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Analyze the Teachers' Understanding towards 4Cs Skills at Non-Formal Primary Schools

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Abstract
Analyze The Perceptions of Teachers' Understanding towards 4Cs Skills at Non-Formal Primary Schools in District Chiniot. The study was a descriptive by nature. Qualitative research design was used to gather the data from 20 teachers from non-formal primary schools in Chiniot District. Semi-structured interviews were conducted with the help of purposive sampling technique. Thematic analysis techniques were used to analyze the data. The results showed that teachers understood the significance of 4Cs and applied the questioning technique, interactive discussion, collaborative learning, problem solving, and creative classroom practices to develop the 4Cs. The effective implementation was however hampered by a lack of professional development opportunities, insufficient teaching materials, lack of curricular flexibility, lack of space in schools, and examination-focused pedagogy. The study found that a successful integration of the 4Cs takes place when there is continuous professional development were existed; the presence of supportive educational policies; curriculum changes; availability of the teaching resources; and teaching approach that is learner-centered. Educational authorities are advised to improve teacher training courses and ensure that teacher training equips them with the necessary competencies to integrate 21st century skills effectively in their teaching methods to boost up instructional effectiveness and the quality of primary education.

Keywords: *Critical Thinking, Communication, Collaboration, and Creativity*

Introduction

The educational landscape of the twenty first century has dramatically changed as a result of rapid technological change, globalization and the complexity of today's societies. Education systems are no longer limited to imparting content knowledge, but are focused on providing

students with the skills necessary to face new challenges and to cope with real-life situations. Modern education systems place a strong emphasis on student competence and require students to exhibit higher-order thinking, flexibility, and innovation. These shifts signify a need for an increasingly skilled workforce with the ability to work collaboratively, across cultures, and to be lifelong learners. As a result, the emphasis on rote learning is shifting to interactive and student-centered learning that emphasizes skills. This move underscores the necessity of embedding key skills into the curriculum to equip learners with the necessary tools and abilities to meet future challenges and opportunities within this ever-changing global landscape (Thornhill-Miller et al., 2023).

The concept of the 4Cs, namely Critical Thinking, Communication, Collaboration, and Creativity is one of the most prominent frameworks that have come up to meet these educational demands. These skills are considered universal for the success in learning and work area. Critical thinking helps students to process information and make decisions, and helps them communicate effectively. Working together develops team working and problem solving, and creativity promotes innovation and new ideas. The skills are interrelated and cannot be acquired one after the other because many competences have to be applied at the same time to achieve effective learning. The incorporation of these skills in the teaching and learning process has grown in importance, highlighting the need for a pedagogical approach that is increasingly focusing on integrating them into the classroom to provide a learning experience that washelp promote the growth and development of students (Romero, 2026).

Primary education is an important pathway to developing these key skills because it is a time when children are starting to learn key cognitive, social, and emotional skills. In this year, students learn basic literacy and numeracy skills and also start to think, communicate and interact with others. The benefits of early exposure to 21st century skills have been found to positively impact pupils' academic achievement and personal development. The use of the 4Cs at the primary level assists students to gain confidence, enhance problem-solving skills and foster a positive attitude to learning. In addition, the early integration of these skills promotes curiosity and creativity, which are crucial for lifelong learning and adapting to the rapidly changing world (Wang & Shen, 2025).

In the context of the 4Cs, teachers play a pivotal role in the successful implementation of 4Cs in education by devising and implementing teaching methods that promote the 4Cs. High-quality teaching uses interactive approaches such as group work, inquiry-based learning and project learning, which help students to think critically and engage in peer collaboration. However, there are several obstacles for many teachers to implement such practices, including insufficient training, resources, and institutional support. Teachers' understanding of the 4Cs and their openness to new teaching approaches can affect their capacity to implement the 4Cs in teaching. To support teachers in developing the 21st-century skills in the classroom, therefore, continuous professional development and training programs are needed (Sukirwan et al., 2024).

