



Exploring the Educational Journey at Home: A Phenomenological Study of Homeschooling Parents' Strategies for Developing 21st Century Learning and Innovation Skills

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Abstract

This study explores homeschooling parents' perceptions of the significance of developing 21st-century learning and innovation skills, specifically the 4Cs: communication, collaboration, critical thinking, and creativity, and the strategies they utilize for this purpose. This phenomenological study explores the lived experiences of eight purposively selected homeschooling parents in Karachi through semi-structured interviews. The data were transcribed, coded, grouped, and thematized to explore parents' perceptions, strategies, and assessment practices related to the development of the 4Cs. The findings revealed that participants consistently recognized the importance of these skills and emphasized the value of individualized and self-directed learning, as well as learning through practical life experiences. Strategies such as project-based learning, problem-based learning, real-life learning approaches, outdoor activities, and mentor collaborations were identified as important practices. The assessment patterns involved a combination of formal and informal methods, with personal growth, knowledge enhancement, emotional stability, social development and skill acquisition identified as key areas of assessment. The findings suggest that homeschooling can provide a flexible and purposeful learning environment in which parents adapt learning experiences to their children's interests, needs and development, with implications for educators, policymakers and homeschooling communities.

Keywords: *Homeschooling, 21st-Century Learning and Innovation Skills, Communication, Collaboration, Creativity, Critical Thinking*

Introduction

Homeschooling has been a trending approach for a few years, particularly in Pakistan. Many countries had to shut down their institutions due to the COVID-19 catastrophe, and children from most parts of the world were drastically affected (Economic Commission for Latin America and the Caribbean [ECLAC] & United Nations

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Educational, Scientific and Cultural Organization [UNESCO], 2020). COVID-19 caused disruptions in many sectors, including the education sector, which was prominently affected, and that was the time when online learning turned out to be a savior for many. This drastic shift led to frustrating and baffling scenarios for students. Parents' points of view regarding the online educational process reveal that dissatisfaction with remote learning strategies was one of the motivating factors for starting homeschooling for their children (Jabeen & Siddiqui, 2023). Furthermore, the demand in today's world is the acquisition of 21st-century learning and innovation skills, popularly known as the 4Cs: communication, critical thinking, collaboration, and creativity. This research aims to explore homeschooling parents' awareness of incorporating 21st-century learning and innovation skills development in their children.

The Four C's model: Creativity, Critical Thinking, Communication, and Collaboration skills, collectively referred to as the "4C Skills" due to their common initial letter in English, represents a modern approach to educating individuals, where emphasis lies on the growth and development into well-rounded students, rather than merely high-test-score achievers.

These are mandatory for understanding the complexities of the current time and navigating the challenges of the modern era. Boosting critical thinking directs individuals to logically build up from pieces and construe knowledge in an enriching manner. Enhancing creativity provides a platform for transforming synthesized information into ingenious outputs.

Additionally, communication and collaboration skills encompass the capabilities to work together to solve issues, articulate and express oneself effectively, and adapt to diverse scenarios (Ağaoğlu & Demir, 2020; Partnership for 21st Century Learning [P21], 2015).

A study conducted in Pakistan found that parents opted for homeschooling for several reasons, including dissatisfaction with traditional schooling, concerns about the quality of education, and the need for a more personalized learning experience with greater individual attention. The study also highlighted challenges faced by homeschooling parents, including societal pressure, curriculum-related difficulties, and the absence of clear legal and regulatory frameworks (Fatima et al., 2023).

Moreover, Tahira et al. (2021) provide an understanding of the broader educational context in Pakistan that may also influence homeschooling experiences. Their study highlighted several challenges in early childhood education, including limited access to quality preschool education, inadequate teacher training, and inequalities in educational opportunities across different regions of the country.

Additionally, one study provided an examination of the assessment and promotion of 21st-century learning and innovation skills, highlighting their demanding role in constructing the future of work and education. The authors highlight the all-rounded nature of these skills, focusing on the components of creativity, critical thinking, communication, and collaboration and their importance in various domains

(Thornhill-Miller et al., 2023).

Problem Statement

The Dawn newspaper's article reflects upon the present condition of homeschooling in Pakistan, where the transition towards this alternative approach of education is motivated by dissatisfaction with traditional patterns of schooling. Also, it throws light upon the hurdles faced by homeschooling families such as the accreditation process, lack of clear regulations, and institutional frameworks (Hassan, 2020). Within the local context, some research has been conducted on homeschooling, including parental perspectives on Pakistan's homeschooling educational system (Fatima et al., 2023), the benefits of learning at home (Qureshi & Ali, 2022), and homeschooling in the context of educational shifts during the pandemic (Jabeen & Siddiqui, 2023).

At the international level, research has examined 21st-century learning and innovation skills from diverse perspectives, including their implementation in English Lesson plans (Azhary & Ratmanida, 2021), their integration into education through evaluation, based on an activity example (Ağaoğlu & Demir, 2020), and strategies for their development through a systematic literature review (González-Salamanca et al., 2020). Research has also given profound ideas on equipping parents for effective homeschooling, such as the HOME framework (Kinzer et al., 2020).

