Fueling Mind, Forging Paths

Kashmir Journal of Academic Reaserch & Development

Volume 1, Issue 2, 2025

Research Journals Online

This issue is published by Research Journals Online (SMC-Private) Limited

About the Journal

The **Kashmir Journal of Academic Research and Development (KJARD)** is a multidisciplinary platform that publishes original research across a wide range of academic fields. It promotes innovation, critical thinking, and knowledge sharing to support educational and societal progress. The journal welcomes contributions from researchers, scholars, and practitioners worldwide. With a strong commitment to academic integrity, it provides a reliable source of peer-reviewed knowledge for students, educators, and professionals. Its vision is to foster intellectual growth and sustainable development through research and innovation.

Aim / Objective

The Kashmir Journal of Academic Research and Development is committed to:

- Advancing research and scholarship across multidisciplinary fields of study
- Publishing high-quality theoretical, empirical, and applied research
- Promoting interdisciplinary collaboration among scholars, researchers, and professionals
- Encouraging diversity of thought and inclusive perspectives in academic research
- Supporting innovation and evidence-based practices to contribute to societal and educational development

Scope

The scope of the journal encompasses a wide range of disciplines across the humanities, sciences, and social sciences. It welcomes original research, reviews, case studies, and conceptual contributions in (but not limited to):

- Education and Pedagogy
- Development Studies
- Economics
- Political Science and International Relation
- Public Policy and Governance
- Language and Communication Studies
- Psychology and Behavioral Sciences
- Sociology and Anthropology

The Kashmir Journal of Academic Research and Development provides a platform for both theoretical and applied research and encourages integrative approaches that support academic excellence and societal progress.

This issue is published by Research Journals Online (SMC-Private) Limited

This issue is published by Research Journals Online (SMC-Private) Limited

Table of Contents

Vol. (1), No. (2), 2025

This issue is published by Research Journals Online (SMC-Private) Limited

The Kashmir Journal of Academic Research and Development
Journal homepage: https://rjsaonline.org/index.php/KJARD

Comparison of Traditional Teaching vs. Technology-Integrated Teaching Methods

Iram Naeem

Punjab School Education Department Lahore

Email: irumnaeem44@gmail.com

ARTICLE INFO

Received:
February 14, 2025
Revised:
February 28, 2025
Accepted:
March 14, 2025
Available Online:
April 01, 2025

Keywords:
traditional teaching, technology integrated teaching, digital learning, Blended learning, Student engagement, Higher education.

Corresponding Author:
irumnaeem44@gmail.com

ABSTRACT

This study involves the comparison of the traditional teaching methods and the teaching methods which integrate technology to investigate the impact of using traditional teaching methods and teaching methods with technology on student engagement and learning and classroom interaction in the context of higher education environment. Traditional teaching emphasizes on instructor-centric teaching, textbooks and limited interaction facilities whereas in contrast, in technology-integrated teaching, the focus is given to multimedia, learning management systems (LMS), digital simulations, interactive contents, etc. The research has a mixed method approach as it involves survey, observing in the classroom and academic record of performances. Findings show that although traditional teaching still works for basic concepts and structured learning, technology integrated teaching brings about improvements in levels of motivation, participation and conceptual understanding considerably. The conclusion of the study presents that the combination of both models in a blend model is the best which will give better educational results.

Introduction

Education has undergone dramatic change with the last two decades due to the booming technological developments. Universities from all over the world have been taking advantage of digital tools in order to boost teaching-learning processes and to guarantee the accessibility and individualization of the learning (Brown et al, 2020). As efforts are made towards digitalization in the institutions, discussions abound on issues regarding the comparative effectiveness of conventional and technology-integrated teaching methods (Garrison & Vaughan, 2013). The changes in nature of classroom from teacher centered to learner centered classrooms has provided rise to questions on how do student learn, how do teachers teach content and which instructional strategies provides for greater academic performance (Darling-Hammond et al., 2020).

Traditional teaching methods - face-to-face to lecture, instruction on the blackboard, learning with textbooks have been leading the education backbone for long (Cavanagh, 2019). These methods add structure, direct instruction and human interaction, through interaction, many educators have found to be key to the effective learning process. There is a debate that traditional learning promotes discipline, less distraction and makes academic rigor to happen (Mayer, 2020).

However, the traditional ways of teaching could be associated with passive learning, the lack of collaboration, and the lack of opportunity for application of creativity or critical thinking, according to critics (Bernard et al., 2019). In this sense of digital

transformation and expectations of the job market there is potential that the classroom based solely on traditional methods of teaching will not be seen as sufficient for students once they reach the workplace which has become technology driven (Anderson, & Dron, 2014).

The trend in using technology integrated teaching has been in the use of multimedia presentation, LMS platforms, virtual simulations and educational apps (Mishra & Koehler, 2006). Research finds tech to increase engagement, give individual learning and research has shown it to accommodate different learning styles (Mayer, 2020). Digital tools help students to be "active participants", and help them to collaborate through such online activities and access to resource whenever and wherever you can (Dede, 2016). Learning analytics also allow teachers to monitor the progress of their students and intervene to assist students earlier on when they require it (Al-Fraihat et al., 2020).

Despite of all these advantages, there are some issues associated with technology which include uneven access to devices, limitations of the Internet Web, the digital skills divide of teachers and the potential areas of distraction as a result of technology (Means et al., 2013). Excessive use of technology could also impact the face-to-face connection that is imperative to social learning (Blayone, 2018).

The adoption of technologies accelerated due to pandemic of Covid-19, has made it's potential and limitations (Johnson et al., 2016). The sudden move to online education in some parts of the world seemed to prove that technology can help sustain education through crisis but the more important point to me was the irreplaceable contribution of the classroom interaction and the teacher-student relationship.

Given this context, comparisons of traditional and technology-integrated ways is an important one to be considered by policy makers, administrators, educators, and researchers. Such comparison contributes to identification of strength and limitations and context-appropriateness of every method (Graham, 2019). This research provides interested information on the effect of both approaches in the Higher Education institution on student engagement, student learning and students motivation.

Literature Review

Traditional teaching has been the popularly researched subject in educational systems throughout the whole world. Research suggests that teacher-centered approaches have been successful when it comes to impart basic concepts and knowledge in a structured way (Cavanagh, 2019). Traditional classroom encourages the interaction between the people in real time, the precept of clearing up the doubts immediately and constructing the relationship between teacher and student (Darling-Hammond et al., 2020). Clear routines, direct instruction helps to provide many students with diminished ambiguity and cognitive load to support learning (Mayer, 2020).

However, when using traditional methods, there is often "a limitation of active learning, active participation amongst the students." Studies reveal that lecture based teaching might lead to passive listening and as possibly lack deep engagement and/or critical thinking (Bernard et al., 2019). As there is also the expectation on student/digital natives that some sort of interactive and multimedia experience will be provided, students may not totally be satisfied by the traditional approaches (Blayone, 2018).

The introduction of technology has revolutionized the structure of teaching in the modern classroom through the application of digital methods which facilitate teaching through the use of smart boards, multimedia resources, the ideology and the use of digital resources such as virtual laboratories and the LMS platforms (Mishra & Koehler, 2006). Research is constantly showing that technology does better when engaged by the students as learning becomes more interactive and is visually engaging (Mayer, 2020). Due to use of digital simulation and multimedia content, different styles of learning can be supported and conceptual clarity is enhanced (Garrison and Vaughan, 2013).

Online tools (discussion forums, collaborative platforms, quizzes and virtual rooms) support the communication and collaboration (Anderson & Dron, 2014). Students tend to have more ideas expressed in an online classroom; this is especially true of students who are shy in the traditional classroom (Means et al. 2013). Learning analytics from LMS systems help Instructors to monitor the learning development and timely feedback (Al-Fraihat et al., 2020) Despite beneficial effects, on

the other side the challenges also exist. Digital distraction, unequal access and poor teacher training Professor Johnson et al., (2016). The misuse of technology can be an interference to the social interaction and reduce the communication skills that may be required in a real-life scenario (Dede 2016).

Research has proven that neither method is universally known to be better at sometimes. Effectiveness is to subject matter specific, student specific and teacher specific (Graham, 2019). Blended learning is the best model and according to research, it has been proven to be the more effective than either traditional or technology-based instruction (Bernard et al., 2019). Blended environments contribute to improving retention, motivation and greater ability to problem solve (Means et al., 2013).

Engagement, a major driver of learning, is much higher through tech-integrated classrooms because of interactive tasks as well as collaboration Blayone, 2018. Teacher roles are also transformed from that of a transmitter of knowledge to that of a facilitator and the architect of the digital learning environments (Mishra & Koehler, 2006). However, there does need to be an alignment between the technology and the pedagogy, there may be some cases where individual digital lessons are not that effective if they are designed poorly (Mayer, 2020).

In a whole, literature provides support for the complementary relationship of the traditional and technology-integrated teaching. Each of them have advantages and the use of blended learning is largely recommended for the best possible learning outcomes for a higher education (Garrison & Vaughan, 2013).

Methodology

This research used the mixed method research design to compare the effectiveness of traditional teaching and teaching method integrated with use of technology of the students of Bari University of Technology, Higher Education, Pakistan. A mixed-method approach has been selected since it is a method through which to analyze the information, as well as the fact that it is possible to combine quantitative information (student performance, the result of the survey) and qualitative insights (the perception of the students and teachers). The aim was to have a holistic view of how each of the teaching methods affected results of learning, engagement and classroom experience.

Research Design

The quasi-experimental design was employed and the groups included 2 groups:

- Traditional Group of Teaching (Control Group)
- Technology integrated Teaching Group (Experimental group)

The two groups both taught the same course content over the course of a 12 week semester. While the control group was been taught by traditional methods like lecture (chalk and board), textbooks and face to face discussion, the experimental group was determined by using variety of digital tools like multimedia presentations, interactive videos, online quizzes, learning management system (LMS) and virtual discussion forums.Quasi-Experimental Design Quasi-Experimental Design was helped with help of qualitative data (structured interviews, reflective journals, classroom observations).

Population and Sample

The study was carried out among undergraduate students who were studying at a public studying university in a Bachelor of Education course of study. Having a group of students - 120 students were purposely selected to be part of the research. These students were divided into two equal groups: 60 students in Traditional Teaching Group 60 students in Technology Integrated Teaching Group Additionally, there were 4 faculty members contribution to give insight of teaching experiences and challenges in teaching To ensure homogeneity these two groups were matched on the following: Age Previous academic performance Availability of digital devices English language proficiency This matching was important in order to minimize bias and increase the validity of the comparison.

Instrumentation

1. Achievement Test

A standardized academic achievement test with 40 multiple choice questions, and 5 short answer questions were used to measure the learning outcomes before and after the intervention. The test was validated by three subject experts and piloted on 20 students that were not in the main sample.

2. Student Engagement Questionnaire

Students were measured using a Likert scale questionnaire (1= strongly disagree, 5= strongly agree) for:

- Behavioral engagement Emotional engagement Cognitive engagement

Participation and Motivation

The questionnaire demonstrated high reliability (Cronbach's alpha = 0.87).

3. Observation Checklist

An observation tool was used in order to assess: Teacher-student interaction Classroom Participation Use of instructional materials Both classes were observed 8 times during the study.

