 21st-century skills into their pedagogical practices.

According to a study by (Naz, 2023) teachers in Pakistan were not trained in critical thinking, technology integration, communication, or teamwork. Similar results were found in another study, suggesting that Pakistani teachers lacked the knowledge and abilities needed to incorporate 21st-century skills into their lesson plans. Additionally, a British Council report from 2019 (British Council, 2019) emphasized how important it is for Pakistani teacher education programs to give teachers' development of 21st-century skills top priority. The significance of providing educators with training in digital literacy, critical thinking, problem-solving, communication, and teamwork was underscored in the report.

In conclusion, the literature that is currently available indicates that in order to better prepare teachers for successfully incorporating these skills into their teaching practices, teacher education programs in Pakistan should place a high priority on helping them develop 21st-century skills.

Research question:

How effective are teacher education programs in Pakistan in promoting the acquisition of 21st-century skills?

Research Methodology

This study explores teachers' lived experiences and perceptions of the difficulties and efficacy of Pakistani teacher education programs in promoting the acquisition of 21st-century skills. It does this by employing a qualitative research methodology. Because of its depth and capacity to offer a thorough investigation of the research topic, qualitative research is preferred (Creswell J. , 2013). A purposive sample of ten seasoned educators from diverse educational contexts will participate in structured interviews. According to (Patterson, 2022) purposeful sampling guarantees the selection of participants who possess rich and pertinent information regarding the research topic. The data will be subjected to a systematic and rigorous analysis with a six-step approach for thematic analysis, which will identify patterns and themes. According to (Lincoln, 2005), the findings will have greater credibility and dependability if multiple data sources are consulted, such as field notes and observational data. The BERA Ethical Guidelines (BERA, 2018) will serve as the study's guide for ethical considerations, which will prioritize informed consent, anonymity, and confidentiality. The study intends to provide a thorough understanding of the difficulties and efficacy of Pakistani teacher education programs for encouraging the acquisition of 21st-century skills through the use of a qualitative design.

Research Design

This study employs a case study research design, which was selected due to its appropriateness in enabling a detailed investigation of a particular phenomenon in its real-world setting. The case study

that was chosen centers on a teacher education program in Pakistan, which permits a thorough investigation of the complexities involved. The data collection method includes views from both teacher educators and teachers who have completed the program successfully, providing a comprehensive understanding of the program's impact and efficacy. (Stake, 1995; Creswell, 2013; Yin, 2018)

Data Collection Methods

The study employed well-established qualitative research techniques, which can be found in publications like Teachers College Press's "Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences" (Seidman, 2013). Two significant participant groups were involved in this case study: teachers who had successfully completed the program and teacher educators who were in charge of creating and implementing the teacher education program. Data for the study was gathered through structured interviews with these participants. The purpose of these interviews was to learn more about the participants' perspectives and experiences with the program as well as to identify challenges they faced when incorporating 21st-century skills into their instruction. Strategies (Creswell, 2013) Using this approach, the study aimed to provide a thorough understanding of how the teacher education program influences educators generally and graduates specifically in terms of incorporating 21st-century skills into their pedagogy.

Interview

To conduct case studies with ten teachers, this study's main methodology was structured interviews. The goal of these interviews was to obtain detailed information; in response to the participants' answers, more insightful questions were asked. After that, the case studies' patterns and themes were found using thematic analysis.

A preset list of questions is used in structured interviews, a popular qualitative research technique, to guarantee consistent data collection (Bernard, 2017). Benefits of this approach include systematic data collection, reduced bias for greater dependability, and an easily understood framework for analysis.

Researchers create an interview protocol with thoughtfully constructed questions to address research objectives in order to conduct structured interviews. Both standardized and qualitative data are provided by the open-ended and closed-ended questions (Creswell, 2019). Replication, comparability, and consistency are made possible by this systematic approach.

In structured interviews, rapport building is essential, and there should be clear instructions from the outset. It is crucial to take ethical factors like informed consent, confidentiality, and anonymity into account. Interviewers ought to receive training to ensure consistency and objectivity.

The study adhered to established guidelines to guarantee the reliability of the data (Creswell, 2019; Nowell, 2017). The issue of credibility was tackled by recognizing the positionality of the researchers and integrating personal reflections. Reviewing data with other researchers and assessing the findings' generalizability to different contexts improved transferability. Due diligence in the research design, which included a thematic data analysis approach, guaranteed dependability, and reliability.