Statement of the Problem

While the world has been focused on 21st century skills, very few classroom environments have a strong presence of the 4Cs – Critical Thinking, Communication, Collaboration, and Creativity. Most schools still continue to have teacher-centred approaches to teaching and learning, where learning is achieved through memorization and repetition, rather than through learning skills, limiting students' potential to acquire higher-order thinking and application skills. The lack of training of teachers and their ability to use 21st century pedagogical approaches are also important problems. However, many teachers have not been provided with sufficient professional development to integrate the 4Cs in their instructional methods, leaving the theoretical knowledge of new teaching methods and their application in the classroom to be disconnected. In addition, a significant gap between the curriculum statements and actual classroom practices, especially in districts like Chiniot, can be seen. While curricular intentions may focus on skill building and learner-centered practices, factors such as structure, institutional, and instructional constraints may not be present in the classroom. Thus, the need to evaluate teachers' knowledge and skills to use the 4Cs in teaching is like a strong force. Assessment of these competencies can be utilized to show where a gap exists and evidence can be provided to enhance teacher training and improve instruction in order to meet the growing 21st century educational needs so there is a dire need to analyze the Perceptions of Teachers' Understanding towards 4Cs Skills at Non-Formal Primary Schools in District Chiniot.

Objectives of the Study

1) Analyze the Perceptions of Teachers' Understanding towards 4Cs Skills at Non-Formal Primary Schools in District Chiniot

Research Questions

1) How does Analyze the Perceptions of Teachers' Understanding towards 4Cs Skills at Non-Formal Primary Schools in District Chiniot?

Significance of the Study

This study is important because it has global challenges and local educational issues of Pakistan. As the issues of the 21st century are constantly emerging, like unemployment, population growth, poverty, and lack of job opportunities, development of 21st century skills are of great significance to prepare a competent and skilled workforce. The study was be applied to the 4Cs (Critical Thinking, Communication, Collaboration, Creativity), thus enabling to bridge the gap between traditional education and the requirements for modern skill based learning. The results of this study was be advantageous to the teacher as he or she was be able to better develop better teaching strategies to develop and teach the 4Cs skills in the classroom. It was also enable learners to build core skills needed for learning and employment. Moreover, the research was serve as a guide to curriculum designers when developing and updating curricula in accordance with the standards of education and labor market requirements around the globe.

Limitations of the Study

The study was delimited to District Chiniot due to limitations of time, financial resources, and accessibility.

Delimitations of the Study

- The study was limited to non-formal basic education teachers belonging to the Chiniot District only.
- Analyze The Perceptions of Teachers' Understanding towards 4Cs Skills at Non-Formal Primary Schools.
- The findings of the study were used for generalizable only to non-formal teachers within the same division and may not represent other educational settings or regions.
- The scope of the study was restricted to a specific category of teachers, excluding those from formal, special, and private educational institutions.
- Due to contextual and institutional differences, the results may not fully reflect the situation of other districts or provinces in Pakistan.

Review of Literature

The first theme explored teachers' conceptual understanding of the four competencies: critical thinking, communication, collaboration, and creativity. The findings revealed that most participants demonstrated awareness of the importance of these skills for improving students' learning abilities and preparing them for future educational and professional demands.

The findings indicated that teachers viewed critical thinking as an essential ability that enables students to analyze information, solve problems, ask questions, and develop independent opinions. Participants emphasized that primary education should move beyond memorization-based learning and encourage students to understand concepts through reasoning and practical application.

However, teachers also identified that examination-oriented teaching practices often limit opportunities for developing critical thinking because classroom activities frequently focus on completing syllabus requirements rather than engaging students in analytical tasks.

These findings are consistent with recent research emphasizing that critical thinking development requires active learning environments where students participate in inquiry-based activities, problem-solving exercises, and reflective discussions. Choi et al. (2022) reported that learner-centered teaching approaches significantly contribute to the development of higher-order thinking skills among students. The findings showed that teachers considered communication skills important for improving students' confidence, participation, and ability to express ideas effectively. Teachers identified classroom discussions, presentations, questioning activities, and interactive learning tasks as important approaches for enhancing communication abilities.

The analysis revealed that communication was not limited to speaking skills but also included listening, expressing opinions, and participating actively in classroom interactions. Teachers believed that students who develop communication skills become more confident learners and participate more effectively in academic activities. This finding supports the research of van Laar et al. (2022), which highlighted communication as a fundamental 21st-century skill that enables learners to collaborate, share knowledge, and participate effectively in modern learning environments.

The findings revealed that teachers considered collaboration an important competency for developing students' ability to work with others, exchange ideas, and participate effectively in group learning activities. Participants indicated that collaborative learning activities help students develop social interaction, cooperation, responsibility, and respect for different viewpoints.

