

Digital Literacy as a Gateway to Lifelong Learning for Underprivileged Youth: Insights from a Case Study

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ABSTRACT – This mixed-methods case study investigates digital literacy as a crucial gateway to lifelong learning among underprivileged youth aged 16 to 28. Focusing on participants at one Community Learning Center in Karachi, Pakistan, the research explores how acquiring digital skills fosters continuous learning tendencies within this demographic. Recognizing the critical role of digital skills in contemporary society and their potential to unlock continuous learning opportunities, this study applied a convergent parallel mixed-methods design. Two surveys administered to 135 youth quantitatively assessed their digital literacy levels using the Digital Literacy as a Gateway to Lifelong Learning for Underprivileged Youth Scale and their lifelong learning tendencies using the Adapted Lifelong Learning Tendency Scale (LLTS). Concurrently, semi-structured interviews were conducted with 15 selected participants and 3 center facilitators to gather qualitative insights into their experiences, perceptions, and the challenges faced. Findings indicate a significant positive correlation between digital literacy proficiency and higher lifelong learning tendencies among the youth. Qualitatively, participants reported increased confidence, expanded access to information and online courses, and enhanced self-directed learning behaviors as direct outcomes of their digital skill acquisition. Challenges such as limited access to personal devices, inconsistent internet connectivity, and the need for more advanced digital training persist. This study underscores the pivotal role of digital literacy in cultivating a culture of continuous learning among vulnerable youth, offering crucial implications for educational policy and program development in contexts aiming to empower disadvantaged youth, particularly through non-formal learning avenues.

Keywords – digital literacy; lifelong learning; community learning centers; non-formal education

I. Introduction

Digital literacy has evolved over the 21st century, from the specialist skill to the core competency required to access a highly connected world (Ali, 2018). For young people, and for disadvantaged youngsters in particular, access to and competence with digital technologies are not just matters of communication; they are potent tools for social and academic progression, economic welfare and citizen participation (Eshet-Alkalai, 2004). Simultaneously, the focus on lifelong learning (LLL) has become all the more crucial for people to survive in this fast changing digital world, lifelong learning represents the idea that an individual can learn at any stage of their life and can develop their knowledge, skills and attitudes accordingly (UNESCO). This timeless process is crucial for adjustment to the changing realities of the labor market and for individual well-being (Arias, Evans, Santos, 2019; Hofmann, 2019; Walther, 2013). The intersection of these two trends, digital literacy, and lifelong learning, implies a strong, symbiotic relationship, where digital competency serves as a key gateway, providing access to plenty of paths for lifelong

learning (Commission of the European Communities, 2023; Field, 2006; Sharples, 2000; Taranto, & Buchanan, 2020; Torres, 2004).

Pakistan has a sizeable population of youth who live facing a lot of socio-economic dichotomies, it is difficult to access the quality education and vocational training for many, particularly in under privileged urban areas (Ali & Zehra, 2025). Therefore, this study intends to investigate the role of digital literacy as a portal to life-long learning for disadvantaged youth at one such Community Learning Centre in Karachi. Using a combination of both quantitative and qualitative methods, the study quantitatively measured the association between digital literacy levels and lifelong learning inclination and qualitatively examine the experiences, attitudes, and obstacles of this new generation of learners. It contributes more nuanced understanding of the ways in which digital literacy engendered through community-based programs has the potential to foster a culture of life-long learning for marginalized youth, thus informing evidence-

based strategies on youth empowerment and national development in comparable settings.

II. Literature Review

A. Understanding Digital Literacy in the 21st Century

Digital literacy is a multidimensional concept that extends beyond mere technical proficiency in using digital tools. It encompasses the ability to find, evaluate, create, and communicate information, requiring both cognitive and technical skills (Bawden, 2008). Eshet-Alkalai (2004) identified five key types of digital literacies: photo-visual, reproduction, branching, information, and socio-emotional, emphasizing the cognitive skills necessary for navigating the digital landscape. More broadly, digital literacy involves critical thinking, problem-solving, collaboration, and ethical considerations in digital environments (Joint Information Systems Committee, 2014). For youth, digital literacy is paramount for academic success, future employment, and active citizenship (Eshet-Alkalai, 2004; Helsper, 2012; Sharples, 2000), as they are often digital natives but may lack the critical and evaluative skills necessary for responsible and effective digital engagement, particularly in underprivileged contexts (Livingstone & Helsper, 2008). In developing countries like Pakistan, digital literacy can bridge information gaps, provide access to online educational resources, and open doors to global opportunities previously inaccessible to marginalized populations (Sattar, 2018).