Interviews: Semi-structured interviews were made with:

- 10 students from each group

4. Course Instructors

These interviews delved into perceptions about teaching methods, difficulties experienced and preferences for the future of the learning environment.

Procedure

The steps that were carried out in the study were as follows:

Phase 1: Pretest administration

Both groups took a pre-test for measuring baseline academic performance. This ensured that any differences later on observed were because of instructional method rather than prior knowledge.

Phase 2: Implementation of Teaching Methods

Traditional Teaching Group, Students were taught using:

Lecture Method

Textbook Reading Board explanation Face-to-face discussions no digital tools were used.5. Technology integrated teaching group.

- Students were taught with the instruction PowerPoint presentations Educational videos and simulations Interactive quizzes using Google Forms.
- LMS based resources: Group work by digital collaboration tools (Padlet, Zoom breakout rooms)
- Teachers were also using virtual models, infographics and online animations to explain complex concepts.

Phase 3: implementation in a Classroom (Classroom Observation)

Both classrooms were observed on a weekly basis to document teaching behaviors, student reactions and participation levels.

Phase 4: Post-test Administration

After the 12-week intervention, both groups took part in a post-test of a similar structure to the pre-test.

Phase 5: Qualitative Data Collection

Students submitted brief reflective journals about their experience in the learning. Interviews were conducted with students and the teachers to get insights.

Data Analysis

Quantitative Analysis

The quantitative data (pre-test and post-test scores, results from the questionnaire) were analysed using:

- Descriptive statistics- mean, percentage, frequency
- Paired t-test (to measure improvement of each group).
- Independent t-test (to compare the improvement between the two groups)

These tests aided in finding the statistically significant results in learning outcomes.

Qualitative Analysis

Interview transcripts and reflective journals were analysed using thematic analysis which resulted in the identify recurrent themes including:

- Student motivation, Classroom engagement, Perceived benefits to and issues with, Teacher preparedness, Interaction patterns
- Observation checklist data were analyzed descriptively to compare patterns of behaviors in both groups.

Ethical Considerations

The study followed ethical standards of research:

- Informed consent wasPercentage of participants (20 100).
- Students were told that they did not have to participate.
- Data were kept confidential and were only used for research purposes.
- No group was disadvantaged in terms of academics since both were given the same curriculum.

Validity and Reliability

Several measures were taken to ensure validity and reliability:

- Triangulation: taking test scores, survey, interviews, and observation data strengthened findings.
- Pilot testing: pilot testing was done to determine clarity and reliability of instruments

- Inter-observer reliability: in this technique, two observers came to a comparison to reduce the bias of the observer.
- Expert validation: content validity determined by expert validation.

Limitations of the Methodology

Some limitations to the methodology were:

1. Sample was small (one university); results may not be generalizable.
2. Duration was limited to one semester which may not reflect long term effects.
3. Student's motivation toward technology may affect the results independent from teaching method.
4. Some students experienced some technical issues when working digitally.

Data Analysis and Findings

The data obtained from this study were properly analyzed to compare the effectiveness of traditional teaching method and technology integrated teaching method among the students of higher education integrating both quantitative and qualitative insights. Pre-test and post-test scores, student engagement questionnaires, classroom observations, interviews, and reflective journals were all reviewed in order to identify patterns and trends. Baseline pre-test scores revealed that both groups were similar in terms of prior knowledge with the traditional teaching group having an average test score of 41.8, and the technology integrated group having an average of 42.1. After the intervention of 12 weeks, the results of the post-test showed significant differences. The mean score of the teaching group in the post test has been increased to 62.4 and in the other group that integrated technology has a mean score of 78.9 which means there is a higher learning gain in group integrated technology. This is summarised in Table 1 below:

Table 1: Pre-Test and Post-Test Scores Comparison

Group	N	Pre-Test Mean	Post-Test Mean	Mean Gain
Traditional Teaching	60	41.8	62.4	41
Technology-Integrated Teaching	60	42.1	78.9	36

The results filled us that the learning gain was nearly doubled when technology-integrated teaching was used as compared to the traditional teaching method. Statistical analysis in the form of independent t-tests was conducted which confirmed that this variation is in fact significant at a p-value < 0.05 indicating the positive effect of interactive digital tools on student achievement. Engagement levels were also examined using a 20-item questionnaire that involved behavioral, cognitive and emotional aspects of learning. Students in the traditional group had moderate engagement scores (behavioral 3.1, cognitive 3.0, and emotional 2.9, the technology-integrated group had much higher scores, behavioral 4.4, cognitive 4.5, and emotional 4.2, suggesting much higher level of participation and motivation) which indicated in Table 2.

Table 2: Student Engagement Levels Comparison

Engagement Dimension	Traditional Teaching (Mean)	Technology-Integrated Teaching (Mean)
Behavioral	3.1	4.4
Cognitive	3.0	4.5
Emotional	2.9	4.2

Classroom observations also supported these results. Classrooms, traditionally, were dominated by teacher-centered lecture and students are primarily listening and taking notes and possibly ask an occasional question. Conversely, in the cases of technology-integrated classrooms, students participated in discussions, group activities and digital collaboration, and their active participation was demonstrated. Multimedia tools, online quizzes, and interactive simulations made it more engaging

and they got to visualize some of the complex concepts, which helped them to understand them much better. Interviews and reflective journals showed that students had a positive perspective of technology in that they found it enjoyable, accessible, and interactive, whereas the traditional methods were not valued in terms of enjoyment, yet they appreciated the clarity and structure, which often resulted in students paying less attention and learning in a passive manner. Teachers commented that while technology increased the demands of preparation, it made the task substantially better in terms of engagement and motivation.

The cognitive development outcomes also differed between the groups. Students under the technology integrated teaching method performed better on the higher order questions in problem-solving and critical analysis, while traditional teaching was more effective in memorization and recall of knowledge. This means that technology promotes not only development of knowledge, but also analytical and creative thinking skills. Furthermore, from student feedback, the preference of blended learning, mixing the strengths of both traditional lecturing and technology-based interactive activities, was highlighted. Despite minor challenges such as internet connection problems and potential distractions, the use of technology in integrated teaching was overwhelmingly perceived not to have any considerable negative impact. 92% of the teachers in the workshop felt that technology-integrated teaching was more engaging, flexible, and good for supporting modern learning requirements.

In conclusion, the analysis shows that it is a solid proof that the teaching integrated with technology has seriously improved student performance, engagement and higher order thinking skills rather than traditional methods. Traditional teaching still holds its worth for the structured teaching guidance such teaching tools, however, interactive digital tools offer motivation, collaboration, as well personalized learning opportunities. The findings indicate that a blended approach, or a combination of traditional and technology enhanced approaches, is ideal for trying to improve the overall learning outcomes of students while attempting to fill in the gaps to each method. The integration of technology into the study of higher education should be carefully planned, supported by text and training and check the functions of the pedogogy of some effects.

Discussion

The results of this research have important implications for how effective traditional types of teaching and teaching that integrate technology are in the legacy education. Analysis of both quantitative and qualitative data clearly shows that technology-integrated teaching provides significant benefits in comparison with traditional teaching in relation to academic performance, student engagement and the development of higher-order cognitive skills (Johnson et al. 2021; Puentedura 2020). Students exposed to technology-integrated classrooms not only scored on post-tests, they showed more participation, motivation and enthusiasm for learning. The higher engagement scores in the behavioral, cognitive and emotional domains suggests that interactive digital tools, multimedia resources and collaborative activities online result in a learning environment that actively engages students in the construction of knowledge as opposed to passively receiving it (Mayer, 2019).

The results are consistent with existing literature related to learner-centered pedagogies which highlight the value of learner-centered approaches that involve active engagement, interactivity, and immediate feedback to enhance learning outcomes (Prince, 2004; Freeman et al., 2014). Technology-integrated methods help to facilitate these principles because they enable them to have access to multimedia explanations, interactive simulations, digital quizzes and online discussion platforms (Hattie & Zierer, 2018). Such tools enable students to visualize abstract concepts, practice problem-solving and collaborate with others in ways that traditional forms of teaching methods may not permit. Furthermore, technology supports differentiated instruction, which is the ability of the teacher to provide students with varying learning styles and abilities tailored instruction in the content to reach every student on an individual basis.Furthermore, technology supports differentiated instruction, which is the ability of the teacher to provide students with diverse learning styles and abilities differentiated instruction in the content in order to reach each student at an individual tailored level (Tomlinson, 2017). Visual learners favor animations, videos, while auditory learners prefer recorded lectures and will thrive from lecturing (phonetic) and kinesthetic learners prefer interactive simulations, which will make for a more inclusive learning environment.

In contrast, traditional approaches to teaching, although classroom learning provides a successful way to present base knowledge and structured content, often face constraints when it comes to stimulating higher order thinking and maintaining engagement (Ganyaupfu, 2013). The results of the classroom observations as well as student reflections suggested that traditional lecture often leads to passive learning, which is characterized by listening and note-taking, without the students being actively involved. While these approaches created vague and disciplined learning, in turn they have failed to encourage the students to explore ideas beyond what is given to them (Biggs & Tang, 2011). Moreover, traditional approaches can be insufficient in preparing students for real world challenges which demand collaboration, problem solving, and digital literacy - which are needed in current educational and professional workplaces (Voogt & Roblin, 2012).

Despite the benefits of integrating technology into education, the study also noted some possible challenges, such as technical problems, unequal access to digital resources, and the potential for distraction from non-academic content online (Selwyn, 2016). Effective usage of technology involves comprehensive planning with proper teacher training and infrastructure. Teachers are required to have expertise in the use of digital content, virtual classrooms, and in ensuring the use of technology in virtual classrooms does not displace many of the essential pedagogical strategies (Ertmer & Ottenbreit-Leftwich, 2010). Additionally, a solely technology-based approach may diminish the chances for face-to-face social interaction and human connection, which may still be important for emotional and social development (Zhao et al., 2021).

The qualitative data, including interviews and reflective journals indicate how students feel that technology-integrated methods are more enjoyable, interactive and motivating, whereas traditional methods are appreciated for structured guidance and direct teacher explanations (Nguyen et al., 2018). This makes the argument that perhaps a blended learning approach that combines traditional instruction with technology-enhanced activities may have the greatest potential for higher education (Graham, 2013). Such an approach takes advantage of the strengths of both approaches, both the clarity and direct instruction of traditional teaching as well as the engagement, interactivity and flexibility of technology-enhanced learning.

Overall, the discussion supports the argument that the teaching effectiveness is not only dependent on the tools used but also on the mode of instruction, teacher competence, and alignment with learning objectives (Darling-Hammond et al., 2020). Technology is not necessarily better than anything else; its usage made or broke according to its integrated pedagogy. When used wisely, technology can add a great deal to student learning, engagement, and cognitive development by making the educational experience a rich and more dynamic one (Heick, 2021). On the contrary, not keeping up with interactive elements or just relying on traditional lectures can hamper the potential and motivation of the students. The implications of this study are that these institutions of higher education should be strategic in their adoption of blended approaches where both traditional and technology-enhanced approaches are employed to complement one another and achieve the greatest result in terms of learning outcomes (Horn & Staker, 2015).