Teachers reported that group assignments, peer learning activities, and classroom discussions are commonly used strategies to encourage collaboration among primary-level students. However, some challenges were identified, including differences in students' participation levels and difficulties in managing collaborative activities within limited classroom time. The findings suggest that teachers recognize collaboration as more than simple group work; rather, they perceive it as a process through which students learn from each other and develop interpersonal skills. Recent research by van Laar et al. (2022) emphasized that collaboration skills are essential 21st-century competencies because they promote teamwork, knowledge sharing, and collective problem-solving among learners.

The results showed that teachers perceived creativity as the students' capacity to think outside the box and invent ideas in innovative activities. Participants recognized creative tasks, storytelling, drawing activities, project work and practical learning experiences as helpful means of fostering creativity in Primary students.

The analysis revealed that teachers felt that creativity would grow if they gave students the chance to think creatively and generate their own ideas, not just listen to their teacher's suggestions. Traditional teaching methods and testing also were cited as limiting opportunities for creativity, however, teachers noted. These results are consistent with recent research that highlights the role of teaching strategies that foster creativity in children's active participation and curiosity, as well as the development of innovation. The classroom environment is a crucial factor in students' creative development, as it provides opportunities for experimentation and open-ended learning activities, according to Huang et al. (2023).

In a study by Lo and Romero (2025), they examined reflective practice in pre-service teachers and came up with creativity as one of the important competency that has to be developed during the teaching process. They found that reflection empowered teacher candidates to examine problems, propose other solutions and enhance the decision making process in teaching. Based on the researchers' findings, it can be concluded that reflective activities are able to enhance creative thinking by forcing teachers to move beyond routine activities. The study has emphasized the importance of creativity in the development of teachers to implement innovative and learner-centered approaches in modern classrooms.

Taqwa et al. (2025) conducted a review of international studies that used the 4C framework, where creativity was found to be a significant skill relevant to innovation and education enhancement. Their results indicated that creativity leads to problem-solving skills, adaptability and lifelong learning skills. The researchers said schools need to have a learning space to allow students and teachers to experiment, collaborate and develop new ideas. They advocated for the reinforcement of teacher training programmes in order to train teachers to

imitate and apply creativity-oriented teaching methods across various subjects. The findings revealed that teachers promoted critical thinking mainly through questioning techniques, problem-solving activities, and discussions based on real-life situations. Teachers reported that encouraging students to explain their answers and provide reasoning helped them develop deeper understanding and analytical abilities.

The analysis showed that questioning was considered one of the most practical strategies for stimulating students' thinking processes. Teachers attempted to move students from memorizing information toward understanding concepts and applying knowledge in different situations. These findings support recent educational research indicating that inquiry-based and problem-oriented teaching strategies improve students' analytical abilities and encourage deeper learning. Zohar and Barzilai (2021) highlighted that teachers play a central role in developing students' higher-order thinking by designing classroom activities that require reasoning and evaluation.

The findings showed that teachers used different interactive activities to improve students' communication abilities. These activities included classroom discussions, oral presentations, question-answer sessions, and opportunities for students to express their opinions. Teachers emphasized that communication development requires an encouraging classroom environment where students feel comfortable sharing their ideas. The findings suggested that students' confidence increased when teachers provided opportunities for active participation.

Methodology

A descriptive qualitative design enables the researcher to Analyze The Perceptions of Teachers' Understanding towards 4Cs Skills at Non-Formal Primary Schools in district Chiniot.. This design offers a chance to explore teachers' experiences in their context in which education takes place, as social and institutional factors affect educational practices.

Population

The population of present study is 20 teachers of primary schools engaged in Non Formal Education in district Chiniot. These teachers are the people who know first-hand of classroom practices and can offer excellent feedback on how the four competencies – critical thinking, communication, collaboration and creativity – are being developed and implemented.

Sampling Technique

Purposive sampling was used for selecting participants in this study. For this study, teachers were chosen based on involvement in primary level teaching and having useful information on the integration of 4C in teaching.

Sample Size

In the present study the number of sample teachers is 20 from primary level teachers of District Chiniot. This is deemed to be an appropriate number, as the results of the qualitative interviews with a focused group of participants can give detailed information about the experiences and perspectives of the teachers on the implementation of the 4Cs. The answers that come out of these participants was assist in identifying trends, obstacles and practices

associated with critical thinking, communicating, working with others, and creativity within the primary school context.

Research Instrument

The interview guide was open-ended questions based on the four dimensions of 4Cs – critical thinking, communication, collaboration and creativity. The questions were directed to teachers' awareness of these competencies, to strategies implemented in the classroom to encourage these competencies, and to difficulties encountered in implementing the competencies.