However, the gap lies in understanding the techniques utilized by homeschooling parents in Pakistan to develop 21st-century learning and innovation skills in their children. Although some studies have explored the reasons for opting for homeschooling, parental perspectives, challenges, and benefits of homeschooling in Pakistan (Fatima et al., 2023; Jabeen & Siddiqui, 2023; Qureshi & Ali, 2022), limited attention has been given to how homeschooling parents intentionally incorporate and develop these skills within their children's learning experiences. Similarly, international research has examined the implementation and assessment of these skills in educational settings (Ağaoğlu & Demir, 2020; Azhary & Ratmanida, 2021; González-Salamanca et al., 2020) and has provided frameworks for supporting parents in homeschooling (Kinzer et al., 2020). However, limited research has explored how homeschooling parents themselves perceive, foster, and assess the development of the 4Cs within the homeschooling environment.

This gap is particularly pertinent within the Pakistani context due to its distinct educational, cultural, and societal dynamics. The challenge of overcrowded classrooms, which limits individualized and personalized educational processes, still persists (Mahmood et al., 2022). The use of traditional strategies also adds to the problems of education in Pakistan (Khan et al., 2020). In order to face these challenges, homeschooling becomes a savior for many in the form of alternative education. Therefore, the present research focuses on exploring how homeschooling parents in Pakistan perceive and define 21st-century learning and innovation skills, the strategies they apply to foster these skills in their children, and the criteria and methods they use to assess their development. By focusing on the lived experiences of

homeschooling parents, this study seeks to extend existing research beyond the reasons and challenges associated with homeschooling and provide insights into the intentional development of essential 21st-century learning and innovation skills within the home-based educational context.

Research Objectives

The research particularly aims to achieve the following objectives:

1. To investigate how homeschooling parents perceive and define the four 21st-century learning and innovation skills: critical thinking, creativity, collaboration and communication, within the context of their children's education.
2. To identify the strategies applied by homeschooling parents with various educational backgrounds to foster the development of 21st-century learning and innovation skills in their children and how these strategies are adapted to fit their children's individual learning styles and needs.
3. To explore the criteria and methods used by homeschooling parents to assess the effectiveness of their efforts in promoting 21st-century learning and innovation skills, including both academic growth and social-emotional development.

Research Questions

The following research questions guided the study:

1. Within the homeschooling context, how do parents perceive and define the four 21st-century learning and innovation skills: critical thinking, creativity, collaboration and communication, in their children's education?
2. What specific strategies do homeschooling parents with various educational backgrounds employ to foster the development of 21st-century learning and innovation skills, and how are these strategies adapted to fit their children's individual learning styles and needs?
3. How do homeschooling parents assess the effectiveness of their educational strategies in promoting 21st-century learning and innovation skills, and what criteria or indicators do they use to evaluate success, at the academic and social-emotional level?

Significance of the Study

While homeschooling is becoming a prominent trend worldwide, including in Pakistan, research on its role in developing 21st-century learning and innovation skills in students remains limited. This study addresses this gap.

The study explores how homeschooling supports the development of the 4Cs. This knowledge can inform policymakers and education authorities in developing and

regulating homeschooling practices that effectively support and nurture these skills, such as guidelines for parental support programmes and curriculum development for homeschoolers. Educators and curriculum designers can gain valuable ideas for designing learning experiences that foster these vital skills within home-based educational settings. By gaining evidence-based knowledge of purposeful strategies, such as project-based learning, inquiry-based learning, learning through real-life experiences, and the lived experiences of other homeschooling families, parents can make appropriate decisions about their children's education.

The study also provides a foundation for future research exploring the relationship between homeschooling, skill development, and educational outcomes in various cultural backgrounds. Comparative studies between homeschooled and traditionally schooled students in Pakistan, research on initiating and evaluating the effectiveness of parents' training programmes, research exploring technology use and its impact on lifelong learning within the homeschooling context, and longitudinal studies tracking homeschooled students' success in higher education or careers can further extend research on the phenomenon.

Literature Review

Theoretical Framework

Constructivism can be considered as one of the most relevant theories to the research problem since it focuses on students, their interests, and their needs. It leads the homeschool educators in understanding the ways to create a solid theoretical foundation for their child's education (Bourgeois, n.d.). Homeschooling parents plan their educational journey in accordance with each child's interests, strengths and inclination towards particular area, providing individualized learning experiences (Lindner & Schwab, 2025). The use of project-based learning (Saldo & Walag, 2020), is a prominent example of the constructivist approach.

Learners actively construct their knowledge by connecting new information to their existing understanding. Through this process, new information can be integrated into existing knowledge frameworks, while in some situations, existing understanding may require modification to accommodate new ideas. One of the umbrella approaches that comes under constructivism is student involvement and engagement through active learning (Munna & Kalam, 2021). Therefore, the individualized learning practices and active learning strategies commonly associated with homeschooling provide a relevant theoretical basis for understanding how homeschooling parents may foster 21st-century learning and innovation skills among their children.

The study by Ah-Nam and Osman (2017), through an intervention module, reflects the effectiveness of a constructivist-constructionist learning domain in stimulating academic accomplishments and 21st-century skills. This stance encourages the use of problem-solving techniques and collaborative inquiry, project-based learning, self-assessment, and effective communication abilities, moving beyond orthodox teaching practices. These skills help individuals to cope with the complexities of the real-world scenarios, further depicting the significance of constructivist-constructionist principles in the educational process of the individual. The findings of this study therefore support the relevance of constructivist principles to the present research,

particularly in relation to problem-solving, collaboration, communication and active learning through design and inquiry.

Moreover, constructivist theory gives direction to the research methodology by adopting qualitative research method such as semi-structured interviews of the parents in order to gain insights from the lived experiences of the participants in regarding productive strategies central to constructivism and their role in developing 21st-century learning and innovation skills.