B. The Evolving Landscape of Lifelong Learning

Lifelong learning (LLL) refers to all learning activities undertaken throughout life, with the aim of improving knowledge, skills, and competencies within a personal, civic, social, and/or employment-related perspective (UNESCO). It is characterized by its voluntary nature, personal relevance, and flexible pathways that often extend beyond formal education systems (Torres, 2003). In the context of youth, LLL is no longer a luxury but a necessity, as the rapidly changing world of work demands continuous reskilling and upskilling (Adams, 2012; Arias, Evans, Santos, 2019; Hofmann, 2019; Walther, 2013). Youth unemployment is a significant global challenge, and LLL, especially through non-formal avenues, can equip young individuals with adaptive skills and a resilient mindset (Bhattacharya, 2019; Bonnet, Vanek, Chen, 2019; Hofmann, 2013; ILO, 2015/2018). A positive attitude towards lifelong learning is crucial, as it fosters self-efficacy and self-regulation, which are key drivers for continuous personal and professional development (Garipaoglu, 2013).

C. Digital Literacy as a Gateway to Lifelong Learning

The intersection of digital literacy and lifelong learning creates a powerful synergy. Digital tools and platforms (e.g., online courses, educational videos, digital libraries) have democratized access to information and learning resources, making LLL more attainable and flexible than ever before (Sharples, 2000). For individuals, digital literacy serves as a gateway by expanding access to learning resources. The internet offers a vast repository of knowledge, from MOOCs (Massive Open Online Courses) and tutorials to research articles and virtual communities of practice. Digital skills enable learners to navigate this abundance and identify relevant information (Helsper, 2012).

Furthermore, digital environments empower learners to take charge of their own learning journeys (Ali, 2018; Ali et al., 2024). They can choose what, when, and how they learn, aligning with principles of self-directed learning (Guglielmino, 1977) and self-regulated learning (Zimmerman, 2002). The ability to search, filter, and synthesize information independently, which are core digital literacies, directly supports self-regulated learning processes (Zimmerman, 2000; Taranto & Buchanan, 2020). Interactive digital content and online learning communities can make learning more engaging and motivating (Pintrich, 2004). The immediate feedback and diverse learning modalities offered by digital platforms can sustain a learner's interest and persistence. Digital skills are increasingly a prerequisite for many jobs. Beyond basic computer use, proficiency in specific software, data analysis, or digital marketing can directly lead to employment or entrepreneurial opportunities, making continuous learning a tangible pathway to economic independence (Yasunaga, 2014).

Therefore, for underprivileged youth, who may face barriers to formal education, community centers providing digital literacy training become crucial intermediaries. Such centers can provide them with tools that expand the pantomime of vocational training, online commerce and telework as economic realities for them and foster long-term engagement with learning.

D. The Role of Community Centers in Developing Digital Literacy and Lifelong Learning

The importance of Community Learning Centers (CLCs) as significant non-formal educational spaces not only makes up for the lack of the formal education services but also relate to the reality of people's lives and provide learning opportunities that address varying populations' learning needs (Yasunaga, 2014; Torres, 2003). In countries such as Pakistan, these institutions are making a special effort to help underprivileged

children overcome the digital divide by contributing to the development of critical digital soft skills among youth by providing them with computer and internet facilities as well as with organized training (Sattar, 2018).

These centers provide friendly and caring atmosphere in which young people can learn technology, relieve their first anxieties and get confidence (Kurawa, 2021). In addition to technical expertise, CLCs can also incorporate components of critical digital literacy including online safety, responsible digital citizenship, and information evaluation to provide a comprehensive digital knowledge. Facilitating digital literacy, CLCs are a key investment in fostering a spirit of life-long learning among the youth, who can follow to a pursuit of online studies, access career information/e-resources and habit of self-improvement, corresponding to the objectives of Sustainable Development Goal 4 (Quality Education) (United Nations, 2015/2016).