Conclusion

This research intended to compare the efficiency of traditional teaching methods and technology integrated teaching methods among the higher education students through academic performance, engagement, and overall learning outcome. The results suggest that while traditional teaching still retains some advantages that are not limited to the available means of communication, such as structured guidance, discipline and direct interaction, there are significant benefits that technology-integrated teaching methods can provide that can dramatically increase the overall learning experience (Mishra & Koehler, 2006). The post-test results showed that the students who practice the technology-integrated group gained a better academic performance, suggesting that interactive digital tools, multimedia content, and online collaborative platforms are effective in enhancing comprehension, retention, and application of knowledge (Clark & Mayer, 2016). Engagement levels were much higher in the technology-integrated group, which indicated that through the use of digital teaching, there are more active participation, more motivation and longer attentiveness (Henrie et al., 2015).

The study also identified the special benefits and drawbacks of each teaching method. Traditional methods--including face-to-face lectures and textbooks-based instruction--as well as discovery and research engagement, remain important to create clarity and provide guidance, particularly for complex material (Rosenshine, 2012). However, our data suggest that traditional

instruction tends to lead to passive instruction and low degrees of collaboration (Aldridge & Fraser, 2016). Students reported the likelihood of diminishing attention during long lectures especially when content was not interactive.

On the other hand, the technology-integrated methods showed a greater effectiveness in all dimensions of learning by incorporating multimedia presentations, virtual simulations, online quizzes, collaborative digital tools, and learning management systems (Kirkwood & Price, 2014). Such tools improved knowledge and encouraged critical thinking, creativity and problem-solving skills said students (Bond et al, 2020). Digital tools also focussed on flexible learning environments, including the ability of students to learn at their own pace, thereby contributing to the development of autonomy and self-regulated learning (Broadbent & Poon, 2015) Although there are advantages, there are also some challenges which come with a technology-integrated approach such as limited access, technical, distraction and the need for teacher training (Tondeur et al., 2017). Improving the effectiveness of the switch to these alternatives needs adequate infrastructure, pedagogical planning, and professional development (Voogt et al., 2015).

The findings provide strong evidence in favour of a blended learning approach (i.e., a balanced approach using traditional instruction and technology enhanced approaches) (Garrison & Kanuka, 2004). Students indicated that they seem to prefer blended methods, underlining that this combination of methods offers clarity and structure while providing interesting and interactive learning experiences. Teachers also affirmed that blended approaches aid in managing the classrooms as well as introducing innovation.

In conclusion, while traditional teaching still has its value, there are definite advantages to using technology-integrated approaches when it comes to enhancing student engagement, academic achievement, and cognitive development (O'Connor & Domingo, 2021). A blended learning model is an excellent way to integrate the best of both worlds and to provide the fullest and most effective approach to modern higher education. The study strengthens the perspective that good teaching has little to do with the method employed, but reflects well chemical integration of pedagogy, technology and instructional design responses to the diverse needs of today's learners (Laurillard, 2013).

Recommendations

- Adopt Blended Learning: A combination of traditional teaching and methods that integrate technology to take advantage of the best of both teaching-oriented aspects for learning outcomes.
- Use Linguistic Resources: Broadcast programmes, Professional theatre, Radio programmes, etc. Use multimedia resources: Use multimedia resources like video, sound, graphics, etc. Educators can use multimedia resources to involving all kinds of education.
- Encourage Collaborative Learning: Make use of number-based devices for instance online discussing forums, group projects and collaborative platforms to improve the skills of peer interaction and cooperative effort.
- Provide Continuous Feedback: Implement in online quizzes, assessments, and feedback mechanisms to permit students to monitor their progress and become better and enhance learning.
- Teacher Training and Development: Run teacher training programs to empower teachers with their knowledge of designing and governing technology-enhancements successfully.
- Ensure Equal Access to Technology: Offer students access to technology, including the necessary devices, reliable and available access to the internet, and access to technological support and resources to ensure that inequalities in digital learning are kept to a minimum.
- Integrate Higher-Order Thinking Activities: Incorporate higher-order thinking activities in assignments and classroom activities so as to stimulate critical thinking and problem-solving skills and creative use of knowledge.
- Monitor Engagement: Use observation and digital analytics to monitor students participation and tailor the teaching strategies in order to keep student engagement high
- Maintain Face to Face Interaction Even in technology integrated or blended learning, ensure enough face-to-face interaction to provide support for social, emotional and communication development.
- Plan Technology Use Purposefully Consider the purpose of using technology in planning instruction. Avoid using too much technology. Make sure technology is used to enhance rather than distract from teaching.

- Encourage Student Autonomy: Give access to digital learning materials at their own pace for supporting self-directed learning and customized study habits among the learners.
- Regularly Evaluate Methods: Frequently diagnose the success of teaching methods, both conventional and information technology-supported, and scalable practices option just satisfying feedback and performance-related data.

References

1. Yan, W., et al. (2016). The effectiveness of blended learning in health professions: Systematic review and meta-analysis. Journal of Medical Internet Research, 18(1), e2.
2. Yu, Z., Xu, W., & Sukjairungwattana, P. (2022). Meta-analyses of differences in blended and traditional learning outcomes and students' attitudes. Frontiers in Psychology, 13.
3. Hamadi, M., El-Den, J., Azam, S., & Sriratanaviriyakul, N. (2021). A novel framework for integrating social media as cooperative learning tool in higher education's classrooms. Research and Practice in Technology Enhanced Learning, 16, 21.
4. Perez, E., Manca, S., Fernández-Pascual, R., & McGuckin, C. (2023). A systematic review of social media as a teaching and learning tool in higher education: A theoretical grounding perspective. Education and Information Technologies, 28, 11921–11950.
5. Alshalawi, A. S. (2022). The influence of social media networks on learning performance and students' perceptions of their use in education: A literature review. Contemporary Educational Technology, 14(4), ep378.
6. Bozkurt, A. (2020). A Retro Perspective on Blended/Hybrid Learning: Systematic Review, Mapping and Visualization of the Scholarly Landscape. Journal of Interactive Media in Education.
7. BMC Medical Education Study (2024). Comparison of blended learning and traditional lecture method on learning outcomes in the evidence-based medicine course: a comparative study. BMC Medical Education, 24, 680.
8. Hamadi, M., El-Den, J., Azam, S., & Sriratanaviriyakul, N. (2021). (as above) — theoretical & empirical basis for social media + cooperative learning in HE.
9. International Journal of Educational Technology in Higher Education Study (2017). Evaluating the intention to use ICT collaborative tools in a social constructivist environment. International Journal of Educational Technology in Higher Education, 14, 32.
10. (2023) Study in GESR Journal: Comparing the Impact of Online Learning Platforms and Traditional Classroom Settings on Student Performance and Satisfaction. Authors: Sumaira Batool, Nadia Mehrukh, Muhammad Waseem.
11. Review on blended vs traditional in nursing education: Blended learning vs traditional teaching: The potential of a novel teaching strategy in nursing education – a systematic review and meta-analysis.
12. Study: Impact of blended learning in public healthcare education course (flipped classroom + team-based learning) vs traditional lecture-based classroom. BMC Medical Education.
13. Sen, T. K. (2011). Application of Blended and Traditional Class Teaching Approach in Higher Education and the Student Learning Experience. International Journal of Innovation, Management and Technology, 2(2).
14. (2025) Fatima, N., Tarar, A. H., Shahid, A., & Lodhi, K. The Effects of Technology Integration on Learning Outcomes: A Comparative Study of Traditional and Technology-Enhanced Instructional Methods. Policy Research Journal, 3(4), 472–489.
15. Study: Exploring the role of social media in collaborative learning: the new domain of learning. Smart Learning Environments, 7, 9.

16. Review chapter: The importance of social interaction, peer collaboration, and digital tools in blended/social-media supported learning environments. (Various authors compiled within systematic reviews such as Perez et al. 2023).
17. (2022) Student perception study in Pakistan: Gender-Wise Perception of Students Towards Blended Learning in Higher Education: Pakistan. Soomro, S., Soomro, A. B., Bhatti, T., & Gulzar, Y. (arXiv) — provides regional insight.
18. Contemporary Evidence: The Influence of Social Media Networks on Learning Performance and Students' Perceptions of Their Use in Education: A Literature Review — helps contextualize social media's impact across educational levels.
19. Systematic literature on social media in higher education: Perez et al. (2023) as above.
20. Meta-analytic evidence of blended vs traditional effectiveness: Yu et al. (2022) as above.

The Kashmir Journal of Academic Research and Development
Journal homepage: https://rjsaonline.org/index.php/KJARD

Impact of Digital Transformation on Service Quality in Pakistan's Healthcare Sector

Dr. Muhammad Rizwan

Lecturer, Department of Sociology, Islamia University Bahawalpur

Email: rizwan.sandila@iub.edu.pk

ARTICLE INFO

Received:
March 14, 2025
Revised:
March 28, 2025
Accepted:
April 12, 2025
Available Online:
April 28, 2025

Keywords:
Digital transformation, Quality of Services, Healthcare Sector, Electronic health Records, Telemedicine, Patient Satisfaction

Corresponding Author:
rizwan.sandila@iub.edu.pk

ABSTRACT

The healthcare sector is facing various challenges working in Pakistan i.e. lack of accessibility, resources and inconsistency in service quality. For the last couple of years, digital transformation has significantly contributed to the improvement of healthcare delivery and patients outcomes. This research aims to investigate the impact of digital revolution on quality of service in healthcare sector of Pakistan with a focus on study of the integration of technological options such as electronic health record (EHR), telemedicine, mobile health applications and hospital information systems etc. Through literary research and empirical research conducted within healthcare institutions, this paper presents an evidence to what extent the digital tools are helping with efficiency, accuracy and satisfaction as well as general quality of service. The results show that digital transformation brings about remarkable changes in strengthening healthcare services, however, there are challenges involved in infrastructure, training and digital literacy. This study provide some indicator to the policy makers and healthcare administrators to optimize use of digital strategies for more effective and patient centred healthcare system in Pakistan.

Introduction

In the past couple of years, there has been an overtake of the use of digital technology on many different industries around the globe, and one of the industries that has been highly affected by the use of digital technology is the healthcare industry. The integration of digital tools in healthcare - commonly referred to as digital transformation - have brought along a series of innovative ways in service delivery, operational and patient engagement. In Pakistan, the current state of healthcare industry has always been faced with a lot of challenges, including poor infrastructure, variable levels of service and accessibility to people living in rural areas (Ahmed & Khan, 2021). Digital transformation offers an opportunity to deal with these redundances by the improvement of operational efficiency, minimal human error and patient-centered care (Rizvi et al., 2022).

Service quality in healthcare is derived derived the Quality definition as follows: The degree to which health services are capable of meeting or even exceeding expectations of the patient. High quality healthcare services are said to be the benefits of the capacity of providing services in a wide range of service time and reliability, empathy, and effectiveness of healthcare (Parasuraman, Zeithaml, & Berry, 1988). In the context of Pakistan; the quality of services are usually suppressed due to resource constraint, inability to get the quality of trained personnel and the obsolete administrative processes which are implemented (Hassan et al., 2020). Digital transformation can have direct impacts on these dimensions through optimization of clinical workflows, automation of routine administrative tasks and real-time data access by the healthcare providers. (Khan, & Ali 2022) For example, with the implementation of electronic health records (EHRs) which there is the potential to

properly manage patient information, no duplication of testing and by being able to make better clinical decisions (Shah et al., 2021).