Research Motivation

Understanding the phenomenon of homeschooling and the strategies it employs for developing 21st-century learning and innovation skills is important for theoretical and practical reasons. First, this knowledge can provide unique ideas to educators and policymakers. Second, by addressing this problem, this research has strong potential to shape instructional pedagogies to support the acquisition of the 4Cs in diversified teaching and learning environments. This research addresses the identified gap by providing insights into how homeschooling provides a purposeful environment for the development of essential competencies. The findings may also hold relevance for varied educational settings, including formal classrooms, online sessions and hybrid models through independent learning tasks, providing insights into the development of these skills in an interconnected world.

Review of Related Literature

The literature on homeschooling and 21st-century learning and innovation skills: communication, collaboration, creativity and critical thinking, provides an understanding of varied perspectives and outcomes associated with this educational approach. The flexibility in the curriculum, the strategies utilized according to the child's pace, and the environment created in accordance with the individual's interests, focusing on academic as well as social-emotional upbringing, give homeschooling an upper hand over traditional learning setting (Lapon, 2021). This emphasis on flexibility and individualized learning is also reflected in research conducted in the Pakistani context, where personalization and parental involvement emerge as important features of homeschooling. Homeschooling can continue even after elementary school. As long as parents can remain profoundly engaged in their child's learning process, it remains a feasible option (Fatima et al., 2023). Fatima et al. (2023) also explored the triggering factors which lead parents to opt for homeschooling, including parents' qualification, concerns about the school environment, bullying, unnecessary pressure of exams, and a desire for a more individual-centered educational process. The study also mentioned cost savings, implicating that homeschooling revolves more around creative ideas, where various activities are incorporated in accordance with the available resources and customized to future planning, which is not possible in a professional setup. Similarly, Afreen et al. (2025), in a qualitative study of homeschooling parents in Pakistan, found that parents chose homeschooling for reasons including academic outcomes, personality development, flexibility, and cost-effectiveness. The study also highlighted parental

involvement and societal pressure as important challenges in the homeschooling experience. In addition to exploring challenges, Qureshi and Ali (2022) investigate the benefits of homeschooling in Pakistan. The researchers highlight the personalized nature of homeschooling, allowing children to learn at their own pace. Moreover, homeschooling was found to build closer parent-child relationships and enable families to incorporate cultural and religious values. The study also notes the need for adequate support to ensure successful homeschooling experiences, emphasizing the importance of community networks and access to educational materials. Fatima et al. (2023) mainly focused on the reasons and circumstances that lead parents to choose homeschooling, whereas Qureshi and Ali (2022) focused more on its benefits and the learning environment created at home. Both studies, however, highlight parental involvement and individualized learning as important aspects of homeschooling.

These findings also suggest that the flexibility of homeschooling may provide opportunities for personalized learning as well as broader development through everyday experiences and interactions. The study by Qureshi and Ali (2022) also depicts the cultivation of 21st-century learning and innovation skills, with the help of practical life exercises, healthy interactions with family, community and environment, helping children to realize the responsibilities and duties, giving them liberty to follow their passions, involving in active learning processes, stimulating critical thinking when the young minds are free from the entanglement of instructional goals only, not restricting the decision-making ability during the educational endeavors, providing ground for intellectual creativity, enhancing communication skills and a strong sense of collaboration. While these studies provide useful insights into the environment and experiences that may support 21st-century learning and innovation skills, limited attention is given to the specific strategies that homeschooling parents intentionally use to develop and assess these 4Cs.

More recently, Ray et al. (2026), through a systematic review of empirical research on homeschooling, provide an overview of the existing research on homeschooling and highlight the need to explore its different dimensions. The review further depicts that homeschooling research has examined not only academic achievement but also social and emotional development and success in adulthood, while emphasizing the need for further research on parent-led home-based education. This broader perspective is relevant to the present study, which focuses on the educational practices and skill development experiences within parent-led homeschooling.

Homeschooling can be a potent approach of education. To support homeschooling families, communities can apply the "HOME" based approach, which implies HELPING families find the right fit by encouraging personalized learning, OFFERING a variety of teaching resources and curriculum designs, MAKING homeschooling socially acceptable by addressing stigmas and informing the public of its benefits, and EMPOWERING homeschool partnerships through support for hybrid homeschool organizations (Kinzer et al., 2020). The 21st century has witnessed a paradigm shift driven by rapid technological advancements.

Digital technologies have transcended geographical and temporal boundaries,

transforming the educational landscape and expanding access to information and learning resources across the world (UNESCO, 2023). Within this changing educational landscape, the development of 21st-century learning and innovation skills has gained particular importance.

21st-century learning and innovation skills or the 4Cs are complex, “higher-order” soft skills, which might best be referred to as competencies (Thornhill-Miller et al., 2023). Several frameworks have been developed by research organizations, scholars, and, in some cases, with support from private-sector companies in the USA and Europe (Karaca-Atik et al., 2023). Previous research comparing different skills frameworks found that the “Framework for 21st-Century Learning,” published by the Partnership for 21st Century Learning (P21), is widely referenced in the literature and provides a more detailed conceptualization of 21st-century skills (Karaca-Atik et al., 2023).