III. Research Objectives

- [1]. To assess the current levels of digital literacy among underprivileged youth (16-28 years) attending Community Learning Centers.
- [2]. To measure the lifelong learning tendencies of these youth using the Adapted Lifelong Learning Tendency Scale (LLTS).
- [3]. To investigate the relationship between digital literacy proficiency and lifelong learning tendencies.
- [4]. To qualitatively explore the experiences and perceptions of youth regarding how digital literacy training influences their motivation and capacity for continuous learning.
- [5]. To identify the challenges faced by youth in acquiring and utilizing digital literacy skills for lifelong learning purposes, as well as the challenges faced by Community Learning Center in providing these opportunities.

IV. Research Questions

- [1]. What are the levels of digital literacy among underprivileged youth aged 16-28 attending Community Learning Center?
- [2]. What are the lifelong learning tendencies of these youth as measured by the Adapted LLTS?
- [3]. Is there a statistically significant relationship between digital literacy proficiency and lifelong learning tendencies among the youth?
- [4]. How do the youth perceive the impact of digital literacy training on their personal development, access to learning, and motivation for continuous learning?

- [5]. What challenges do youth encounter in their digital learning journey, and what operational challenges do the Community Learning Centers face in delivering digital literacy programs for lifelong learning?

V. Methodology

This study employs a convergent parallel mixed-methods case study design. This approach involves collecting both quantitative and qualitative data concurrently, analyzing them separately, and then converging the findings during the interpretation phase to provide a comprehensive understanding of the phenomenon (Creswell & Plano Clark, 2018). The case study approach allows for an in-depth exploration of the specific context of Community Learning Centre.

Site Selection: The setting chosen for this study was a Community Learning Centre in Karachi, Sindh, Pakistan. The center is a long-standing non-profit organization that provides a wide range of vocational and skill training programs for disadvantaged youth. For the purpose of this study, it serves as an excellent place to examine the interaction of digital literacy within lifelong learning for the underprivileged youth in Karachi.

Sample: One hundred thirty-five male and female youths between the ages of 16 and 28 were enrolled through convenience sampling in the quantitative phase of the study. These respondents either attended or had recently completed digital literacy or IT courses at the Community Learning Centre. For the qualitative component, 18 participants were purposively recruited for semi-structured interviews. This latter group comprised 15 youth from the sample who had originally completed the survey. This was to ensure that a variety of experience and perspective would be captured among the selected candidates, along the full spectrum of digital literacy and Lifelong Learning Tendency Scale scores. There were also three key informants from the administration and facilitation team of the Community Learning Center. These facilitators had first-hand experience in the implementation and management of digital literacy programs that provided insights into the design and implementation of the projects and their institutional effects.

A. Instruments and Data Collection:

The quantitative part of this study consisted of administering two instruments for measuring digital literacy and lifelong learning inclinations of underprivileged youth. One of the tools was the Digital Literacy as a Gateway to Lifelong Learning for Underprivileged Youth Scale (25-item self-report measure formulated to reflect the multiple aspects of digital literacy). These dimensions were information literacy (e.g., "I

know how to search for and evaluate information on the web and use it for learning purposes”), communication and collaboration (e.g., “I am proficient at taking part in communication and collaboration with others using digital tools”), and content creation (e.g., “I can generate digital material in the form of documents, presentations, simple multimedia, etc.”). Other dimensions were safety and ethics (response options: known or sometimes known, and used or sometimes used about e.g., online safety, privacy, and ethical behavior, “I know how to protect (your own) personal information online”) and technical proficiency (response options: yes or sometimes, no or hardly, e.g., “I can troubleshoot with simple computer problems”). Answers were measured with a 5-point Likert scale (1 - Strongly Disagree to 5 - Strongly Agree), with total scores that vary between 25 and 125: the higher, the stronger digital literacy.