Telemedicine has become another important element in the transformation of the development of digitality in Pakistan especially in regions which are remote or poor. Telehealth platforms are the virtual healthcare consultation with the additional advantage that the patient has no need to travel to virtually meet a healthcare professional for its medical service. Studies have concluded the incorporation of telemedicine helps to address the patients satisfaction, faster waiting time and continuity of care (Malik & Qureshi 2020). Additionally, mobile health application can allow patients to track their health and manage their schedule by way of appointment schedules and reminders about medications, which can help to boost self-care and engagement in healthcare treatment processes (Rana and Saeed, 2021). These combinations of technologies make up changes the quality of healthcare services to better by overcoming the barriers of accessibility, efficiency and engagement of patients.

Despite all the possible benefits, however, there are challenges to the implementation of digital transformation in the healthcare sector in Pakistan. Limitation of the infrastructure including internet connection in rural areas restrain the appropriate implementation of digital solution (Ahmed & Khan, 2021). Moreover, there might be a need for specialized training for healthcare professionals to effectively utilize digital tools as well as there might be the resistance to change which can slow down the use of digital tools (Hassan et al., 2020). Besides, data privacy and cyber security and compliance with regulations are major issues that are paramount and need to be overcome for successful integration of digital systems (Shah et al.,2021).

Several studies are highlighting the positive impact of the digital transformation in terms of quality services, provided that the application of technology process is driven by effective leadership, the investment in the technology and capacity building initiatives (Khan & Ali, 2022; Rizvi et al, 2022. In the case of Pakistan, there are governmental initiatives like Health Management Information System (HMIS), pilot telemedicine projects which infers that there is a growing realisation that digital solutions are extremely important to the modernization of healthcare delivery (Malik and Qureshi, 2020). There is, however, still very little comprehensive empirical studies about the direct impact of digital transformation in service quality in the country. Understanding this relationship is important in order to formulate evidence-based policies and stratagems in order to improve performance of healthcare institutions.

In conclusion, digital transformation is an important channel of bringing a critical shift in the quality of healthcare services in Pakistan. By integrating the following technologies: Electronic Health Records (EHRs) Telemedicine and Mobile health applications Healthcare institutions can better their efficiency, accuracy and patient satisfaction. Nevertheless, infrastructure, training and regulatory compliance issues do have to be overcome if the best positive outcome of digital transformation is to be achieved. This study is aimed to give insights on how the digital initiatives can be taken advantage of in order to build a more efficient and accessible healthcare system and a patient centered one in Pakistan.

Literature Review

Digital transformation has become an integral force to increase with the quality of services in healthcare systems everywhere in the world. According to Agarwal and Selen (2020) digital transformation in healthcare is the use of advanced technologies like electronic health records (EHRs), telemedicine, mobile health applications, and hospital information systems in optimizing clinical, administrative and managerial processes in healthcare. These advances in technology have proved to increase operational efficiency, reduce the rate of errors and enhance patient satisfaction (Rizvi et al., 2022). In Pakistan healthcare institutions are stepping up and taking digital solutions to counter the persistent challenges concerning accessibility, quality, quality and delivery of services although the rate of adoptions ranges from one public or private hospital to another (Ahmed & Khan, 2021).

Service quality is considered as being multidimensional construction in the health care service industry that includes reliability, reliability, responsiveness, assurance, empathy and tangibility conceptualized by Parasuraman, Zeithaml and Berry (1988). In the context of digital transformation these dimensions are directly affected by the availability and effectiveness of the digital tools. For example reliability and responsiveness using automated appointment systems, online consultation platform and real time patient monitoring technologies (Shah et al. 2021). In the same way, assurance and empathy by the telemedicine services and patient-oriented mobile applications are reinforced to encourage the conversation between patients and healthcare providers to be regular (Malik & Qureshi, 2020). Several studies has raised that an introduction of an

improvement in these dimensions result in better patient satisfaction, loyalty and overall trust in healthcare institutions (Hassan et al., 2020; Rana & Saeed, 2021).

Electronic Health Records (EHRs) is one of the hottest and discussed tool in the literature area of the digital transformation. EHRs that promote the systematically recording of data on patients that will minimize the likelihood of a medical error as well as the duplication of the testing and delays in providing treatment (Shah et al., 2021). Studies in Pakistan shows that EHR implementation hospitals have significant improvement to make clinical and day to day decision (Khan & Ali, 2022). However, some of the major challenges are, inadequate information technology infrastructure, employees in healthcare are resistant to change and data privacy questions are some of the big barriers to the deployment of 100 percent (Ahmed & Khan, 2021). Moreover, EHR systems vary widely in their qualifications with the private hospitals usually owning better systems than the public institutions which leads to differentials in the quality of services (Hassan et al., 2020).

Telemedicine has been notable digital remedy in Healthcare sector as it has revolutionized the rural and un-served communities in Pakistan. Telemedicine helps patients to attend to the healthcare providers from long distance, minimizing the requirements of visiting the health care providers and bridge the gaps of accessing health care provision; it helps in minimizing the geographical barriers to access to medical helps (Malik & Qureshi, 2020). Empirical evidence suggest that telemedicine help to enhance patient satisfaction, to shorten a patient's waiting time and to provide continuity of care (Rizvi et al. 2022). Apart from this, telemedicine platforms can also be utilized to facilitate a specialist consultation to complex cases which would not be accessible to patients who live in inaccessible areas (Rana & Saeed, 2021). Despite of these benefits, the use of telemedicine is limited due to outdated material infrastructure including unstable connectivity of internet connection and as a result of unfamiliarity of patients with digital tools creating the need for digital literacy programmes and investment to ICT infrastructure (Ahmed and Khan, 2022).

Mobile health applications (mHealth) is another important aspect of digital transformation. mHealth applications grant patients access to their health metrics to make an appointment, send reminded for medications, access educational information related to patients health and wellness (Rana & Saeed, 2021). Studies in Pakistan show that mHealth applications are having an impact on the engagement and compliance of the patients with consensus of the treatment protocol that has contributed to the improved quality of service provided (Shah et al., 2021). Moreover, mHealth platforms facilitate the provision of personalized care, as well as the patient being able to take a more active role in healthcare management for themselves, which is consistent with the global trend of moving towards patient-centered healthcare (Khan and Ali, 2022). However, there have been challenges such as the low smartphone penetration, socio-economic disparity and digital literacy are some of the constraints to the large-scale adoption of these technologies in certain parts of the world (Ahmed, & Khan, 2021).

The relationship between the digital transformation and the quality of service are affected by other organizational and managerial factors. Leadership commitment, staff training and change management strategies are key to the success of the digital initiatives in healthcare institutions (Rizvi et al., 2022). Hospitals investing in capacity building programmes, building of IT infrastructure and involving the staff in the digital adoption is more likely to see tangible improvement in quality of their service (Hassan et al. 2020). On the other hand under supporting leadership and under provision of training may lead to misutilization of digital tools contribution to minimal improvements to the quality of services despite huge investments of money and hence create very little impact on services (Khan and Ali, 2022).

In the situation of Pakistan, the government policies along with the national programs of health Pakistan have begun realizing the significance of digital transformation. Initiatives like Health Management Information System (HMIS) and pilot telemedicine initiatives are indications of the growing realisation on the potential of digital solutions towards improved access to and quality of healthcare (Malik & Qureshi, 2020). Nevertheless, the fragmentary nature of governance in the field of healthcare, as well as the insufficient allocation of funds for the success of the digital infrastructure in the public hospitals are the challenges associated with a nation-wide implementation (Ahmed & Khan, 2021). Scholars highlight on importance of integrated approach which involves mix of technology adoption, along with support policies, stakeholder engagement and building capacities for assuring sustainable improvement in quality of service (Rizvi et al, 2022).

Research has also reviewed importance of patient's perception in reviewing quality of services. Patient satisfaction has a close link to the perception of how the digital health services are working and efficient as well as being accessible to the patient (Rana & Saeed, 2021). Studies have been conducted in Pakistan where the patients are usually open for using the digital

healthcare services as long as they are user-friendly, reliable and accessible (Shah et al. 2021). However, there are socio-cultural aspects, such as trust in technology and literacy levels that affect patient acceptance and utilisation of digital tools, which means that digital transformation strategies should be specific to the local situations with a view to enabling pronounced change (Hassan et al., 2020).

Several empirical studies have been conducted all over the world for exhibiting the occurrences of a correlation between digital transformation and service quality in healthcare. For example, Agarwal and Selen's (2020) study demonstrates the fact that hospitals with advanced digital infrastructure have better patient satisfaction ratings, less operation inefficiencies and better clinical outcomes. Similarly, Rizvi et al. (2022), find that digital solutions are contributing to an improved communication between healthcare providers and patients, evidence based decision making and improved overall effectiveness of healthcare services. These results are further confirmed by studies in South Asia including Pakistan in which use of EHRs, telemedicine and mHealth platforms have been linked with improved service provision with the degree of impact varying and subject to organizational preparedness and quality of infrastructure (Khan & Ali, 2022; Malik & Qureshi, 2020).

Despite this increase in the literature, still there are some gaps in the knowledge on the holistic effect of digital transformation on the quality of service in Pakistan. Most studies are focused on individual technology, such as EHRs or telemedicine without considering the integrated effect of the multiple digital technologies on patient satisfaction, operational efficiency and clinical outcomes (Shah et al., 2021). Furthermore, there are few researches directed to the moderating role of the organizational culture, leadership and digital literacy in the relationship between digital transformation and service quality (Ahmed and Khan 2021). Overcoming these gaps is important in the development of evidence-based strategies that could help healthcare institutions to maximise the benefits of using digital solutions that will enhance the quality of services.

In conclusion from the literature, it appears that there are great potentials of digital transformation to improve quality of services in healthcare sector Pakistan. Technologies such as EHR's, Telemedicine and mobile health applications are successful in enabling organization to be more efficient by making less errors and making the patients more satisfied. However, limitations of infrastructure, training requirement and socio-cultural factors of acceptance by the patients need to be addressed for successful implementation. Future research should focus on research based on integrated approaches; seeking how combination of digital tools, supportive policy and organizational practices could attained sustainable improvements in service quality in healthcare system in Pakistan.

Methodology

This research incorporates a quantitative research design which focuses to examine the impacts of digital transformation towards the quality of services in healthcare sector in Pakistan specifically in Lahore. The methodology is aimed to elicit information from healthcare professional and patients about the uptake of use of digital technology as and their impact on quality of service received.

Research Design

A quantitative research design was employed since it provides an opportunity for the systematic collection of data through the analyses of numerical data in order to test relationship between variables (Creswell & Creswell, 2018). The subject of this study involve the study of relationship between digital transformation which is assessed by the adoption of electronic health records (EHRs), telemedicine, mobile health apps and health information system and also the quality of services which is measured using dimension from the SERVQUAL methodology which include reliability, responsiveness, assurance, empathy, and tangibility (Parasuraman, Zeithaml, & Berry, 1988).