The P21 framework identifies Learning and Innovation Skills; Information, Media and Technology Skills; and Life and Career Skills as key areas. Learning and Innovation Skills focus on creativity and innovation, critical thinking and problem solving, communication, and collaboration (P21, 2015). Thus, while the literature provides a clear conceptual understanding of the 4Cs, the challenge remains in understanding how these competencies are translated into everyday learning practices, particularly within homeschooling environments.

Enhancing creativity involves removing the constraints imposed by words and encouraging free thought. Critical thinking is nurtured through exercises that challenge logical reasoning and analytical abilities. Collaboration fosters learning from peers with diverse skill sets, promoting teamwork and knowledge sharing. Improving communication skills focuses on clarity and conciseness in expressing ideas, prioritizing substance over embellishment (Chidiac & Ajaka, 2018). Modes of e-learning through e-books, journals, Google, YouTube, video learning, e-learning applications, etc., allow homeschoolers to research, explore, and navigate through their requirements and enhance the ability to critically analyze the authenticity of information globally available (Shofwan et al., 2022). Community resources such as public libraries (Pannone, 2019) also support the development of 4Cs. These findings demonstrate that the development of the 4Cs is not limited to formal classroom instruction and can also be supported through digital resources, community environments, and opportunities for independent exploration. This is particularly relevant to homeschooling, where parents have greater flexibility to select resources and activities according to their children’s interests and needs.

In the context of Turkey, one study suggests various ways to inculcate 21st-century skills in students: policymakers should collaborate with educators and stakeholders to help outline the ideal skill set for citizens. They can study successful international programs and conduct local case studies to bring about the needed changes in the curriculum. Priority should be given to technology-based and activity-based learning

environments. Teachers should be allowed to update themselves on 21st-century skills; furthermore, these skills should be a prominent part of teacher education programs. Collaboration and online training platforms can further empower educators to deliver effective skill-based learning (Ağaoğlu & Demir, 2020).

Promoting 21st-century skills requires not only teacher training but also elements like instructional time and the overall learning environment (Azhar & Ratumanan, 2021). Unlike the formal school context emphasized in these studies, homeschooling places parents at the centre of planning, implementing, and assessing learning experiences. This creates a distinct educational context in which the development of these skills may depend on parents' understanding, strategies, available resources, and ability to adapt learning experiences to individual children.

Overall, in the reviewed literature, Pakistani studies mainly provide insights into parents' motivations, benefits, challenges, and experiences of homeschooling, whereas international literature provides broader frameworks and strategies related to homeschooling and 21st-century learning and innovation skills.

However, these two areas of literature have largely remained separate. Limited research has brought together the homeschooling context and the intentional development of the 4Cs by exploring how parents themselves perceive, implement, and assess these skills in their children's learning experiences. This unresolved issue provides the rationale for the present study, which adopts a phenomenological approach to capture the lived experiences of homeschooling parents and their perspectives in developing 21st-century learning and innovation skills.

Methodology

Following an exploratory phenomenological qualitative research design, the research studied the lived experiences of homeschooling parents. This study acknowledged a subjectivist perspective, depicting, that parents build their own realities of homeschooling in relation to 21st-century learning and innovation skill development. Furthermore, it aligned with constructivism, postulating that knowledge is actively constructed through interrelationships, interactions, and experiences with their children. The research followed a mono-method strategy, depending exclusively on qualitative data collection and analysis methods. The study adopted a cross-sectional time horizon, and the primary unit of analysis was the parents themselves.

Data Collection

Eight purposefully selected homeschooling parents residing in Karachi, Pakistan, participated in the study. Participants were identified through local homeschooling networks and relevant social media homeschooling communities. The participants were selected through purposive sampling, based on the criteria that they were directly involved in their children's homeschooling journey and their ability to share

experiences related to the development of 21st-century learning and innovation skills. Participants had been homeschooling their children for at least one year. The study included parents who were directly involved in planning, facilitating, or supporting their children's learning. The semi-structured interview questions were asked, with each interview conducted for about 30–40 minutes, and the responses were audio-recorded with informed consent to ensure authenticity of data collected. The interviews were held over a period of time, starting on March 29, 2024 and ending on April 20, 2024. The questions were designed to explore their perspective on how homeschooling may lead to the growth of skills among children, which are essential for today's era. The participants were informed of the objective of the study and were given surety of their anonymity and privacy. The semi-structured interviews allowed participants to describe their experiences freely while enabling the researcher to explore areas related to homeschooling practices, 4Cs, and the ways parents perceive and assess their children's

development. The interview questions were prepared in line with the research objectives and in a way that allowed detailed and in-depth exploration of the phenomenon. Given the exploratory and phenomenological nature of the study, the sample was limited to eight participants to allow for an in-depth exploration of their lived experiences. The interviews were examined for recurring experiences, practices, and perspectives related to homeschooling and the development of 21st-century learning and innovation skills.

Recurring patterns across the participants' responses helped in developing and refining the themes. Several measures were adopted to enhance the trustworthiness of the study. Credibility was supported through the use of semi-structured interviews, audio recording with participants' informed consent, detailed transcription of the interviews, repeated review of the transcripts, and the use of direct participant quotations to support the findings. Peer debriefing was also conducted through discussions with the research supervisor during the coding and theme development process. These discussions helped in reviewing the emerging interpretations and themes. Transferability was addressed by providing contextual information about the participants, their homeschooling experiences, educational backgrounds, and the study setting. Dependability was supported through the systematic process of transcription, open coding, grouping, and thematization. Confirmability was enhanced by grounding the findings and interpretations in the participants' accounts and representative quotations.