Validity

To ensure credibility, the interview guide was carefully developed, participants were chosen carefully, and participants' responses were interpreted accurately. The researcher was keep comprehensive records of the research process to increase the dependability and conformability of the research.

Transfer ability were enhanced by providing a description of the research context, participants and procedures. These strategies were enabled readers to see how the findings are relevant to other educational contexts.

Data Collection

In this study, Semi-Structured interviews were used to gather data from the primary school teachers of District Chiniot. Participants was be contacted and notified about the purpose of the study prior to conducting interviews. Interviews were held in a time and location convenient for participants to ensure a comfortable environment to share their experiences. The interviews was given participants the opportunity to reflect on, share experiences, and talk about their classroom experiences and understanding of critical thinking, communication, collaboration, and creativity. The researcher was take note of and arrange the participants' responses to be analyzed later, ensuring accuracy and completeness of the response gathered.

Data Analysis (Thematic Analysis)

Thematic analysis were given through several stages: familiarizing oneself with the collected data, developing initial codes, finding potential themes, reviewing and refining themes, defining themes, and creating a report. The responses that are made during the interviews was closely studied for common themes about teachers' understanding and practice of the 4C's.

Table 1 *Demographic Characteristics of Participants*

Characteristics	Categories	Frequency (n)	Percentage (%)
Gender	Male	10	50
	Female	10	50
Teaching Experience	1–5 years	6	30
	6–10 years	8	40
	Above 10 years	6	30
Educational Qualification	Name degree	I	%
	Graduation	7	35

Bachelor of Education (B.Ed.)	9	45
Master's Degree	3	20

Table 1 indicates that the demographic profile indicates that participants represented a balanced distribution of male and female teachers, with varied professional experience 1–5 years, 30% responses, 6–10 years, 40% responses and Above 10 years have 30% responses. Teachers with different levels of experience contributed diverse perspectives regarding classroom practices, teaching strategies, and challenges associated with integrating 21st-century skills.

Table 2 *Teachers' Understanding of the Importance of 4Cs*

Categories	Description	Number of Teachers Reporting (n) -%
Critical Thinking	Development of reasoning, questioning, and problem-solving abilities	16-80%
Communication	Improvement of expression, confidence, and interaction skills	18-90%
Collaboration	Encouragement of teamwork and peer learning	15-75%
Creativity	Development of innovation, imagination, and idea generation	17-85%

Table 2 indicates that 80% non formal teachers were agreed about development of reasoning, questioning, and indicates that 90% non formal teachers were agreed about problem-solving abilities were very effective for non formal teachers, indicates that 75% non formal teachers were agreed about Improvement of expression, confidence, and interaction skills, encouragement of teamwork and peer learning, indicates that 85% non formal teachers were agreed about development of innovation, imagination, and idea generation.

Table 3 *Major Themes and Sub-Themes Identified from Interview Data*

Major Themes	Sub-Themes
Theme 1: Teachers' Understanding of 4Cs	Understanding of critical thinking, communication, collaboration, and creativity
Theme 2: Classroom Practices for Developing 4Cs	Teaching strategies, classroom activities, student engagement
Theme 3: Teachers' Role in Promoting 4Cs	Teacher facilitation, supportive learning environment, professional development

Theme 4: Challenges in Implementing 4Cs	Limited resources, curriculum constraints, assessment practices, lack of training	
Theme 5: Suggestions for Effective Implementation	Teacher training, curriculum improvement, institutional support	

Table 3 indicates that the identified themes demonstrate that teachers recognize the importance of 4Cs but experience several contextual challenges in implementing these skills effectively. The findings indicate that teachers' practices are influenced by classroom conditions, available resources, curriculum requirements, and professional development opportunities.

Table 4 *Teachers' Understanding of the Importance of 4Cs*

Categories	Description	Number of Teachers Reporting (n) -%
Critical Thinking	Development of reasoning, questioning, and problem-solving abilities	16-80%
Communication	Improvement of expression, confidence, and interaction skills	18-90%
Collaboration	Encouragement of teamwork and peer learning	15-75%
Creativity	Development of innovation, imagination, and idea generation	17-85%

Table 4 indicates that 80% non formal teachers were agreed about development of reasoning, questioning, and indicates that 90% non formal teachers were agreed about problem-solving abilities were very effective for non formal teachers, indicates that 75% non formal teachers were agreed about Improvement of expression, confidence, and interaction skills, encouragement of teamwork and peer learning, indicates that 85% non formal teachers were agreed about development of innovation, imagination, and idea generation

Findings

Table 1 indicates that the demographic profile indicates that participants represented a balanced distribution of male and female teachers, with varied professional experience 1–5 years, 30% responses, 6–10 years, 40% responses and Above 10 years have 30% responses. Teachers with different levels of experience contributed diverse perspectives regarding classroom practices, teaching strategies, and challenges associated with integrating 21st-century skills.