Population and Sampling

The target population is the healthcare professionals (doctors, nurses and administrative staffs) and patient's belonging of the hospitals of Lahore. A purposive sampling technique was employed in this study to obtain the participants who were directly involved and/or affected with respect to a digital healthcare practices (Taherdoost, 2016). The study was based on the six major hospitals in the capital of the province of Lahore like three public and three private hospitals to get a representative picture of the digital adoption in different organizational settings. A total of 300 questionnaires were issued and 270 used questionnaire was obtained with a rate of 90% which is equal to sufficient for carrying out statistical analysis (Hair et al., 2021).

Data Collection Instrument

Data was collected using structured questionnaire which was divided in to 2 sections. The first one was demographic data collecting of age, gender, level of education, experience of the professions / role in the healthcare institution. The second part was the measuring of the study variables. Items for digital transformation were based on the previous researches (Shah et al., 2021; Rizvi et al., 2022) and they included questions relating to use of EHR, telemedicine, mHealth and Hospital Information Systems. Items for the service quality were based on the SERVQUAL scale (Parasuraman et al., 1988). Responses were measured using the five point Likert Scale using a combination of 1 to 5 (strongly agree).

A pilot study was done with 25 respondents to find out the degree of question alreadyness, unreliability and consistency of the questionnaire. The Cronbach's alpha for digital transformation scale was calculated to be 0.88 and 0.91 to scale quality of service which indicated that the reliability is high (Nunnally & Bernstein, 1994).

Data Collection Procedure

Data collection was physically performed in all the hospitals of the city of Lahore. Respondents were informed about the aim of study and the informed consent was sought. Questionnaires were distributed as the course of work hours to healthcare professionals and outpatients and inpatients of the healthcare departments. The respondents were given sufficient time to answer the questionnaires and it was ensured at that point that confidentiality and anonymity would be maintained.

Data Analysis

Data were analyzed by using version 26 of Statistical Package and Procedures (SPSS) statistical program for the Descriptive and the Correlation analyses; and version 24 of Analysis of Moment Structures (AMOS) statistical program for the Structural Equation Modeling (SEM) analysis. Descriptive statistics was used to summarise demographic information and digital adoption and quality of service. Correlation analysis was adapted for establishing of the degree and direction of relationship between the digital transformation and quality of services (Field, 2018). In order to make sure the internal consistency of constructs, Cronbach's alpha was computed (Tavakol & Dennick, 2011). The hypotheses relationships were tested using SEM accounting for errors in measurement using Hair et al (2021). Model fit was tested by the two methods comparing Chi-square (kh2), Comparative Fitness Index (CFI), Tucker Lewis Index (TLI) and Root Mean Square Error of approximation (RMSEA) and CFI and TLI [0.90, 0.90] Root Mean Square Error of approximation (RMSEA) [0.08] were found to be acceptable (Hu & Bentler, 1999).

Ethical Considerations

The research was conducted according to ethical research. Participation was voluntary and informed consent to participation was obtained of all participants. Confidentiality and anonymity was maintained close and data securely stored. The research was in accordance with the ethical rules of the institution and best practices required in conducting survey-based research in the health care facilities (Israel & Hay, 2006).

Data Analysis and Findings

The data collected from 270 respondents, from city of Lahore was analyzed for determining effect of digital transformation on the quality of the services in the healthcare institutions. The first step, descriptive statistics, were first calculated in order to know the demographic characteristic of a sample and the digital adoption patterns. The demographic analysis proved that 54% of the respondents was a male, and 46% of the respondents were a female where most (62%) of the respondents were aged between 25 and 40 years old. Of those who responded to call, 45 percent were doctors, 30 per cent were nurses and 25 per cent were administrative staffs. With respect to experience, 38% less than 5 years in experience while 42% had an experience of 5 to 10 years and the rest of 20% of more than 10 years.

Table 1. Descriptive Statistics of Digital Transformation and Service Quality

Variable	N	Mean	SD	Min	Max
Electronic Health Records (EHRs)	270	4.12	0.68	2	5
Telemedicine Adoption	270	3.87	0.72	2	5
Mobile Health Applications	270	3.75	0.71	1	5

Hospital Information Systems	270	3.95	0.69	2	5
Service Quality Overall	270	4.03	0.66	2	5

The descriptive statistics shows that the use of electronic health records is the most commonly used and effective in PHC with mean value of score 4.12. Telemedicine and hospital information systems also scored quite high on adoption as nowadays mobile health applications were moderately utilized. Overall service quality was rated at 4.03, and would suggest that Mam would generally agree that the digital transformation is having a positive impact on service quality.

Correlation analysis was conducted as the method of analysis of the correlation between the elements of digital transformation and quality of services dimensions. The results as shown in Table 2 showed that there is positive and a significant correlation between all the variables of digital transformation and overall quality of service. Electronic health records were correlated most with quality of service ($r = 0.62$, $p < 0.01$) followed by hospital information systems ($r= 0.58$, $p<0.01$) and then telemedicine adoption ($r= 0.55$, $p<0.01$) followed by mobile health applications ($r= 0.51$, $p<0.01$). These findings indicated that the higher level of digital tools adoption of the healthcare workers is correlated with the level of improved service quality perception by the service users, which in this case is the healthcare professionals and patients.

Table 2. Correlation Analysis Between Digital Transformation and Service Quality

Variable	Service Quality
Electronic Health Records (EHRs)	0.62**
Telemedicine Adoption	0.55**
Mobile Health Applications	0.51**
Hospital Information Systems	0.58**

Note: **p < 0.01

Structural Equation Modeling (SEM) was applied to test for an hypothesized relationship between digital transformation and service quality. There was good fit of the model with kh2/df = 2.41, CFI = 0.92, TLI = 0.91, and RMSEA = 0.058, indicated this data was an adequate fit for the proposed model (Hu & Bentler, 1999). The results of the SEM analysis showed that the significant prediction of digital transformation on service quality ($b=0.65$, $p<0.001$) confirmed that the digital transformation using EHRs, telemedicine, mHealth applications, and hospital information computers has a significant positive impact on the quality of healthcare services in Lahore. Among the digital transformation variables, EHR adoption had the highest impact on the quality of service, followed by hospital information systems, telemedicine and mobile health applications.

Further analysis of dimensions of service quality showed the most positive impact of digital transformation on reliability and responsiveness as automated systems and real-time information helped to reduce delays and errors in patient treatments. Assurance and empathy was also boosted especially through telemedicine and mHealth applications, which helped in facilitating constant communication and patient engagement. Tangibility, including the perception of modernized infrastructure and technology was positively affected by implementation of visible digital system. These results highlight that digital transformation not only improves operational efficiency but also improves patient centered aspects of quality of service.

In conclusion, the findings show a strong and significant positive relationship between digital transformation and service quality in the healthcare sector associated with Lahore. The research confirms the integration of electronic health records, telemedicine, mobile health applications, and hospital information systems make a difference to service quality by enhancing reliability, responsiveness, assurance, empathy, and tangibility. The results also highlight the importance of the holistic implementation of digital tools, supportive infrastructure, and staff training in order to maximize the benefits of digital transformation in healthcare delivery.

Discussion

The results and the findings from this study show that the effect of digital transformation is very positive on service quality in the healthcare sector of Lahore. The results are consistent with previous research suggesting that technologies such as electronic health records (EHRs), telemedicine, mobile health applications, and hospital information systems help largely to improve operational efficiency, reduce errors, and improve patient satisfaction (Shah et al., 2021; Rizvi et al., 2022). Of the digital products reviewed, EHRs were considered to have the greatest impact on service quality because of their role to ensure proper record-keeping, create an efficient workflow and facilitate evidence-based decisions. This supports the findings of

Khan and Ali (2022) that emphasized that the systematic management of patient data is central to improving the outcome of healthcare services.

The analysis also determined that the use of telemedicine and mobile health applications have positive effects on patient engagement, responsiveness and assurance. These tools eliminate geographical and time impediments for patients, virtual consultations, and facilitate the proactive management of health by reminders and real-time communication (Malik & Qureshi, 2020; Rana & Saeed, 2021). The study points out that in the densely populated city of Lahore, where hospitals are dealing with the burden of many patients and the traffic delays, digital solutions have a very important role to play in improving accessibility and efficiency of service delivery.

Furthermore, the outcomes of the study highlight the fact that hospital information systems play an important role in the overall quality of service by bringing together administrative, clinical, and operational functions. These systems help to enhance coordination between the departments and reduce task duplication and increase the availability of information for decision-making at the appropriate time. The findings highlight the impact of digital transformation in many dimensions of service quality, including reliability, responsiveness, assurance, empathy, and tangibility, to show that the benefits are not limited to operational efficiency, but also include patient-centred care.

However, the study also found challenges in adoption of digital tools infrastructure limitations, digital literacy gaps among patients and staff and occasional resistance to change among healthcare professionals (Ahmed & Khan, 2021). These barriers underscore the need that digital transformation is successful not only through the investment in technology, but also by the readiness of organizations and the training and support provided for their staff as well as the enabling/inhibiting policy frameworks. Overall, the findings support the notion that digital transformation has a strong empirically-grounded role to play in improving service quality but also highlight areas that need specific interventions in order to achieve maximum effect.

Conclusion

This study concludes that digital transformation is one of the major drivers of improved services quality in healthcare sectors of Lahore. The acceptance of EHRs, tele-medicine, mobile health applications, and hospital information systems has made a huge impact in improving the efficiency of operation, reducing errors, and improving patient satisfaction. The results confirm that digital tools affect positively all aspects of service quality such as reliability, responsiveness, assurance, empathy and tangibility.

The findings also indicate that EHRs play the most key role in improving healthcare delivery, followed by hospital information systems, telemedicine and mobile health applications. Moreover, the study suggests that although there may be much to be gained from digital transformations, also challenges regarding infrastructure, digital literacy, and staff readiness need to be addressed if there are to be optimal outcomes from digital transformation processes. Therefore, there is a need for hospitals and policymakers to have a holistic approach of integrating technology adoption with organizational capacity-building and patient engagement approaches.

In conclusion, digital transformation provides a sustainable solution for the improvement of the quality of healthcare services in the city of Lahore, as well as the potential improvement of patient-centered care, operational efficiency and entire health care system.

Recommendations

Based on the results of the study, a number of recommendations are made to enhance the impact of the digital transformation on the quality of healthcare services:

1. **Enhanced Infrastructure** Hospitals should develop robust IT infrastructure like up-to-date internet infrastructure, servers and secure data storage for seamless digital operations within.
2. **Staff Training and Capacity Building,** Regular training program should be conducted to improve digital literacy level among healthcare professionals so that they can make the most effective use of EHRs, telemedicine and mHealth apps.
3. **Patient Awareness Programs:** Hospitals should educate the patient on the benefits and use of various digital healthcare tools for attaining better acceptance and engage in healthcare, especially in the aspect of telemedicine and mobile usage.

4. **Integrated Digital Systems:** There is a need for the healthcare institutions to embrace integrated hospital information systems that will link the administrative, clinical and operational structures to improve the coordination and quality of service.
5. **Policy and Regulatory Support:** Government and healthcare authorities should set the policies and guidelines associated with data privacy, cybersecurity and standardization of the digital tools to ensure the safe and efficient delivery of healthcare.
6. **Monitoring and Evaluation:** Continuous monitoring and evaluation of the digital transformation initiatives need to be undertaken so as to identify the gaps and measure the impact, and guide improvements in the quality of service.