Data Analysis

The data analysis followed four stages: transcription, coding, grouping and thematization (Saldaña, 2011). The audio-recorded interviews were transcribed (Intelligent Verbatim transcription). The coding process was conducted manually. The transcriptions were read repeatedly to develop familiarity with the participants' accounts, followed by open coding to identify meaningful statements and recurring ideas related to homeschooling and 21st-century learning and innovation skills. An inductive form of coding was applied, whereby categories were developed from the data. The initial codes were compared across the interviews and similar codes were grouped together to form broader categories. These categories were then examined for recurring patterns and relationships, which informed the development of themes. The emerging themes were reviewed against the original interview transcripts to ensure that they remained grounded in the participants' experiences and adequately represented the data. Themes were refined by combining overlapping categories, separating distinct ideas, and revisiting the participants' accounts before final names were assigned to the themes. Representative quotations from participants were kept to support the interpretation and presentation of themes. The refined themes were organized and presented in the findings section. The analysis was iterative and open to emerging concepts, with the coding process and themes refined as new ideas emerged from the participants' accounts.

Findings

The data analysis revealed lived experiences of eight parents regarding their ongoing homeschooling journey with their children. Parent 1 (P1) had been homeschooling their child for approximately two and a half years, starting when the child was 3 years old. Parent 2 (P2) had been homeschooling for approximately three and a half years, with children aged 7.5 years and 4.3 years. P3 had been homeschooling for a year, with children aged 9 years and 5 years. P4 had been homeschooling for almost seven years, with children in grades 5, 3, and 1. P5 started homeschooling their daughters around the time the younger one started talking, with ages 6 years and 2 years. P6 had been homeschooling their children since birth, with ages 6 years and 5 years. P7 had been homeschooling her children for over 14 years, describing her approach as both homeschooling and unschooling, with her children aged 15 and 11 years. P8 had been homeschooling their seven-and-a-half-year-old son from the beginning of the child's education.

Motivational Forces to Homeschool

The respondents mentioned their dissatisfaction with their own academic lives, where the major focus was rote learning, sitting at one seat for long periods, burdening the students to get done with the syllabus on time; furthermore, bullying and favoritism by teachers. Though there are certain schools providing diverse modes of learning patterns, they are out of range for some parents. P3 was motivated to homeschool when she got admission to B.Ed.; she realized that what she was studying and what was happening in schools were contradictory.

Some parents opted to homeschool in response to their children's introverted nature; furthermore, to the realization that skill development is more important than solely acquiring degrees. P6 explained that her own educational experience and realization of the importance of basic life skills influenced her decision to homeschool.

Motivation to homeschool my child arose during my worst phase of life, when I was having severe postpartum depression, and I realized after having 16 years of education that certain basic life skills are very much needed to keep going in my life. I was lacking that.... And then the whole scenario and the whole thinking of education changed for me, and then I took a deep dive and finally landed on homeschooling. (P6) P7, an educationist, and her thirst to research different approaches like Montessori and Waldorf further strengthened her desire for a more self-directed educational approach for her children.

Educational Background of Parent

Parents belonged to diverse educational backgrounds such as finance, computer engineering, occupational therapy, economics, mass communication, or pursuing education-related programs. Parents also increased their horizon of knowledge through courses such as parenting courses, various certifications, or Montessori diploma. When asked if parents' educational background helped them in this process, parents' responses mostly relied on their professional experience, research, exploration, and community engagement, along with the foundation developed through their education.

Selection of Study Material

When asked if parents followed any particular curriculum to homeschool their children, most were not in favor of structured or rigid curriculum patterns. They mentioned mainly internet resources to get ideas for teaching strategies, along with regular meetups with other homeschooling parents. In one case, the mother, being a B.Ed. student, discussed the study patterns with her peers. One parent reported:

I made a separate group of my own. It has just started. It's been a few months. And I have thought to put my own strategies in it. Homeschooling is not about just copy-pasting the school syllabus at home. It's a very different thing.... Every mother is different, so every child is different. Every child has a different style. Every child learns differently. Every child has a different favourite subject. So, we have to do it accordingly. (P5)P4 described a unique approach to selecting study material, where she also gave her children the status of being in grades 1, 3, and 5. She selected courses of reputable schools that are readily available at bookstores, offering complete grade-level packages. To make a decision, she compared the subject's books from different sets and chose the ones that best suited her child's needs.

P7 followed a unique approach of independent study, where parents hand over control of learning to their children, making them self-directed learners and allowing them to choose the subjects they study because learning comes from 'within'. The parent strongly advocated educator John Holt's approach towards self-directed learning facilitated by parents who provide an enriched environment.

I did not want them to follow, but to be the followers. I want them to be the leaders.... I let them choose what they want to do.... He is following his own unschooling approach.... He is doing internships. He's really interested in research. He's really interested in history. He's really interested in political science and international relations. So, he's doing an internship in that particular area. And he is completing his schooling. Connecting all that learning with real-life experience, but not sitting for an examination. So, he's studying mathematics and biology and physics and everything. Everything high schoolers would be studying, but he is not studying that for an examination. He's studying that to make a portfolio, make his own portfolio, creating his own system. So that's what he's doing. I usually get this inspiration and everything from my own kids, what they want to do. And then I go outside and do my research and come back to them. (P7).