In addition to the Digital Literacy scale, the Adapted Lifelong Learning Tendency Scale (LLTS) (Diker Coşkun & Demirel, 2010) was also employed, consisting of 27 items originally but trimmed down to 15 items. This scale was based on 4 major dimensions: motivation, persistence, self-directed learning and curiosity. As with the digital literacy scale, it was measured using a 5-point Likert format, creating a total score range of 15–75. Greater scores indicated greater lifelong learning attitudes of the users. As a measure of basic demographic information a demographic questionnaire was added and participants were asked to indicate their age, gender, years of education, and socio economic status. Strict assurance of privacy and anonymity of participants was ensured by the researcher.

Semi-structured interviews were conducted with 15 youth participants as well as three facilitators from the learning centers. An interview guide specifically was designed for all groups to talk about their experiences and perceptions. Youth were interviewed about digital literacy training experiences and impacts on learning attitudes behavior, information access, skill learning and career aspirations. They also talked about any obstacles they faced, offering real examples of how learning digital skills paved the way to whole new areas of learning. Facilitators, conversely, provided their views about the benefits of the digital literacy program and some of their observations on the youth participants of the program and the difficulties encountered to implement and maintain this type of agenda within their organizations. The interviews were held in Urdu and English both to facilitate the participants.

B. Data Analysis:

Quantitative data analysis for this study involved the use of descriptive and inferential statistical techniques to examine

patterns within the data. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were calculated to summarize participants’ levels of digital literacy, their tendencies toward lifelong learning, and relevant demographic characteristics. To explore potential relationships between variables, inferential statistics were applied, specifically, the Pearson correlation coefficient will be used to examine the relationship between digital literacy scores and lifelong learning tendency scores. All statistical analyses were conducted using IBM SPSS Statistics software to ensure accuracy and consistency.

For the qualitative data analysis, thematic analysis was employed to interpret the transcribed interview data. This process was carried out using NVivo qualitative data analysis software and began with a thorough familiarization with the data. Initial codes were generated to capture key aspects related to participants’ experiences with digital literacy, its impact on their learning behaviors, levels of motivation, and the challenges they faced. These codes were then grouped into themes and sub-themes that emerge across the interviews. The themes were reviewed, refined, and clearly named to represent the core of participants’ perspectives and experiences. To enhance the validity of the findings, triangulation was used by integrating the results of the quantitative and qualitative analyses during the interpretation phase. This comparative approach enabled a more nuanced and comprehensive understanding of digital literacy as a gateway to lifelong learning for underprivileged youth.

VI. Ethical Considerations

The study strictly adhered to ethical guidelines for research involving human participants. Formal ethical approval was obtained from the researcher's affiliated institution and from the Community Learning Centre administration prior to data collection. Informed consent was obtained from all participants (and parental/guardian consent for participants under 18), ensuring they were fully aware of the study's purpose, procedures, their right to voluntary participation, and the right to withdraw at any time without penalty. Anonymity and confidentiality of all participant data was rigorously maintained through de-identification of survey responses and secure storage of all data. Audio recordings were used solely for transcription and deleted upon completion of the study.

VII. Findings

A. Quantitative Findings: Digital Literacy Levels and Lifelong Learning Tendencies

1. Demographic Profile of Participants (n=135)

Table 1: Demographic Profile of Participants

Characteristic	Frequency (n)	Percentage (%)
Gender		
Female	75	55.6
Male	60	44.4
Age Group		
16-18 years	45	33.3
19-22 years	55	40.7
23-28 years	35	25.9
Educational Background		
Primary	18	13.3
Secondary	60	44.4
Intermediate/College	57	42.2
Prior Digital Exposure		
Minimal/None	40	29.6
Some (e.g., mobile phone use)	70	51.9
Moderate (e.g., basic computer use)	25	18.5

2. Digital Literacy Levels

The mean score for the Digital Literacy as a Gateway to Lifelong Learning for Underprivileged Youth Scale among the 135 youth participants was 89.2 (SD = 12.5), out of a possible score range of 25-125. This indicates a moderate to high level of digital literacy, suggesting that while participants have gained foundational skills, there is room for improvement in advanced areas.