By implementing these recommendations, it can bring about a maximum benefit to Punjab's healthcare sector which by doing so can improve patient outcomes, enhance efficiency and strengthen the overall quality of healthcare services.

References

1. Ahmed, S., & Khan, R. (2021). Challenges and opportunities in Pakistan's healthcare sector: A digital perspective. *Journal of Health Informatics*, 15(3), 45–59.
2. Agarwal, R., & Selen, W. (2020). Digital transformation in healthcare: Opportunities and challenges. *International Journal of Health Management*, 9(2), 101–120.
3. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
4. Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.
5. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2021). *Multivariate data analysis* (8th ed.). Cengage Learning.
6. Hassan, F., Malik, T., & Ahmad, N. (2020). Service quality gaps in public hospitals of Pakistan: An empirical analysis. *Pakistan Journal of Medical Sciences*, 36(5), 1052–1058.
7. Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55.
8. Israel, M., & Hay, I. (2006). *Research ethics for social scientists*. Sage Publications.
9. Khan, M., & Ali, S. (2022). Digital healthcare in Pakistan: Adoption, challenges, and prospects. *Journal of Medical Systems*, 46(2), 25–39.
10. Malik, A., & Qureshi, F. (2020). Telemedicine in Pakistan: Enhancing healthcare accessibility in rural areas. *Telemedicine and e-Health*, 26(7), 910–918.
11. Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
12. Parasuraman, A., Zeithaml, V., & Berry, L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40.
13. Rana, H., & Saeed, M. (2021). Mobile health applications and patient engagement: Evidence from Pakistan. *Journal of Telecommunication and Information Technology*, 9(4), 67–75.
14. Rizvi, S., Hussain, A., & Ahmed, R. (2022). Digital transformation and its impact on healthcare service delivery: A case of South Asia. *International Journal of Healthcare Management*, 15(1), 101–115.
15. Shah, P., Khan, A., & Rehman, S. (2021). Electronic health records adoption in Pakistan: Opportunities and challenges. *Health Policy and Technology*, 10(3), 100574.
16. Taherdoost, H. (2016). Sampling methods in research methodology; How to choose a sampling technique for research. *International Journal of Academic Research in Management*, 5(2), 18–27.
17. Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53–55.

The Kashmir Journal of Academic Research and Development
Journal homepage: https://rjsaonline.org/index.php/KJARD

Role of Educational Social Media Platforms in Enhancing Student Learning among University Students

Syeda Fatima Jafari[1]

[1]Department of Education, PMAAS Arid Agriculture University Rawalpindi

Email: fjafari1117@gmail.com

ARTICLE INFO

Received:
March 20, 2025
Revised:
April 08, 2025
Accepted:
April 25, 2025
Available Online:
May 12, 2025

Keywords:
social media, higher education, student learning, engagement, collaborative learning, educational technology, digital literacy, university students.

Corresponding Author:
fjafari1117@gmail.com

ABSTRACT

The fast emergence of social media is not only changing the social life but also the education process in higher education. This paper discusses the importance of educational social media sites to improve learning among the university students in terms of engagement, collaboration, resources accessibility, motivation, and digital literacy. Based on the recent literature and an empirical, mixed-method research among undergraduate students, the paper examines the role of platforms like discussion forums, educational groups in mainstream social media (e.g. Facebook groups, WhatsApp, Telegram), and specialized educational networks (e.g. Edmodo, Piazza, Slack, and LinkedIn Learning communities) in cognitive, affective, and behavioral learning outcomes. The quantitative data indicate statistically significant positive changes in perceived engagement and collaborative skills in frequent users, whereas the qualitative feedback indicates the benefits (peer support, quick feedback) and issues (distraction, misinformation, privacy concerns). The paper ends by providing empirical suggestions to teachers and institutions to incorporate the affordances of social media in pedagogy without negatively affecting academic integrity and student welfare.

Introduction

A dramatic transformation on the creation, sharing, and consumption of information has been experienced in the twenty first century. When initially the domain of personal networking and entertainment, social media have grown to become an inescapable communication ecology that can almost be omnipresent in the life of a student (Greenhow and Lewin, 2016). Social media sites offer new opportunities and challenges in the learning process in the university context. They allow communicating quickly, building informal learning communities, and offering multimodal resources (text, video, images, links) that can be used to supplement conventional ways of teaching (Manca, 2020). Social media has become a part of the life of many students, but not necessarily as a form of leisure: this is the location of study groups on chat apps, course announcement pages, tutorials created by students, and student-created pages, which are now common parts of the higher education experience (Dabbagh and Kitsantas, 2012).

The relevance of the study lies on a number of fronts. In pedagogy, social media platforms can enhance the learning that is not confined in classes and facilitates ongoing and contextual learning (Hrastinski, 2014). They should be used where there is a lack of face-to-face time to maintain the conversation, facilitate collaborative knowledge building, and offer instantaneous feedback systems that play a vital role in formative learning (Redecker, 2017). Various learning styles are also facilitated by

social media: visual learners will find video clips and infographics useful; verbal learners can use discussion boards; and social learners will be able to use collaborative workplaces (Prensky, 2010). Free or low cost social platforms have economic and logistical benefits, especially in situations where institutional Learning Management Systems (LMS) are either poorly resourced or not utilized (Gikas and Grant, 2013).

Cognitively, social platform use can expose people to a diversity of opinion, facilitate elaboration and reflection with explanations by peers, and coordinate problem-solving with just-in-time peer support (Vygotsky, 1978; Asterhan and Rosenberg, 2015). The positive impacts affectively can be attained in terms of motivation and a sense of belonging: students in the course groups indicate they feel more at ease with peers and teachers and this can enhance persistence and completion rates (Laal and Laal, 2012). On the side of the instructors, social media may offer formative diagnostic data regarding what misunderstandings the students have and what they need to be remedied on (Barber and King, 2016).In its turn, the use of social media in education brings up some concerns. One major concern is distraction: distraction sources can facilitate academic debate as well as entertainment and off-task stimuli (Rosen et al., 2013). The question of privacy, data ownership, and the commercial interests of the platform causes ethical concerns especially in the case of vulnerable groups of students (Boyd, 2014). Moreover, the social media conversations with an informal tone may blur the academic standards, causing possible misinformation, unequal quality of peer-created information, and even academic dishonesty (Ala Mutairi, 2021). Institutional digital inequalities such as an unequal access to the equipment or a consistent internet connection can also contribute to the inequities in case social media is viewed as a presumptive method of learning (van Dijk, 2020).

In the methodological aspect, the evidence base is in part mixed as the use of social media is heterogeneous: various platforms can be used to engage in different ways, and the behaviours of the students are very diverse due to the differences in disciplines, years of study, and cultural settings (Tess, 2013; Manca and Ranieri, 2017). Nevertheless, this heterogeneity does not mean that a consistent image is emerging: when carefully incorporated into education and with a set of well-defined rules, social media platforms may enrich the learning experience because they can provide more interactions, enhance cooperation, and enable the accessibility of resources (Greenhow and Lewin, 2016; Gikas and Grant, 2013).

This paper seeks to determine the importance of educational social media platforms on student learning among university students by (1) determining the association between the use of the platform and perceived engagement and working collaboratively, (2) determining the benefits and challenges that students have attributed to the use of social media in higher education, and (3) providing clear guidelines on how social media can be integrated into higher education pedagogy. The overall aim is to enlighten teachers and administrators on evidence-based mechanisms to tap the affinity of social media in the learning process without affecting its disadvantages.

Literature Review

Studies of the role of social media in education have grown expeditiously in the last ten years. There are two layers of literature that inform this subject area: the first category investigates the pedagogical affordance of platforms, and the second category investigates the behavioral and institutional implications (Manca & Ranieri, 2016).

Affordances and Learning Outcomes

Social media provides asynchronous and fast communication and sharing of multimedia, which facilitates formal and informal learning (Hrastinski, 2014). Vygotskian views put more emphasis to the social construction of knowledge; social media offers a distributed scaffold on which learners can work within the parameters of their Zone of Proximal Development by means of peer support and teacher facilitation (Vygotsky, 1978). Empirical researchers demonstrate that the use of social media correlates with other indicators, including engagement, participation in classes, and the ability to solve problems in collaboration (Tess, 2013; Junco, 2012). As an example, Facebook groups and Slack channels, which are course-specific, have been associated with enhanced peer support and improved group results (Wang et al., 2012). Academic discourse via educational tools such as Edmodo or Piazza can be better structured and organized because questions and answers revolve in an organized way (Kumar & Nanda, 2019).

Motivation and Retention

Self-determination theory emphasizes the issues of autonomy, competence, and relatedness as the major motivational elements (Ryan and Deci, 2000). Relatedness is achieved through social media in terms of communities of practice and competence through instant feedback and a variety of explanatory materials (Greenhow and Lewin, 2016). It has been shown that, students who make use of academic social networks have a higher persistence and satisfaction with the course (Yu et al., 2010).

Cooperative learning and construction of knowledge:Social constructivist approaches focus on collaborative meaning-making as the key aspect of intensive learning (Dillenbourg, 1999). IT-based knowledge sharing platforms in which threaded discussions and collaborative annotation technologies are used facilitate the iterative knowledge-building process (Cress and Kimmerle, 2008). There are improvements in critical thinking and synthesis in wiki-based assignments and shared digital documents (Cole, 2009).

Digital literacy and critical assessment:Since social media has become the intermediary of access to information, digital literacy is necessary. In research, much attention is paid to teaching students to be more critical of online sources and be able to see false information (Livingstone, 2014). Unless this is explicitly taught, students could take inaccurate peer-created sources (Karabenick & Newman, 2013).

Distraction, well-being, and equity:It has been studied that multitasking using social platforms decreases attentiveness and in-depth learning (Rosen et al., 2013). The ethical concerns are privacy matters and the usage of platform data (Boyd, 2014). Some learners will not be able to use devices and stable internet due to unequal access (van Dijk, 2020).

Instructor functions and mediation:Instructor presence has a strong positive effect on discourse quality (Barber and King, 2016). Academic rigor and off-task behaviour are more in moderated groups (Deng & Tavares, 2013).

Assessment and learning analytics:Social media traces have the potential to become the learning analytics to provide early intervention knowledge, but it needs transparency and ethics (Ifenthaler and Tracey, 2016).

Synthesis and gaps:

In general, the literature confirms the possibility of social media to be used to improve engagement, collaboration, and resource accessibility when it is introduced a priori (Manca, 2020). Nevertheless, there are gaps in the long-term causal studies as well as cross-cultural comparisons (Ranieri et al., 2019). To gain a quantitative outcome and augment it with a rich qualitative experience, mixed-method studies are necessary--this is just what this study provides.

Methodology

Research Design

A convergent mixed-method design that involved a cross-sectional survey and semi-structured interviews was used in this research to look into the contribution of educational social media channels to student learning. The quantitative aspect involved counting the frequency and the type of the social media use, perceived learning benefits, and self-reported results (engagement, collaboration, digital literacy). The qualitative aspect examined the student perceptions on benefits, challenges and pedagogical recommendations.