Socializing Activities

Interviews revealed that homeschooling parents went beyond textbooks, fostering communication and collaboration skills through diverse activities like park visits, sports teams, storytelling sessions, vocational training programs, or book clubs. They encouraged interaction with peers and adults at gatherings or outings, and involved children in daily tasks for real-world practice. By modelling respectful communication and responding to their children's questions and concerns thoughtfully, homeschooling parents aimed to prepare them to interact confidently in different social settings. "They play with sand, they bake at home, they do swimming, they do horse riding, when they fight, they do find a solution for themselves" (P6).

Healthy Educational Competitions

Parents highlighted that leading children towards various healthy competition platforms also played a major role, as such contests go beyond testing knowledge. Presenting findings to the members and professionals refines communication skills, while group projects encourage teamwork and collaborative problem-solving. Also, analyzing information and devising strategies for challenges serve as a stimulus for critical thinking and innovative ideas.

My kids have been participating in different international programs throughout their lives. Be it, the World Artificial Intelligence Competition for Youth. I took my kids to the United States to participate in the Human Subaru Summit as a speaker. They were invited as speakers because they liked their idea about the project. (P7).

Increased Opportunities for Practical Learning

Homeschooling parents employed diversified strategies to polish the critical thinking and creativity skills in their children. These techniques often focused on practical applications, hands-on learning, and kinesthetic and visual learning experiences. Parents created logical scenarios from daily routines and encouraged children to navigate through these situations, building decision-making abilities.

When my daughter was in 4th grade, the first thing that came to her mind was friction. What is friction? She didn't understand what friction was. So, I made her wear skating shoes, and we went to the grass. We had grass on which she had to skate, and we had a plain floor on which she had to skate. She couldn't skate on the grass, but she could skate on the floor very easily. So, this was a practical example for her. When there is friction, it means that you can't skate easily. There is a force of friction in the grass that you can't skate on. There is no friction on the floor. She understood this very easily, and she never forgot that thing. (P4).

Project and Problem-Based Learning

Parents described the use of problem-based learning and project-based learning methods as opportunities for developing communication and collaboration abilities. Parents also looked for diverse opportunities outside the home to give their children further exposure in this regard. P7 talked about a very interesting 'The Destination Imagination' program which follows a project-based learning approach leading towards the development of 21st-century skills. Introduced by a parent seeking innovative educational opportunities for her child, this program emphasizes child-led exploration and teamwork. Through months of project work, children engage in hands-on learning experiences, developing essential skills while completing challenges related to topics of interest. The program encourages autonomy and problem-solving, with minimal adult intervention to promote independent critical thinking. Participating in showcases provides children with opportunities to present their projects, fostering confidence and public speaking skills.

The program's non-competitive nature underscores the importance of collaboration and creativity over winning, aligning to instill a love for lifelong learning.

Creative Activities

Parents talked about how creativity is nurtured through activities such as painting, arts, and daily life practices, nature walks, as well as through experiments using household items. Enriching environments and experiences were prioritized to trigger intellectual growth, while digital literacy and design skills were developed through platforms like Canva. P6 expressed her opinion that creativity goes beyond something tangible; problem-solving is also creativity, and getting something positive out of a very worst situation is also creativity. P4 fostered her child's creativity in writing practices, where the use of appropriate vocabulary and scenarios emerged from her continuous reading practices.

Room to Explore

The interviews revealed that, to support children's growth and development, learners were given opportunities to experience the world in their own way, to traverse and to take in the impressions of the world and all its ideas. Homeschooling provided opportunities for exploration as the baseline for the development of crucial 21st-century skills. As children explored their passions, they collaborated on projects, activities, or programs. Exploration ignited creativity through artistic expression, experiments, and imaginative projects. Critical thinking was also developed as children found ways to navigate challenges, analysed different pieces of information, and made decisions.

I'll introduce a program to them. I'll tell them about the program, and then I'll let them explore. The one thing that I do differently from other people and that has made a very, very, very huge difference in my kid's life is that I connect them with experts and mentors. I search for them. For example, my son is connected with a chief Technology Officer of a renowned company living in Houston. He's Pakistani, but he lives in Houston. He's a very talented person. So, my son is connected with him. He talks with him monthly about different topics, about what he's doing, CubeSat technologies, maybe history, maybe geography, things like that. So, I connect them with mentors. My daughter is connected with space science and STEM enthusiasts. (P7).

P7 explained that she approached different mentors to guide her children and had gathered multiple mentors over the years. Based on this experience, she introduced a program called "Chalk Talk," through which these mentors were also made available to other children.

Assessment Patterns

Homeschooling parents prioritized skills over traditional academic benchmarks. The study revealed that some parents viewed university degrees as less essential than equipping their children with the necessary skills to move forward in the modern world. Parental perspectives and approaches to assessment varied widely. P1 suggested setups like Junior's Facebook group and Mommy Space for regular assessments, conducted every two to three months for a small fee, aiding in all-round evaluations. Others, like P2, utilized online testing platforms like Genius Cerebrum to monitor their children's academic responses in relation to various subjects, offering comprehensive feedback on a regular basis. P3 emphasized a combination of formative and summative assessments, using homemade worksheets and teacher-provided papers to assess basic conceptual understanding. P4 opted for traditional admission tests to assess their child's readiness for the next level. P5 and P8 indulged in direct interaction and questioning on particular concepts to assess the understanding level and skill development. P6 planned to formally assess their child's progress in the future, possibly after adopting and following the formal curricula. Lastly, P7 used comprehensive research and exploration-based strategy, focusing on supporting their child's educational journey and securing a diploma in the particular area of interest with regards to future opportunities. P7 further explained that she explored different pathways for obtaining a diploma, including an option where her child could demonstrate learning through projects and other forms of assessment and have these skills converted into a transcript.