Table 2: Mean Scores for Digital Literacy Dimensions

Digital Literacy Dimension	Mean Score (Out of 5)	Interpretation
Information Literacy	3.9	Moderate-High
Communication & Collaboration	4.2	High
Content Creation	3.3	Moderate
Safety & Ethics	3.6	Moderate
Technical Proficiency	4.0	Moderate-High

The highest scores were observed in "Communication & Collaboration," reflecting the prevalence of mobile phone use for social interaction. "Content Creation" showed the lowest mean, indicating a need for more comprehensive training in this area.

3. Lifelong Learning Tendencies

The mean score for the Adapted Lifelong Learning Tendency Scale (LLTS) among the youth participants was 59.5 (SD = 7.2), out of a possible score range of 15-75. According to the scale's interpretation (60-75 = Very High, 45-59 = Moderate to High), this places the youth participants generally within the "Moderate to High" range, verging on "Very High" indicating a strong disposition towards continuous learning.

Table 3: Mean Scores for LLTS Sections

LLTS Section	Mean Score (Out of 5)	Interpretation
Curiosity and Motivation	4.3	High
Self-Directed Learning	4.0	Moderate-High
Persistence in Learning	4.1	High
Learning Awareness and Purpose	4.2	High

These sub-scores suggested that the youth are generally curious, motivated, persistent, and aware of the importance of lifelong learning.

4. Correlation between Digital Literacy and Lifelong Learning Tendencies

A Pearson correlation analysis revealed a statistically significant positive correlation between overall Digital Literacy Scale scores and Adapted Lifelong Learning Tendency Scale scores ($r = .69$, $p < .001$). This indicates that youth with higher digital literacy proficiency tend to exhibit stronger lifelong learning tendencies.

B. Qualitative Findings: Perceptions and Experiences

The thematic analysis of interviews with youth participants and center facilitators revealed several key themes elaborating on how digital literacy acts as a gateway to lifelong learning.

Theme 1: Expanded Access to Information and Learning Resources Youth participants consistently highlighted how digital literacy opened up a world of information previously inaccessible. Many spoke about using the internet for research beyond their course material. As one participant, Ali (20), shared: "Before, I only knew what was in books. Now, I can search for anything. If I don't understand something in class, I Google it. It's like having a library in my pocket." Facilitators

noted a visible shift in learners' approach to problem-solving: "They no longer wait for us to give them all the answers. They try to find solutions online first, which is a big change." This theme directly supports the notion of digital literacy as a gateway to information literacy and broader learning.

Theme 2: Enhanced Self-Directed Learning and Autonomy

The acquisition of digital skills empowered youth to take greater control over their learning journeys, fostering more self-directed behaviors. Sana (22), a fashion design student, explained: "I learned how to use YouTube properly for tutorials. Now, I watch videos to learn new embroidery stitches that aren't taught here. I even follow international designers to get new ideas." This newfound autonomy was further reflected in their ability to seek out additional online courses or tutorials relevant to their vocational skills, indicating a growing capacity for self-regulation in learning (Taranto & Buchanan, 2020). A facilitator commented: "When they learn basic IT, they realize there are so many free courses online. Many of them start exploring coding or graphic design on their own, even if it's not part of our curriculum."

Theme 3: Bridging the Employability and Entrepreneurship Gap

Digital literacy was perceived as crucial for improving employment prospects and enabling entrepreneurial endeavors. Ahmed (25), who learned basic IT skills, stated: "I can now make a better CV online and search for jobs. I even created a small Facebook page to sell my handcrafted items. Digital skills are no longer an option; they are a necessity for earning a livelihood." The center's focus on entrepreneurship was reinforced by digital skills, allowing youth to market their products, connect with customers, and manage simple online transactions. Facilitators emphasized this direct link: "We teach them how to use social media for business. It's not just about learning a craft; it's about making a living from it, and digital skills are key to that."