In conclusion, structured interviews were used in this study to investigate the perceptions and experiences of teachers. The methodological rigor was directed by well-established principles to yield significant insights and efficiently addressing research questions.

Lastly, conformability was upheld by presenting the study's results as participants' ideas and experiences rather than reflecting the researchers' own characteristics and preferences. These measures collectively contributed to the overall credibility of the data, specifically the qualitative data, in this study.

Name	Gender	Age	Qualification	Experience /Years
Aneesa Bibi	Female	31	MA English, M.Phil Education	9
Uzma khalid	Female	29	Master	5
Saba Farid	Female		M.Phil Education	20
Jawaria	Female	33	MSc	8
Muhammad Idrees	Male	34	M.phil	11
Fawad Khan	Male	42	M.Phil	15
Zeeshan Khan	Male	35	BS Hons	6
JAwad	Male	33	BS Hons	8
Zohaib Khan	Male	27	BS Hons	3
Kashif	Male	29	Msc	5

Data Analysis Techniques

Thematic analysis was the main technique utilized in this case study to examine the information gathered from structured interviews. The methodical discovery of patterns and themes in the data is a key component of the thematic analysis process, which places a focus on interpreting the results in light of the primary research question. Both "The Coding Manual for Qualitative Researchers" (Saldaña, 2015) and "Thematic Analysis: Striving to Meet the Trustworthiness Criteria" (Nowell L. S., 2017) provide descriptions of this process.

The interview data underwent a comprehensive analysis process that included coding, transcription, and the application of both deductive and inductive methodologies. It was feasible to thoroughly analyze the challenges and advantages of the teacher education program in fostering the development of 21st-century skills in the unique context of Pakistan thanks to the combination of methodological approaches.

Our thematic analysis was reliable because we adhered to the recommendations made in the previously cited references. The study's conclusions offer significant new insights into how the teacher education program functions and how it influences teachers' acquisition of 21st-century skills in the Pakistani context.

Findings and results

The interviews with teachers and teacher educators covered a wide range of subjects, offering insight into the current state of Pakistani education as well as its possible future. Regarding 21st-century skills, the nation's current teacher education programs, the role that technology plays in fostering these skills, initiatives for teacher training and support, successful teacher education programs, methods for evaluating 21st-century skills, and recommendations for program improvement, participants shared their perspectives on a wide range of topics. When combined, these themes paint a complete picture of the challenges and opportunities that educators and decision-makers in Pakistan's educational system face. Additionally, they offer perceptive details regarding the strategies and techniques that can be applied to enhance instruction in compliance with the demands of the 21st century.

Theme 01 Understanding of 21st-Century Skills

Understanding 21st-century skills is essential for educators and policymakers to better prepare students

for success in the contemporary world. Critical thinking, teamwork, creativity, and digital literacy are just a few of the many competencies that are included in the concept (Trilling B. &, 2009). These abilities are considered necessary for people to successfully navigate the complexity of the workforce and society of the twenty-first century. They go beyond the conventional academic curriculum, emphasizing the growth of students' critical thinking, problem-solving, effective communication, collaborative work, and environment-adaptation skills.

Education systems throughout the world are incorporating these skills into curricula and instructional practices due to their recognition of their importance. This integration is a calculated attempt to guarantee that students have the knowledge and abilities needed to prosper in the twenty-first century. The Framework for 21st Century Learning emphasizes the significance of these skills in equipping students for the demands of the contemporary world and provides a thorough framework for comprehending and applying them (Trilling B. &, 2009).

In this advanced era, a teacher must have the idea of 21st-century skills for the sake of effective teaching and learning. As a student of education, I think that we have to inculcate critical thinking as well as qualities of investigating the real facts in our students. Keeping in view the futuristic approach the group work and projects will improve their leadership skills and through collaboration, they can achieve their desired goals.

Leadership: Making decisions and achieving missions and goals.

Collaboration: working with others to produce or create something or achieve a common goal.

Critical thinking: This is the ability to think in an organized and rational manner to understand connections between ideas or facts (Uzma Khalid).

The interviewers acknowledge the importance of 21st-century skills such as critical thinking, collaboration, and leadership in today's world.

They believe these skills are essential for success in collegiate programs and modern workplaces.

These abilities are put to use in college courses for tasks like information analysis, teamwork, and decision-making.