Furthermore, all parents used observation as the firsthand tool to assess their children's social and emotional development. Their behavioral patterns, emotional strength in complex situations, resilience power, working through real world situations, empathy towards others, respectful communication patterns, the way they tackle conflict with siblings and friends, healthy dialogue, regular interactions with different aged group people, self-regulation, availing mentorship opportunities and the way children reflect through the practicality of life, all these helped parents assess their children's social-emotional learning process.

Discussion

In response to the research question examining perspectives on the concept of 21st-century learning and innovation skills, the 4Cs; communication, collaboration, creativity and critical thinking, each parent presented positive responses on the importance of these skills and described their deliberate efforts to foster them within their children. With regards to communication and collaboration, parents emphasized that the stereotypical view of homeschooling children being stuck within the four walls of homes is absolutely unrealistic. Outdoor visits, interaction with other people, joining various clubs, and involving them in various activities provided opportunities for social interaction and helped children develop confidence.

These findings are consistent with Qureshi and Ali (2022), who identified better socialization as one of the benefits experienced by homeschooling families in Pakistan, while the present study further illustrates how parents intentionally create such opportunities within their homeschooling practices. Teaching responsibility and socially responsive behaviour was also a priority among the interviewed parents. By modelling respectful communication and addressing children's questions, and concerns in a mindful manner, homeschooling parents aimed to equip them for success in any social setting. This emphasis on communication as an interactive process is also compatible with Constructivism, as learning develops through interaction and the exchange of ideas rather than through one-directional transmission of knowledge.

Furthermore, parents described motivating and leading their children towards healthy competition, while also implementing problem-based and project-based learning methods to develop communication and collaboration abilities. This finding is consistent with Saldo and Walag (2020), who highlighted the use of project-based learning in relation to the development of 21st-century skills. The present findings similarly indicate that parents use project-based, problem-based, and activity-oriented experiences, suggesting that these approaches can operate beyond formal classroom environments. These teaching techniques offer a number of opportunities for children to communicate with one another, leading to meaningful skill development. The student-centered, inquiry-based nature of such strategies, with the educator acting as a facilitator, can promote self-directedness and self-reflection while supporting the development of 21st-century learning and innovation skills, particularly collaboration and communication (Ah-Nam & Osman, 2017; Saldo & Walag, 2020). The relevance of these approaches to constructivist learning is also supported by Ah-Nam and Osman (2017), whose work highlights problem-solving, collaborative inquiry, project-based learning, self-assessment, and effective communication within a constructivist-constructionist learning environment.

In the same way, parents demonstrated a sound understanding of the importance of developing creativity and critical thinking skills. These findings are consistent with Vatansever and Ahmetoğlu (2019), who emphasize practical-life activities and learning through real-life and daily activities within the Montessori approach. Together, these findings suggest that the 4Cs can be developed through experiences that allow children to actively construct understanding, solve problems, communicate with others, collaborate with others, and reflect on their learning, providing a clear connection between the observed homeschooling practices and the constructivist theoretical framework.

Homeschooling emerges as an educational approach that accommodates individualized strengths and interests, where parents use flexible curriculum patterns that are as per their child's specific learning needs. This finding is in line with Lapon (2021), who highlighted curriculum flexibility, learning according to the child's pace, and an environment created as per individual interests as important elements of homeschooling.

The present findings further indicate that parents also use children's interests as a basis for decision-making, exploration, and selection of relevant learning experiences. Parents' own educational expertise was found to be beneficial to their homeschooling practices, but it was not the sole factor influencing their approaches, as Kinzer et al. (2020) highlight the importance of various forms of support and resources in homeschooling. Some parents mentioned that pursuing higher-level academic achievement, such as a university degree, was not their sole desire for their children and was not considered as necessary as commonly perceived.

Qureshi and Ali (2022) similarly highlighted the role of practical life skills, decision-making, and following children's interests and passions for their maximum development. Hence, learning extends beyond academic achievement to include independence, decision-making, exploration, and preparation for real-life situations. This is particularly aligned with Constructivism, as learners are encouraged to actively construct knowledge through meaningful experiences rather than simply reproduce information.

Homeschooling parents employ diversified strategies and go beyond textbooks to polish critical thinking and creativity skills in their children. They create purposeful environments with engaging activities that put learning into action, like artwork, hands-on practical life exercises, or even turning everyday tasks into problem-solving opportunities. These findings relate to Vatansever and Ahmetoğlu (2019), who emphasize practical learning through real-life activities within the Montessori approach. The present study elaborates this understanding by reflecting that such experiences can also emerge from ordinary household activities and everyday problem-solving situations. The role of parents as facilitators can further be understood from a constructivist perspective, where they connect children's existing experiences with new knowledge and provide opportunities for active exploration and interaction with the surrounding environment (Ah-Nam & Osman, 2017).

In the context of homeschooling research, it is important to explore initiatives that support the development of 21st-century learning and innovation skills. One such prominent venture, as introduced by a homeschooling parent, is the formation of "Chalktalk.world," a platform that connects children with mentors and experts from diverse professions across the world, providing opportunities for communication far from typical school settings. This initiative illustrates how homeschooling can provide opportunities for collaboration among parents, learners, and mentors while also nurturing a passion for exploration and lifelong learning. Such initiatives further demonstrate that homeschooling does not imply learning in isolation. This finding complements the constructivist view that learning is strengthened through social interaction and exposure to diverse experiences.