Theme 4: Increased Confidence and Motivation for Continuous Learning

Participants consistently reported a boost in self-confidence as they became more digitally literate. This confidence, in turn, fueled their motivation for further learning. Fatima (18), a newcomer to digital tools, expressed: "At first, I was scared of computers. Now, I can type, send emails, and even make video calls. This confidence makes me want to learn more, maybe even learn a foreign language online next." This finding aligns with the concept that self-efficacy positively influences lifelong learning tendencies (Garipağaoğlu, 2013; Yilmaz, 2018). The ability to master a new and complex skill like digital literacy enhanced their belief in their overall learning capabilities.

Theme 5: Persistent Challenges in Digital Access and Advanced Training Despite the positive impacts, significant challenges were highlighted. Many youngsters did not own personal computers or reliable smartphones, limiting their practice and online learning outside the center. "I learn a lot here, but at home, I don't have a laptop or stable internet, so it's hard to practice," lamented a participant. Inconsistent internet connectivity was another issue that needed to be dealt with. Even at the center, internet connectivity could be unreliable, hindering effective online learning experiences. Need for advanced training was identified. While basic digital literacy was appreciated, many participants expressed a desire for more advanced and specialized digital skills, such as advanced coding, graphic design, or digital marketing, which the center's current resources sometimes limited. Finally, facilitators noted challenges in keeping up with rapidly evolving digital technologies and the need for continuous professional development to deliver cutting-edge digital literacy programs.

VIII. Discussion

The findings of this mixed-methods case study strongly support the proposition that digital literacy serves as a crucial gateway to lifelong learning for underprivileged youth. The significant positive correlation between digital literacy proficiency and lifelong learning tendencies, evidenced by the quantitative data, quantitatively validates this relationship. This aligns with broader literature emphasizing the enabling role of digital skills in accessing, engaging with, and sustaining continuous learning (Sharples, 2000; Helsper, 2012).

The qualitative findings further enrich this understanding by providing rich contextual insights. This theme on "Expanded Access to Information and Learning Resources" unmistakably shows that digital literacy has opened the doors for liberating our youth from the traditional way of acquiring knowledge since it enables them to access or reach out for information and develop skills to use an array of educational contents that are now housed in online (Ali, 2018; Ali et al., 2024). This new access is essential to lifelong learning which is predicated on continuous gaining of information (Kurawa, 2021). Additionally, the subjects' better findability of information autonomously mirrors the progress of the digital literacy property of information literacy (Bawden, 2008).

The theme of "Enhanced Self-Directed Learning and Autonomy" suggests the positive changes of learning behavior of youngsters. Once proficient in the digital literacy, they make the transition from the largely passive recipient of other people's knowledge and multimedia material to responsible

actors in their motivational structures. One of the most important outcomes is this movement towards self-directed and self-regulated learning (Guglielmino 1977; Zimmerman 2000) as these are precisely the characteristics of effective lifelong learners. Yet, the capacity to learn through self-study on platforms such as YouTube and to independently investigate new topics demonstrate how digital competencies support the development of lifelong learning skills and dispositions (Taranto & Buchanan, 2020).

Another theme "Employability and Entrepreneurship" points to the instrumental value of digital literacy as means for economic inclusion, thus enhancing the (employment) motivation for lifelong learning. In the scenario of high youth unemployment, providing digital skills such as developing online resumes and establishing the online e-commerce presence, represents tangible benefits of skills, which may lead to further skills investment. This application of learning strategies in practice can strengthen the perception of their usefulness and stimulate the attitude of lifelong learning, which is important for career adaptability.

The "Increased Confidence and Motivation for Continuous Learning" theme is particularly significant for youth development. The sense of achievement derived from mastering digital skills significantly boosts learners' self-efficacy, which is a powerful predictor of lifelong learning tendencies (Garipağaoğlu, 2013). This psychological charge sets in motion a self-propelling loop of positivity: the more efficient students are in their digital practices, the more they will build their confidence with a greater likelihood that they will keep seeking to learn, reinforcing the trajectory of lifelong learning.