These abilities are valued in today's workplaces for their ability to solve problems, work well in teams, and make strategic decisions.

According to the interviewees, students need to have 21st-century skills in order to succeed in today's world.

They stress that these abilities promote resilience, inventiveness, and adaptability—qualities that are highly prized in both contemporary workplaces and college curricula.

Students utilize these abilities when conducting information analysis, working together with classmates, and exhibiting leadership.

The interviewees emphasize the significance of critical thinking, teamwork, and leadership in handling complicated problems, collaborating well in heterogeneous groups, and promoting constructive change. These results show that respondents generally agreed on the importance of 21st-century skills for both educational

These results show that respondents generally agreed on the importance of 21st-century skills in both professional and educational contexts. Critical thinking, teamwork, and leadership are considered to be crucial abilities for students to flourish in university courses and in today's society.

Theme 02: Teacher Education Programs in Pakistan

In Pakistan, teacher education programs are essential for determining the standard of instruction and equipping teachers to tackle the challenges of the twenty-first century. These courses are made to give teachers the fundamental knowledge, pedagogical abilities, and efficient teaching techniques they need to impart knowledge and encourage learning in their students. The National Education Policy of Pakistan emphasizes the need for alignment with changing student and societal needs and stresses the significance of improving the quality of these programs (National Education Policy of Pakistan., 2021).

Usually, the programs take a well-rounded approach, combining professional development opportunities, real-world teaching experiences, and theoretical coursework. The goal of this all-inclusive structure is to develop teachers' pedagogical expertise, subject-matter expertise, and classroom management skills. The education system in Pakistan can improve teacher preparation and ultimately raise the overall quality of education given to students by closely examining and improving teacher education programs (National Education Policy of Pakistan., 2021).

We cannot deny the importance of every 21st century skill but in my opinion Life skills are much crucial for students to acquire. Our students must be that much social so they can easily move in society and prove himself as a good and productive citizen. He must aware of his duties and rights so he may not be deprive of his due rights. He has the courage to take initiative for the betterment of the society. He has to be independent enough to use life management skills (Aneesa BiBi).

Based on the findings, here are few findings regarding teacher education programs in Pakistan and their focus on promoting 21st-century skills:

Curriculum Revision: Institutions in Pakistan have revised their curriculum to emphasize critical thinking, problem-solving, and creativity, reflecting a significant improvement in teacher education programs to address 21st-century skills.

Digital Literacy Emphasis: Teacher education programs in Pakistan recognize the importance of equipping teachers with digital skills through specialized courses on digital literacy, information literacy, and media literacy.

Integration of Technology: Teacher education programs in Pakistan prioritize the effective integration of digital resources, online platforms, and educational technology to enhance student engagement, collaboration, and digital literacy.

Interdisciplinary and Collaborative Approaches: Teacher education programs in Pakistan incorporate interdisciplinary and collaborative learning approaches, fostering teamwork, communication, and critical thinking among future educators.

Critical Thinking and Communication Skills: Critical thinking is acknowledged as a fundamental 21st-century skill, empowering students to become independent learners and problem solvers. Effective communication skills, including verbal, written, and digital communication, are emphasized for success in personal and professional contexts.

These findings demonstrate the efforts made to align teacher education programs in Pakistan with the demands of the 21st century, promoting curriculum revisions, digital literacy, technology integration, interdisciplinary approaches, and the development of critical thinking and communication skills among students.

Theme 03: Role of Technology in Promoting 21st-Century Skills

Through the provision of cutting-edge instruments, platforms, and resources that improve educational opportunities and speed the development of critical competencies, technology plays a critical role in advancing 21st-century skills. With the help of digital technologies, students can now collaborate, be

creative, think critically, and communicate in new ways, which gives them the ability to actively engage with material and create knowledge. According to (UNESCO, 2019) integrating technology into education allows for individualized and differentiated instruction, active and experiential learning, and the development of digital literacy skills that are essential for surviving in the digital age. Technology also makes it easier to access enormous information repositories, fosters cross-cultural understanding and global connections, and gets students ready for a workforce that is becoming more and more dependent on technology. Teachers can create dynamic, immersive learning environments that foster 21st-century skills and give students the competencies they need to thrive by effectively utilizing technology in the modern world.