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skills, encouragement of teamwork and peer learning, indicates that 85% non formal teachers were agreed about development of innovation, imagination, and idea generation.

Table 3 indicates that the identified themes demonstrate that teachers recognize the importance of 4Cs but experience several contextual challenges in implementing these skills effectively. The findings indicate that teachers' practices are influenced by classroom conditions, available resources, curriculum requirements, and professional development opportunities.

Table 4 indicates that 80% non formal teachers were agreed about development of reasoning, questioning, and indicates that 90% non formal teachers were agreed about problem-solving abilities were very effective for non formal teachers, indicates that 75% non formal teachers were agreed about Improvement of expression, confidence, and interaction skills, encouragement of teamwork and peer learning, indicates that 85% non formal teachers were agreed about development of innovation, imagination, and idea generation

Conclusion

1. It was concluded that maximum of non formal teachers were agreed about development of reasoning, questioning, as well as problem-solving abilities were very effective for non formal teachers, therefore, improvement of expression, confidence, and interaction skills, encouragement of teamwork and peer learning, and development of innovation, imagination, and idea generation.
2. It was concluded that teachers viewed critical thinking as an essential ability that enables students to analyze information, solve problems, ask questions, and develop independent opinions. Participants emphasized that primary education should move beyond memorization-based learning and encourage students to understand concepts through reasoning and practical application.
3. It was concluded that maximum non formal teachers were agreed about questioning techniques, problem-solving, tasks, analytical discussions, likewise classroom discussions, presentations, student participation activities, therefore, group activities, peer learning, cooperative tasks, and project work, drawing, storytelling, practical activities.
4. It was concluded that teachers promoted critical thinking mainly through questioning techniques, problem-solving activities, and discussions based on real-life situations. Teachers reported that encouraging students to explain their answers and provide reasoning helped them develop deeper understanding and analytical abilities.

Discussion

The diversity of participants strengthened the findings because teachers' experiences and professional backgrounds influence their understanding and application of innovative teaching approaches. Previous research has highlighted that teachers' qualifications, experience, and professional exposure influence their ability to adopt student-centered approaches and promote higher-order skills among learners (González-Pérez & Ramírez-Montoya, 2022).

Rahman and Karim (2024) examined teacher perceptions of the communication and collaborative skills in learner-centred classrooms. The researchers identified that positive

interaction between teacher and student increased classroom participation, increased student expression and increased the social ties between the teacher and student. They pointed out that communication helps teachers to gain the insights of learners and give them suitable teaching support. The study suggested that interactive teaching, discussion and cooperative learning techniques should be integrated to improve the communication skill of the teacher and students.

In technology-enhanced learning environments, it was shown that the communication competencies of the teachers affected students' interaction with digital learning activities (Yıldırım & Gülbahar 2022). It is important for teachers to be clear about what they expect, to respond promptly, and to make interactions meaningful, the researchers reported. The study pointed out that with the development of digital education, communication ability has become more and more significant. The results indicate that the teachers in modern times should have flexible communication skills to meet the new educational contexts.

Martin et al. (2022) examined interpersonal communication in educational contexts and highlighted the connection between teacher-student interpersonal communications. The researchers discovered that teachers who were empathetic, listened to students and communicated in a supportive way were more effective at cultivating positive classroom climate. They stated that good communication leads to trust, decreases conflict in class, and allows students to be engaged in learning. The study reinforces the need to incorporate communication as a key component of the 4Cs framework, as it enhances social interaction and collaborative learning.

Recommendations of the Study

1. Regular training programs may be organized to enhance teachers' knowledge and practical skills regarding 4Cs-based teaching strategies, student-centered approaches, and creative classroom activities.
2. The primary education curriculum may be include more activity-based learning opportunities that promote critical thinking, communication, collaboration, and creativity rather than focusing mainly on memorization.
3. Schools may be provide adequate teaching materials, technological facilities, and supportive learning environments to enable teachers to implement interactive and creative teaching methods.

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