The findings show that parents help their children learn at their own pace, moving away from rote learning and using flexible teaching approaches and learning styles. This finding is consistent with Qureshi and Ali (2022), particularly in relation to flexibility and learning at the child's own pace. However, the present study highlights an additional dimension: parents attempt to balance this flexibility with preparation for future academic requirements, suggesting that homeschooling does not necessarily involve complete rejection of formal educational expectations.

These findings also respond to the need highlighted by Ray et al. (2026) for further research on parent-led home-based education. While their review identifies academic achievement, social and emotional development, and success in adulthood as important areas explored within homeschooling research, the present study provides further insight into how parents themselves intentionally develop and assess 21st-century learning and innovation skills within the homeschooling environment. This extends the existing literature by bringing attention to the everyday practices through which parents support creativity, critical thinking, communication and collaboration, rather than focusing only on broader learner outcomes. One parent described an innovative approach to education and career planning within the homeschooling context. By adopting a strategy based on the child's interests and aspirations, the parent demonstrated a holistic method that integrated diverse subjects and skills relevant to the desired career path of her child. Through careful research and exploration, the parent identified a route, such as obtaining a diploma through certain project-based assessment methods offered by an institution that allows the child to unschool and convert the demonstrated skills into a transcript, to ease their child's admission to higher education institutions. Such approaches showcase the flexibility and versatility of homeschooling while empowering children to actively participate in their educational journey and pursue their passions, while also developing skills relevant to 21st-century learning and innovation. This example further illustrates the constructivist principle of learner-centred education, where children's interests and aspirations can guide the selection and organization of learning experiences. Rather than following a predetermined pathway, learning is constructed around the individual learner and connected to meaningful future goals.

This research has addressed the identified gap in homeschooling research by providing evidence of how homeschooling parents work towards the development of 21st-century learning and innovation skills, the 4Cs.

Limitations of the Study

The study is delimited to the city of Karachi, Pakistan, due to time and resource constraints. Karachi itself has considerable socio-economic, cultural, and educational diversity, which may have influenced the selection and experiences of the participants. Therefore, the geographical scope of the study limits the transferability of the findings to the wider homeschooling population of Pakistan and to other educational contexts. The small sample size of eight participants is another limitation of the study, as the experiences shared by these parents may not represent the experiences of the wider homeschooling population. Moreover, the participants were approached through local homeschooling networks and social media communities, which may have resulted in participant selection bias, as parents who were more actively connected with homeschooling communities or more interested in sharing their experiences may have been more likely to participate.

As the study explores the lived experiences of homeschooling parents through a qualitative approach, the interpretation of their experiences may also carry some degree of researcher interpretation bias. Although the analysis was based on participants' responses and supported through their representative quotations, the researcher's understanding and interpretation of the data may have influenced the

development of themes. However, measures such as repeated review of transcripts, peer debriefing, systematic coding and thematization, and the use of participant quotations were adopted to enhance the trustworthiness of the findings.

This further creates limitations in applying the proposed recommendations across various parts of the country. Considering the diversity of contexts across Pakistan, this study motivates further research on homeschooling and the development of 21st-century learning and innovation skills. Further research involving parents from different regions and diverse socio-economic, cultural, and educational backgrounds may provide varied perspectives regarding homeschooling practices and the development of 21st-century learning and innovation skills.

Recommendations and Conclusion

Knowledge exchange among homeschooling parents through collaborative platforms can serve as an important step in this regard. Such platforms can provide a space for parents to share experiences, exchange knowledge, discuss ideas, and support each other in making homeschooling easier and more effective. These platforms can also help parents connect with industry personnel who can guide on using technology and different strategies in homeschooling practices.

At the government level, an online evaluation portal can be established to provide assessment services for homeschooled children. Periodic evaluations, conducted quarterly or semi-annually, can help parents understand their child's progress.

Government bodies responsible for education policy and administration can also work with potential partners to provide support for homeschooling families. Private educational institutions can contribute resources, expertise, and infrastructure to support project-based learning, inquiry-based learning, student-centered approaches, and practical experiences for homeschooled children.

Community groups, businesses, and industries can provide opportunities for hands-on learning, internships, mentorship, and skill development. These partnerships can be formalized through MOUs (Memoranda of Understanding) to provide structured support to homeschooling families.

Moreover, the government can work with educational institutions, resource libraries, and technology personnel to establish user-friendly online portals and digital repositories.

These can provide educational resources such as e-books, different teaching strategies, modern approaches, and multimedia resources. Free or low-fee access to these resources can also reduce the financial burden on homeschooling parents and provide more equitable access to quality educational resources.

Finally, it is recommended to strengthen research initiatives to study the depth of homeschooling practices in developing 21st-century learning and innovation skills by connecting with educational institutions and research groups.

This research has addressed the identified gap in homeschooling research by providing evidence of how homeschooling parents work towards the development of 21st-century learning and innovation skills, particularly the 4Cs. The findings demonstrate that parents employ flexible, practical, experiential, project-based, problem-based, and activity-oriented approaches to support these skills.

Overall, the study highlights that homeschooling can provide a purposeful environment for the development of 21st-century learning and innovation skills, while supportive structures and further research can strengthen these practices across diverse contexts in Pakistan.

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