Yes, of course, technology is the most significant part of learning advanced skills. In my opinion, a technology-oriented teacher more effectively conveys the lessons because he takes help from advanced searches, and gadgets help him to foster learning in their students (Saba Farid).

Based on the responses from interviewer, here are some findings regarding the role of technology in promoting 21st-century skills:

Technology facilitates access to information and resources, supporting the development of information literacy skills.

Collaborative technology tools enhance teamwork and communication among students, fostering collaboration and interpersonal skills.

Simulation software and virtual reality applications provide immersive learning experiences, promoting critical thinking, problem-solving, and empathy.

Coding platforms nurture computational thinking, creativity, and logical reasoning skills.

Online learning platforms and personalized learning tools support self-directed learning and the development of lifelong learning skills.

These findings highlight the various ways in which technology can contribute to the acquisition and development of 21st-century skills, including information literacy, collaboration, critical thinking, problem-solving, creativity, and self-directed learning.

Theme 04: Teacher Training and Support

Ensuring effective instruction and promoting professional growth among educators require teacher training and support. Reputable teacher preparation programs equip pre-service and in-service educators with the pedagogical strategies, knowledge, and abilities needed to address the wide range of student learning needs and foster student success. Sustained assistance, like coaching, mentoring, and professional development programs, improves teachers' teaching strategies and keeps them up to date on cutting-edge techniques and tools. According to research, comprehensive and ongoing programs for teacher training and support result in better student achievement, teacher retention, and instructional quality (Darling-Hammond L. H., 2017). Educational institutions can empower teachers to deliver high-quality instruction and effectively foster the 21st-century skills necessary for students to succeed in the workforce by investing in strong training and support systems in the modern world.

There is always room for improvement. Training programs is playing a crucial role in the acquisition of 21st-century skills by arranging training on various topics. There must be arranged a training specifically on 21st-century skills (M.Idrees).

Based on the interviewer responses, here are some findings regarding the role of teacher training programs in promoting 21st-century skills:

Teacher training programs are crucial for empowering teachers to facilitate the development and

application of 21st-century skills among students.

Training programs should focus on raising awareness and understanding of the various 21st-century skills to integrate them effectively into teaching practices.

Professional development should include training in innovative teaching methodologies and technology integration to foster 21st-century skills.

Inclusive and culturally responsive classroom strategies should be emphasized within training programs to promote equity and respect.

Ongoing support and mentoring are essential to help teachers refine their instructional practices and continuously improve their implementation of 21st-century skills.

These findings highlight the importance of teacher training programs in equipping educators with the knowledge, skills, and support necessary to promote 21st-century skills effectively in the classroom.

Theme 05: Successful Teacher Education Programs

Good teacher education programs are essential for providing teachers with the knowledge, abilities, and attitudes they need to succeed in the classroom, which in turn promotes positive effects on student learning outcomes. These well-received programs combine demanding academics with real-world application and ongoing professional development. The combination of these factors improves student achievement and the general quality of education while also increasing teacher effectiveness (Ingersoll, 2011)

Public and private sector universities, particularly in Pakistan, are working to effectively incorporate 21st-century skills into their undergraduate and graduate teacher education programs through curriculum revision, classroom assessment strategies, field-based teacher training, and technology integration (Saba Farid).

Through its integration of technology, emphasis on critical thinking and problem-solving, and provision of hands-on experiences through fieldwork and practicums, the Aga Khan University-Institute for Educational Development (AKU-IED) in Pakistan effectively promotes 21st-century skills.

The Lahore University of Management Sciences (LUMS) School of Education is dedicated to enhancing the pedagogical abilities of educators and implementing cutting-edge teaching approaches, thereby advancing the advancement of 21st-century competencies.

The Teachers' Resource Centre (TRC) in Karachi successfully encourages 21st-century skills by providing teachers with continuous support and mentoring, experiential learning strategies, and a lively learning community.

The Indus Resource Centre (IRC) in Pakistan develops 21st-century skills through various teaching approaches such as inquiry-based learning, critical thinking, and project-based learning. Contextualized learning, local language resources, and partnerships with schools and communities make this possible.

Through their teacher education programs, these institutions and organizations in Pakistan have been successful in promoting 21st-century skills, with a focus on technology integration, creative teaching methods, support for professional development, and collaboration among educators.