Despite these successes, the study also highlights persistent challenges. The theme "Persistent Challenges in Digital Access and Advanced Training" demonstrates critical systemic discrimination, such as limited individual ownership of smart devices and secured internet access. These issues, common in underprivileged communities, limit the full potential of digital literacy as a gateway, as learning cannot extend seamlessly beyond the community center (Bhattacharya, 2019; Hofmann, 2019; ILO, 2019a; Mawas et al., 2017). Increasing demand for higher level digital skills underscores the need for expert education providers, to continually review and update their curricula and resources in order to ensure their relevance in the rapidly changing digital landscape (Bawden, 2008). A need for more community centers and facilitators to receive on-going professional development could also be noticed and is in line with other studies (Kurawa, 2021). The results are in harmony with the larger challenges that have been reported by multiple

researchers, not only in commercial but also in non-formal education in developing countries, where due to resource constraints comprehensive program management is difficult (Adams, 2012; Arias, Evans, Santos, 2019; Bhattacharya, 2019; Eraut, 2000; Hofmann, 2013/2019; Sultan, et al., 2018).

In conclusion, this study provides strong evidence that digital literacy serves as a transformational gateway for disadvantaged youth, leading them to develop much stronger lifelong learning tendencies and opportunities for personal development and professional success. Although community centers work hard to fulfil this important access, the prevalence of digital literacy is crucial for the youth themselves, highlighting the profound implications for youth empowerment and educational policy in similar socio-economic contexts.

IX. Recommendations

Among other things, the research calls for more advanced digital infrastructure and its access to be enhanced. Public-private partnerships for discounted or free internet access and recycled digital devices (laptops and tablets) should be considered using partnerships with telecom companies, NGOs, and government interventions. It would give youth the opportunity to take their learning from community centers to their homes. Also, the provision of more computer labs and more online facilities in those centers, especially in (non-)class hours, could enable extra practice and self-guided online learning.

Another crucial step is to expand and diversify the uses and content of the digital literacy curriculum and to align it more closely to youth development. Inclusion of marketable courses like advanced graphic design, video editing, basic coding, digital marketing, and management of e-commerce platforms can lead directly to better employment or entrepreneurial opportunities. Curriculum content must also be supplemented with critical digital literacy components such as online safety, misinformation literacy, and ethical digital citizenship to help ensure that young people are able to engage responsibly and effectively online. When introduced as part of a broader life skills approach—like financial literacy, health information and civic participation—digital literacy could also result in a more comprehensive learning experience for young people.

It's also crucial to encourage self-directed learning in digital formats. This includes limiting access to well-known free online learning platforms, such as those found in MOOCs, educational YouTube channels and other learning websites and motivating children to pursue digital content in areas of interest to them. Research-based, problem solving projects involving content creation can be introduced to foster the

necessary skills for potentially lifelong learning. Mentoring programs that link their digitally savvy youth with less experienced peers also creates opportunities for collaborative learning and growth.

Furthermore, facilitators should be trained on a regular basis to keep up with new technologies and methodologies for digital learning. They should also be provided the pedagogical training to develop the self-learning habits, enable the online collaborations and assess digitally the overall digital competences of the young learners. Digital career counseling services and certification opportunities might also be added to provide additional support to young people and to help them identify job opportunities in an online environment, as well as to create digital portfolios to present to potential employers.

Lastly, a strong monitoring and evaluation (M&E) system should be put in place to monitor the growth outcomes. Longitudinal tracking systems can be an important medium for understanding longer-term effects of digital literacy training on employment, advanced education, and life trajectories. Digital literacy can provide the means for young people to have better access to information sharing, greater independence in learning opportunities, increased employability and overall greater self-confidence in the context of lifelong learning.

X. Conclusion

This case study highlights the transformative potential of digital literacy as an access point to life-long learning in the lives of disadvantaged youth. While challenges such as limited digital access and the need for advanced training persist, the insights from the Community Learning Centre case study highlight the potential of non-formal education to bridge critical skill gaps and cultivate a resilient, adaptable, and continuously learning generation. By embracing the proposed recommendations – focusing on enhanced infrastructure, diversified curricula, strengthened self-directed learning approaches, and formal linkages – efforts can be maximized to equip youth with the tools necessary to navigate the digital age, unlock their full potential, and contribute meaningfully to Pakistan's social and economic development, thereby advancing the nation's progress towards the Sustainable Development Goals related to education and decent work.

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