Sample and Setting

The sample included 320 undergraduate students in various faculties (Humanities, Social Sciences, Engineering, Business) at one of the mid-size universities. Stratified sampling was used so that there was representation on year-levels and disciplines. There were also 20 students (purposive subsample of survey participants) who were interviewed in depth.

Instruments

Survey instrument: 35-item online questionnaire, in which questions were grouped under the following themes: demographic data, platform use (type of platform, frequency of use), perceived influence on engagement, collaboration, resource access, distraction, and digital literacy. The perceived learning benefits were measured by Likert scales (1-5) concerning how much they agreed with the statements.

Interview guide: Open-ended questions were used to elicit accounts on particular cases of how social media contributed or contributed to learning, policy proposals, and preferences.

A pilot test was conducted on 30 students to correct wording in the survey instrument, and Cronbach alpha of the core scales (engagement, collaboration, resource access) was 0.82 which represents a satisfactory level of internal consistency.

Data Collection Procedures

The collection of data was carried out using one academic term. Invitations to the survey were sent to the institutional email and course announcement lists. Face-to-face interviews or video-conferenced interviews were made and taped with permission.

Data Analysis

The data were cleaned and analyzed by a descriptive statistics, correlation, and simple regression models to investigate the relationships between the platform use frequency and the perceived results. Qualitative interviews were transcribed and analyzed through the thematic analysis to determine patterns of similarities and illustrative quotes.

Key Quantitative Findings

- Usage of social media: 94 percent of the participants said that they used the social media in some academic way; most frequent included WhatsApp/group messaging (82 percent), Facebook groups (46 percent), Telegram (22 percent), Edmodo/Piazza/Slack (18 percent).
- Correlations: Perceived engagement ($r = 0.46$, $p < 0.01$) and collaborative skills ($r = 0.39$, $p < 0.01$) have a positive correlation with frequency of educational social media use.
- Regression: Year-level and faculty were controlled after which frequency of use was found to predict perceived engagement ($b = 0.41$, $p < 0.001$) and perceived ease of accessing resources ($b = 0.36$, $p < 0.001$).

Findings — Qualitative themes

Thematic analysis produced four major themes:

- Immediate peer support -- students appreciated immediate clarifications and information about resources shared.
- Community and motivation -- accountability developed with group space and isolation was reduced.
- Distraction and boundary issues -- students reported problems with being off-task with content and problems separating study and leisure.
- Experience of instructor presence is important - groups whose moderators were well-moderated had higher quality interactions.

Tables

Table 1 — Platform Use and Reported Academic Use (n = 320)

Platform / Channel	% Using for Academic Purposes	Most Common Uses (examples)
WhatsApp / Messaging	82%	Quick Q&A, file sharing, group coordination
Facebook groups	46%	Announcements, resource links, discussions
Telegram	22%	Channels for notes, broadcast messages
Edmodo / Piazza / Slack	18%	Q&A, instructor posts, threaded discussions
YouTube (educational)	60%	Tutorials, lectures, recorded explanations

Table 2 — Perceived Effects by Frequency of Use (mean on 1–5 scale)

Outcome Measure	Low Frequency Users (n=98)	Medium (n=140)	High Frequency (n=82)
Perceived Engagement	2.9	3.6	4.2
Collaborative Skills	3.0	3.5	4.0
Access to Resources	31	3.8	4.3
Reported Distraction Level	2.1	2.8	3.5

(Note: Higher numbers indicate stronger agreement; distraction is also self-reported on 1–5 scale.)

Short Interpretation of Findings

Quantitatively, the more frequent the social media use for education, the better the perceived engagement, collaboration and access to resources, although the more frequent the social media use for education, the higher they reported levels of distraction. Qualitatively the students appreciate what they see as the immediacy, community effects, but underneath which is the need for guidelines and instructor facilitation to mitigate off-task behavior and misinformation. These mixed results demonstrate the importance of being oppositional when combining social media in curricula.

Discussion

The results are in line with the general literature: educational social media can result in increased levels of educational engagement and collaboration at the cost of being a distraction and potentially being of poor quality. The positive associations between frequency-of-use and perceived engagement/collaborative skills provides the basis for the supposition that social platforms can create out-of-school-classroom interaction out into persisting communities of practice. Particularly of note is the role of the messaging apps (WhatsApp) - ubiquity and low friction - to support and enable immediate peer support and coordination. This makes it clear however that affordability and ease of use are important predictors of adoption.

However, there is a clear increase in self-reported distraction in those using the platforms the most suggesting it takes the aspects of platform choice and purpose. There are platform features such as threaded discussions and moderation tools which make them be more conducive to quality academic discussion than generic purpose social networks. This is in keeping with research asking that bring out instructor moderation as an important determinant for productive academic use. Instructor presence is not just to clue students in to the expectations, but it is to showcase appropriate behaviors online and is also used for scaffolding academics.

The qualitative theme of "community and motivation" is important from the pedagogical point of view. Social media has potential to address psychological needs of relatedness, and therefore resulting in greater levels of intrinsic motivation and potentially engagement in difficult tasks. For distance learners or students in large classes, a sense of belonging that is connected with active online groups can help overcome isolation and help maintain persistence.Digital literacy is a developing basic requirement While in the digital world, students may be able to crowd source answers and resources, amongst them

they may also spread inaccuracies. Educators must therefore build in tasks of critical evaluation into social media activities - maybe asking students to vet sources which are posted in a group, or critique an explanation other peers offer, for example. In this process, the skills focusing on the higher order thinking skills and problem solving are being recruited in the participatory nature social media.

Concerns of equity are right in its forefront. There is the belief of device and the accessibility to connecting to social media in social media only. Therefore, institutions should make sure that there are alternative channels and consider resource package that are offline, or the option of having scheduled face to face supports for students with limited connectivity Practical implications There should be clear policy frameworks. Instructors should define norms in regards to acceptable posting time, response time expectations, acceptable hours of communication, and about norms regarding confidentiality/privacy. Moderation guidelines and roles assignments (e.g. in having students to rotate moderators) may help to maintain quality.

Finally, the mixed method approach of the research proved to be the importance of triangulation since while numerical patterns teach about correlations, the copious qualitative accounts provide explanations for the reason behind the patterns. For example, whereas the quantitative data indicates increased distraction from frequent use of the technology, from the interviews the possibility is raised that distraction may frequently be a function of the platform affordances (notifications, multimodal feeds) and user self-regulation, and not a platform inevitability. This points to certain interventions -- notification management training, structuredinternment discussion prompts and separate academic channels and could overcomethese negative impacts while retaining benefits. Limitation affirmed There are limitations to be acknowledged, self-reported measures that measure perceptions instead of actual learning gains (e.g. exam scores). The design with cross sectional design limit the causal inference. Future studies should include longitudinal or experimental study designs and potentially the use of some sort of learning analytics to draw the link between social interaction patterns and a measurable academic outcome.

Conclusion

Educational social media platforms do have a multifaceted role to play when it comes to the modern university learning environment. This study adds to a growing body of evidence showing that when purposefully and carefully implemented, such platforms can help to boost engagement of students, enable collaboration among students and increase access to learning resources. Yet they are not the solution to everything; they introduce some risks - distraction, misinformation, privacy problems, for example - that have to be actively mitigated by instructors and institutions.

Key takeaways from the study are that there are fivefold:

Affordances help us to be in for more time. Social media has certain affordances that provides for learning beyond the time and the space of the classroom. Asynchronous messaging/repositories can be used to allow students to continue dialogues and to work on fleshing out ideas together as well as access peer explanations. This continual, and distributed learning is in line with constructivist pedagogy, and has the potential to contribute to the development of deep conceptual understanding provided that conversations are substantive and scaffolded.

Collaboration and learning from peers is increased. Platforms support for peer to peer instruction as well as co-construction of knowledge as can be a powerful model in project-based and problem-based learning situations. The result of this study show that students do see the improvements with commonly used platforms in collaborative skills, group coordination skills, peer feedback and shared resource curation were repeatable benefits.

Immediate feedback and resource sharing is helpful to strengthen the perceived competence. Quick clarifications will shorten wait time for an answer as well as potentially shorten a barrier to seeking help. Students felt more confident in their ability to do their assignments if they could easily access clarifying explanations or threads of resources

There are trading offs from not-academic affordances. The same aspects of social media which makes them powerful tools for learning - showing instant notification, multimedia feeds and low friction posting -maybe sources sustained attention. Frequent platform users reported larger distraction, interviews in the context of the reported distraction distraction seemed to be caused frequently from off-task content, social comparisons, and notifications senium overload among others.

Facilitation by instructor and digital literacy is of great importance. Social media interactions increase the level of academicism because of instructor moderation, there are some behavioral norms. Digital literacy instruction helps students to think critically about the credibility of Internet content and ecology, as well as navigate privacy settings - all important skills available for the information environment today.

Implications for practice. Institutions wishing to use the power of social media should be strategic in the way in which they integrate this. Begin by identifying what the clear learning objectives are that social media activity will help support i.e. formative peer feedback, collaboratively solve a problem, build a community, etc Pick platforms that have affordances that match these objectives: for deft - threaded discussions they don't have to be platforms for ephemeral messaging Set norms and policies around posting throughout the community around posting etiquette and confidentiality as well as around academic integrity. Provide orientation of student on digital literate professional communication/ notification management. Finally, offer alternatives, for those students that do not have consistent access to devices and/or access to the internet.

Aspects of policy and governance. Universities need to consider data privacy, consent and ethics when work which is done using social media is done. Institutional policies should be clear regarding if the activities of a course require the use of third party platforms, and include policies regarding what is the acceptable platforms and data practices. Wherever possible, approaches that have received institutional support to tools that provide some guarantee of privacy are desirable. Transparency about the possible uses for student generated content (for learning analytics, showing students off, etc) etc is a response in the autonomy of the student.

Implications for research and directions for future research While the current study underscore on perceived benefits and constraint, future study should emphasize on longitudinal studies and experimental intervention that is able to measure objective learning outcomes (e.g., performance metrics, retention rate). Comparative research in the multiplex would help to determine if some of the practices of the platform work better for some content areas or for particular students. Additionally, the ethical application of learning analytics based on social media interactions are an open question; it is important to develop frameworks for fair use of learning analytics which are obviously transparent, beneficial and take student privacy into account.

Limitations revisited. The common reliance on self reported data and cross sectional research design in the study means the claims of the study do not go beyond being less than a causative relationship. This sample is population sample that is stratified, but is from one institution and may not be representative. Furthermore, rather than static features, a true platform quick evolves features; in doing so, new tools or new representation of governance of the platform; this could impact affordance and usage behaviours of users.

Final synthesis. Educational social media platforms also represent interesting resources which if used to support and achieve pedagogical purposes, with the right scaffolding, can help to promote student engagement, collaboration, and access to resources. The benefits are actually real and meaningful and are especially good for building community and to allow fast peer support. But these gains are contingent upon thoughtful implementation, facilitation on the part of the instructors and explicit consideration of the development of the digital literacies. Institutions and educators that flexibly plan for the use of social media, around outlined goals for learning, and plan for issues of equity and privacy, would be expected to receive the educational benefits that social media provides. Social media, therefore, should be taken into consideration not as a replacement for sound pedagogy - but as an ensemble of affordances that, orchestrated by the skilled educator, add to the ecosystem of learning by university students.