Theme 06: Assessment of 21st-Century Skills

Assessment of students' 21st-century skills is required to ascertain their level of competency and progress in acquiring these essential competencies. Conventional evaluation techniques, which emphasize content knowledge, might not adequately capture the complex and multidimensional nature of these abilities. To effectively measure and evaluate critical thinking, creativity, collaboration, and problem-solving skills, innovative approaches to assessment are essential. These tactics provide a more

thorough and accurate picture of students' competency in 21st-century skills. Performance-based assessments, portfolios, project-based assessments, and authentic tasks are a few examples of such tactics (OECD, PISA, 2018-19). Through the integration of suitable evaluation techniques, educators and policymakers can obtain significant understanding regarding students' capacity to utilize 21st-century competencies in authentic situations. The continuous improvement of education can be facilitated by using this information to inform instructional practices.

Every teacher education program has specific goals, and anyone can evaluate it based on how well those goals are met. Additionally, I believe that the effectiveness comes from teachers instilling these learned skills in their students. (Uzma Khalid)

Rubrics, performance-based evaluations, and self-assessment tools are useful tools for evaluating students' 21st-century skills.

Observations and portfolios can demonstrate how well students are developing 21st-century abilities like creativity, problem-solving, and effective communication.

Peer and group evaluations, along with authentic assessments that replicate real-life situations, can assess students' critical thinking, cooperation, and collaboration skills.

Surveys, questionnaires, and student feedback can provide important information about how well graduates of teacher education programs are being prepared to develop 21st-century skills.

Capstone projects, reflective journals, and alumni tracking are useful tools for evaluating how well teacher education programs integrate and foster 21st-century competencies in aspiring teachers.

These results illustrate a variety of techniques and approaches for assessing graduates of teacher education programs as well as students' competency in 21st-century skills.

Theme 07: Perceptions of Effectiveness

To assess the effects of technology integration and teacher education programs on teachers and students, it is critical to look at perceptions of their efficacy. These insights provide insightful viewpoints from key stakeholders, including educators, parents, administrators, and students, illuminating how these initiatives support the development of 21st-century skills and enhance student outcomes. Research (Creemers, 2008) has shown that positive perceptions are associated with higher levels of motivation, satisfaction, and engagement in both teachers and students. On the other hand, unfavorable opinions could make it more difficult to accept and apply new procedures. Stakeholders in education can identify opportunities for improvement as well as strengths and challenges by methodically gathering and analyzing these perceptions. The aforementioned data subsequently contributes to decision-making procedures and enhances the overall efficacy of teacher education programs and technology integration endeavors.

There is no specific training arranged by the Teacher education directorate on 21st-century skills. (Aneesa BiBi)

Here are some findings of the interview about perceptions

Program evaluations, student feedback, and alumni surveys are useful tools for evaluating how well teacher education initiatives foster 21st-century competencies.

Obtaining feedback from employers and examining student performance can yield significant insights into how graduates of teacher education programs are utilizing and evaluating 21st-century skills.

Studies that compare various teacher education programs can reveal differences in how well they are thought to promote 21st-century skills.

Studies that follow graduates of teacher education programs longitudinally can shed light on how their

21st-century skills develop over time.

The Teacher Education Directorate may not provide specialized training on 21st-century skills, but there is evidence of tactics that can be used to support these abilities, such as encouraging creativity, developing both lower- and higher-order thinking skills, and utilizing technology to support learning.

These findings show a variety of methods and approaches for evaluating the degree to which teacher preparation programs promote 21st-century skills. They also emphasize the importance of conducting comparative and longitudinal studies and gathering feedback from employers, alumni, and students in order to gain a comprehensive understanding of program outcomes.

Theme 08: Recommendations for Improvement

Many significant recommendations are offered to enhance teacher education programs and successfully integrate technology to develop 21st-century skills. First and foremost, opportunities for comprehensive and continuous professional development for teachers should be provided with targeted attention. With support from Darling-Hammond, (2017), this program aims to give educators the knowledge and skills they need to successfully integrate technology into their lesson plans.

Additionally, pedagogical strategies that promote critical thinking, creativity, collaboration, and active learning should be given top priority in teacher education programs. These methods are essential for equipping students to face the challenges of the twenty-first century.

It's also crucial to build strong collaborations between colleges, universities, and the larger educational community (OECD, PISA, 2018-19).

Finally, the creation and application of precise assessment frameworks and guidelines are essential for measuring and assessing 21st-century skills in an efficient manner. By putting these suggestions into practice, teacher education programs and technology integration can be greatly improved, better equipping educators and learners to meet the challenges of the twenty-first century.

First, the training institutions and classrooms must equip with modern technologies. Secondly, specific training on 21st-century skills should be arranged. (Aneesa BiBi)

Here are few main findings

The curriculum of Pakistani teacher education programs needs to be improved in order to specifically include the teaching and evaluation of 21st-century skills. This include giving faculty members opportunities for professional development, updating curriculum guidelines, and allocating funds for the creation of new materials.

In order to cultivate 21st-century skills in pre-service teachers, teacher education programs ought to embrace student-centered and inquiry-based pedagogical approaches that promote active learning, collaboration, and technology integration. To do this, platforms for exchanging efficient teaching techniques must be established, along with training and assistance for teacher educators.

Pre-service teachers should have more opportunities to observe and practice 21st-century skills in authentic classroom settings by strengthening and expanding their field experiences. This entails forming alliances with educational institutions, creating all-inclusive field experience programs, and giving pre-service teachers continual guidance and evaluation.

It is imperative that teacher education programs, educators, and experts collaborate and network in order to exchange best practices, resources, and research pertaining to the development of 21st-century skills. Professional learning communities, conferences, and collaborations between schools and programs can help achieve this.

To improve the development of 21st-century skills, teacher education programs should effectively

integrate technology. Establishing technology labs or resource centers, working with technology companies, and providing training and support for faculty members and pre-service teachers are all necessary to achieve this.

In order to promote 21st-century skills in teacher education programs, these findings emphasize the significance of curriculum enhancement, pedagogical approaches, field experiences, collaboration, technology integration, and ongoing professional development. They also recommend that in order to guarantee the efficacy of these initiatives, further study, assessment, and continuous improvement be conducted.

Discussion

In today's world, developing 21st-century skills is essential for students to succeed in their academic, professional, and personal endeavors. Employers, academic institutions, and people aiming for success highly value these abilities, which include critical thinking, teamwork, leadership, and more (Trilling B. C., 2009). They enable people to solve issues, negotiate complexity, and arrive at wise decisions.

One of the main components of 21st-century skills is critical thinking, which allows people to examine arguments, challenge presumptions, and analyze information (Richard W. Paul, 2006). It encourages originality, inventiveness, and the capacity for defensible decision-making grounded in logic. Another crucial ability is collaboration, which places an emphasis on efficient communication, teamwork, and utilizing a variety of viewpoints to accomplish shared objectives (Eva L. Baker, 2016). Making strategic decisions, inspiring and guiding others, and inspiring team members toward a common goal are all components of leadership skills (Northouse, 2018). Effective expression, teamwork, and idea sharing all depend on having strong verbal and written communication skills (James C. McCroskey, 1995).

In the digital age, technology proficiency and digital literacy are becoming more and more important (Allan Martin, 2015). For students to succeed in a technologically advanced society, they must be proficient with digital tools, adept at navigating online platforms, and capable of critically analyzing digital content (Howell, 2012).

Beyond these fundamental abilities, 21st-century learning encompasses habits that support student achievement as well as social, literacy, and innovative skills (P21, 2007). According to (Wagner T. , 2012), lifelong learning is facilitated by habits like perseverance and time management, innovation skills promote creative thinking, literacy skills cover both traditional and digital literacy, and social skills facilitate healthy relationships and productive social interactions.

Pakistani teacher education programs have taken steps to prepare teachers for the twenty-first century, realizing how important it is to support the development of these skills. These programs have been revised to include cutting-edge instruction, real-world applications, and specialized coursework to help students develop their critical thinking, teamwork, and leadership abilities (Khalid, 2018). Students' learning experiences are enhanced through the use of technology, project-based learning, and interdisciplinary approaches (Bain, 2014).

In Pakistan, initiatives to promote 21st-century skills have focused on improving infrastructure and resource constraints, updating curricula, and giving educators continual opportunities for professional growth (Farooq, 2011). Important tactics for effective implementation include involving the community and parents, encouraging teacher collaboration, and incorporating real-world experiences into the curriculum (Sarfraz, 2016)

The success of teacher education programs in preparing students for success in the twenty-first century will be ensured by ongoing evaluation, improvement, and problem-solving (Fullan, Leading in a Culture

of Change Personal Action Guide and Workbook. Jossey-Bass., 2014). It is impossible to overestimate the significance of program evaluations, student input, alumni surveys, employer feedback, and particular tactics in the development and evaluation of 21st-century skills in teacher education programs (Darling-Hammond L. &., 2005)

Conclusion

In conclusion, promoting 21st-century skills in Pakistani teacher education programs is an important undertaking that calls for a thorough and multidimensional strategy. Critical thinking, teamwork, creativity, problem-solving, digital literacy, and cultural competency are among the abilities that students need to possess to succeed in the quickly evolving world of today.

Pakistani teacher education programs have made great progress in integrating 21st-century skills into their approaches and curricula. They have made changes to the curriculum to place more emphasis on these abilities, successfully incorporated technology, and offered chances for project-based and hands-on learning. These programs prepare students for the demands of the digital age by embracing interdisciplinary approaches and hands-on experiences that allow students to apply their knowledge in real-world contexts.

But to increase these programs' efficacy even more, some issues must be resolved. Attention needs to be paid to quality control, skill application in the real world, and consistency in implementation. Educators must engage in ongoing professional development to ensure they possess the requisite competencies and expertise to successfully foster 21st-century skills in their pupils. Progress requires constant assessment and development, standardization of creative teaching strategies, and closing the knowledge gap between theory and practice.

Pakistani teacher education programs should make infrastructural and resource investments, rewrite the curriculum to emphasize critical thinking and creativity and offer opportunities for continuous professional development if they are to overcome these obstacles. Along with highlighting cooperation and teamwork, they ought to support lifelong learning and forge alliances with local communities and schools. Future educators will be better prepared to develop and promote 21st-century skills in their students if technology integration, practical experiences, and support for teachers in their professional growth journey are integrated into the curriculum.

Additionally, it is important to use assessment techniques to gauge how well students are acquiring and using 21st-century skills. Performance-based evaluations, self-assessment instruments, portfolios, observations, and reflections can all offer insightful information about how well students are progressing. Educators can effectively assess students' progress and customize instruction to meet each student's needs by combining these methods.

To sum up, Pakistani teacher education programs have made great strides in encouraging teachers and students to have 21st-century skills. By combining these abilities with cutting-edge teaching strategies, technology integration, teamwork, and real-world experiences, students are better equipped to prosper in a world that is changing quickly. To increase the efficacy of these programs, however, issues like consistency in execution, quality control, skill application in the real world, and ongoing professional development for educators must be resolved. Teacher education programs in Pakistan can better prepare students for success in the modern world by putting the recommended strategies into practice and always aiming for improvement.

Limitations of the study

Although the goal of this research paper is to examine the difficulties and efficacy of Pakistani teacher education programs in fostering the acquisition of 21st-century skills, it is crucial to recognize certain limitations of this investigation. These restrictions present possibilities for future investigation and study.

First off, the effectiveness and challenges of teacher education programs in Pakistan are the specific focus of this study. As a result, it's possible that the results have no direct relevance to other nations or educational settings. To obtain a more comprehensive understanding and pinpoint optimal approaches, future research endeavors may juxtapose the obstacles and efficaciousness of teacher education initiatives among diverse nations.

Second, in order to address the difficulties and efficacy of teacher education programs, this study draws on previously published literature and research. A more thorough understanding of the current status of teacher education programs in Pakistan could be obtained by conducting primary research, such as surveys or interviews with teachers and teacher educators, even though the literature review offers insightful information.

Thirdly, the perspective of teacher education programs and their effects on both pre-service and in-service teachers are the main subjects of this study. In order to obtain a more comprehensive understanding of the efficacy of teacher education programs in promoting 21st-century skills, future studies could incorporate the perspectives of employers, students, and educational policymakers.

The study delves into a broad spectrum of 21st-century competencies, encompassing critical thinking, teamwork, leadership, communication, digital literacy, social skills, literacy, innovation, and habits that promote student achievement. Subsequent research endeavors may explore in greater detail each particular skill and how it fits into teacher education programs, offering more in-depth perspectives on the difficulties and methods for advancing each skill.

Finally yet importantly, the difficulties and efficacy of teacher education programs are the main subjects of this study. Future studies could examine how acquiring 21st-century skills affects student outcomes like academic success, employability, and general well-being. Furthermore, to evaluate the long-term impacts of teacher education programs on the integration of 21st-century skills in classrooms and the larger educational system, longitudinal studies could be carried out.

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