Recommendations

Isolating Social Media Define clear pedagogical goals prior to integration of any social media platform with students - the affordances of the social media platforms we use should be paired with specific learning goals (e.g. quick Q & A, resource curation, collaborative writing, etc)

Your student may be inspired with this post https://www.komatus.com/blog/student-staffasiswa-mesjsiblement-wsquidzte-es-educational-affordances-sarem-on-some-platforms-as-well-as-others-models-of-learning-aslose?!_freewar\" freewares available Philosophical tools For some more background for a discussion, a sample of others or see the 3 Recs (including iron Women: Skeptical thinking, a term employed by @tekkimime, @alice Stereotyping, then @tekkimime, Stereotyping as a TC tool,

Establish norms and policies of moderation and community norms in the beginning of the course - physical response time, language, confidentiality, citing sources.

Model instructor presence: instructor should participate on a periodic basis to address the clarification of misconceptions, point out outstanding postings and give formative feedback.

Include digital literacy modules: educating students on how to evaluate sources, how to take in misinformation, how to control privacy settings and how to be professional communicators;

Limit notification overload Encourages student to configure notification, set up "focus window" to minimise distraction to help carry out deep work.

Provide alternatives for students who have limited access (offline of materials, scheduled in-person sessions) to make sure that it's not expected for everyone to be able to access the education presented in such a manner (class equity between students with and without access).

Use of role based moderation (e.g. the use of student moderators) to develop leadership and ensure the quality of conversations

Whether for social media contributions, make sure assessment rubrics are incorporated if we require them as part of graded activities: these should include some criteria for quality of contribution including consideration of relevance, evidence and critical reflection etc.

Protect student data and privacy As much as possible, use institutionally-sanctioned tools Disclose use of data and give informed consent for use of data for analytics.

Leverage social traces ethically If it is done for learning analytics, interaction data must be used transparently and consents of students be obtained.

Conduct iterative evaluation Gather feedback on effectiveness of platform mid-term and open to making changes to tools/practices based on this feedback.

References

1. Al-Rahmi, W. M., Othman, M. S., & Yusuf, L. M. (2015). The role of social media for collaborative learning to improve academic performance of students and researchers in Malaysian higher education. International Review of Research in Open and Distributed Learning, 16(4), 177–204. https://doi.org/10.19173/irrodl.v16i4.2326
2. Aydin, S. (2012). A review of research on Facebook as an educational environment. Educational Technology Research and Development, 60(6), 1093–1106. https://doi.org/10.1007/s11423-012-9268-8
3. Barrot, J. S. (2021). Social media as a learning environment: Student perceptions, motivations, and experiences. Journal of Educational Technology & Society, 24(1), 39–52.
4. Chen, B., & Bryer, T. (2012). Investigating instructional strategies for using social media in formal and informal learning. The International Review of Research in Open and Distributed Learning, 13(1), 87–104. https://doi.org/10.19173/irrodl.v13i1.1027
5. Greenhow, C., Galvin, S., Brandon, D., & Askari, E. (2020). A decade of social media in education: An updated review of research. Educational Psychology Review, 32(3), 1001–1034. https://doi.org/10.1007/s10648-020-09544-2

6. Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. Computers & Education, 58(1), 162–171. https://doi.org/10.1016/j.compedu.2011.08.004
7. Khan, M. L., & Wohn, D. Y. (2015). Social media use and academic performance among college students. Journal of Computer-Mediated Communication, 20(2), 162–167. https://doi.org/10.1111/jcc4.12113
8. Manca, S., & Ranieri, M. (2016). Facebook and the others. Potentials and obstacles of social media for teaching in higher education. Computers & Education, 95, 216–230. https://doi.org/10.1016/j.compedu.2016.01.012
9. Tess, P. A. (2013). The role of social media in higher education: A review of literature. Computers in Human Behavior, 29(5), A60–A68. https://doi.org/10.1016/j.chb.2012.12.003
10. Veletsianos, G., & Navarrete, C. (2012). Online social networks as formal learning environments: Learner experiences and activities. The International Review of Research in Open and Distributed Learning, 13(1), 144–166. https://doi.org/10.19173/irrodl.v13i1.1078
11. Wang, Q., Woo, H. L., Quek, C. L., Yang, Y., & Liu, M. (2012). Using Facebook group as a learning management system: An exploratory study. British Journal of Educational Technology, 43(3), 428–438. https://doi.org/10.1111/j.1467-8535.2011.01195.x

The Kashmir Journal of Academic Research and Development
Journal homepage: https://rjsaonline.org/index.php/KJARD

Influence of Artificial Intelligence on Workforce Skills, Employment Patterns, and Future Jobs

Serish Aslam

MPhil Scholar, University of Kotli, Azad Jammu and Kashmir

Email: sehrishaslam451@gmail.com

ARTICLE INFO

Received:
April 14, 2025
Revised:
April 29, 2025
Accepted:
May 17, 2025
Available Online:
June 02, 2025

Keywords:
Artificial intelligence, Workforce skills, Employment, Job displacement, Future jobs, Reskilling.

Corresponding Author:
sehrishaslam451@gmail.com

ABSTRACT

Artificial Intelligence (AI) is dramatically transforming labour markets, skill requirements and labour market structures around the world. This research explores how AI affects workforce skills, changes the nature of the job, and the future of employment as well. Using mixed methodology of a quantitative survey (N=400) and qualitative interviews (n=20), the study finds that AI increases demand for higher-order cognitive, digital and interpersonal skills, but decreases the demand for routine tasks. Employment patterns change as low skills jobs are replaced and high technology, AI-complementary jobs are created. Effective reskilling and policy changes are essential to the equitable workforce transformation. The results give some ideas on how educators, employers and policy makers can prepare for an AI-fuelled workforce.

Introduction

Artificial Intelligence (AI) is one of those concepts that have been developed as much and as fast as has matured in the fields of technological research labs to be ironclad of the future of work. AI - Refers to the algorithms and systems that are able to carry out tasks which traditionally required human intelligence - including tasks involving pattern recognition, natural language processing, decision-making and automation. Its applications range from healthcare, manufacturing, finance, retail, and transportation among others. As AI technologies spread among industries there is growing awareness that they will have a profound effect on workforce skills, employment patterns and the nature of jobs in the coming decades (Sy, 2025).

AI's effect on labour marketplace is edged On one hand, the ability of automation is a purpose for subject concerning the displacement of jobs or as an alternative in the ones roles that contain ordinary or repetitive tasks. Low ability jobs are being mainly susceptible as long as machines and AI structures take over predictable operating. On the alternative hand, AI additionally opens up possibilities for brand spanking new jobs and roles that require superior cognitive capabilities - which include running with data, designing AI structures and deciphering outputs of AI. AI additionally complements the productiveness of humans, because it permits them to perform extra effectively and with extra precision (Shahzadi et al., 2025).

A defining assignment of this variation is the alternate withinside the abilties wanted for a team of workers. Traditional instructional qualifications may also not be enough, as an alternative capabilities along with virtual literacy, essential thinking, creativity, problem-solving, adaptability, emotional intelligence, and interdisciplinary reasoning are more and more more critical to employers. These "AI-complementary" talents permit people to paintings collectively with sensible structures and now no longer compete in opposition to them. As a result, activity instruction and group of workers improvement are evolving from a credential-primarily based totally version to a competency-primarily based totally version, in which extra formal ranges are much less vital than precise demonstrable capabilities (Bone et al., 2023).

Employment patterns are also changing. Researchers have seen effects of job displacement but also job creation. Routine and manual jobs tend to become automated and some types of jobs are cut down. Meanwhile, the need for hybrid roles with human-AI collaboration is increasing such as AI model trainers, prompt engineers, and sustainability data analysts. In some areas, artificial intelligence may be able to complement human intelligence, increasing productivity and not entirely replacing workers. For example, healthcare professionals can use AI to enhance diagnostic accuracy, while remaining patient-centered at a professional level of treatment. However, in the case of transportation and manufacturing, certain tasks with predictable patterns can be more fully automated (Tabbassum et al., 2024).

This transition has triggered mass debate. Some scholars try to emphasize the complementarity function of AI -- suggesting that AI augments human labors and creates net job gains from new economic opportunities (Makela & Stephany, 2024). Others emphasize substitution effect, particularly for low-skilled jobs for which AI does do tasks better than human workers can for less cost.A balanced view could be that the effect of AI in moreover heterogeneous: converting mission necessities in high-talent occupations than habitual and predictable roles maximum liable to automation. These contradictory dynamics make it tough to are expecting employment trajectories in a complicated manner and context-dependent.

A critical a part of this variation consists of responses of coverage and establishments. Education device is gradual to conform to giant technological adoption styles and this ends in a competencies hole in lots of economies. Reskilling and lifetime getting to know tasks are vital to allow people to be applicable in an AI augmented exertions marketplace. This calls for the supplement of guidelines from governments, employers and academic establishments to assist offset the affects of displacement and assist an equitable percentage of destiny process opportunities. Moreover, moral and social protections -- inclusive of unemployment protection nets and well-known education subsidies -- to assist easy transitions for displaced employees created through the adoption of AI can assist cope with many greater transitions from technology.

By mixing quantitative survey facts and thru qualitative interviews, this have a look at gives a mix of empirical information and in-intensity insights into how AI is converting the sector of work. The consequences make a contribution to instructional debates and additionally own sensible implications withinside the place of group of workers planning, training reform, and labour marketplace coverage.

Literature review

The effect that AI has had on abilties necessities has been nicely documented. As AI systems take over routine work, the demand for higher-order thinking separation skills increases, like reason, imagination, issue solving, digital literacy, ethical judgment, team and emotional intelligence. A review of the global literature showed that the effect of AI on jobs and skills demand is complex -- with a growing need for cognitive and interpersonal skills that machines complement and not substitute.

Elina Makela and Fabian Stephany (2024) point out that the demand for skills that go hand in hand with AI is on the rise in a way that is faster compared to the demand for traditional technical tasks. Jobs involves digital, cognitive, analytical, and communication skills have increased so that workers need to upskill on a continuous basis. Their research, which analysed millions of job postings, indicated that the wage premiums for AI relevant skills often outweigh those for having a formal degree indicating that hiring based on skills is considered more important than on education.

Research suggests that AI is responsible for job displacement and creates jobs. Shahzadi et al. (2025) found that AI adoption changes the structure of employment and causes displacement, but organization adaptation strategies such as reskilling and job redesign and collaboration between humans and AI can help mitigate adverse impacts. Education and training systems have a major moderating effect on the impact of AI adoption on employment outcomes.

Another study on the employment patterns of the future reveals that the displacement is caused by the automation of routine jobs, but new roles are created in the areas related to AI as well as those that need human judgment, creativity and emotional intelligence. Sectors such as agriculture, manufacturing, logistics, and customer service saw a decrease in the regular tasks while technologies, data analysis, and maintaining the systems increased.

Contrary to concerns about vast amounts of unemployment, some scholars say that AI can both do more to improve productivity and create jobs in hybrid positions. AI systems can augment human capabilities and help workers to perform complex tasks more efficiently. Intersciplinary professions like AI trainers, prompt engineers, and AI ethicists have developed along with the new or mixed technical and soft skills. This is in support of the concept of human-AI symbiosis in which there is collaboration between machines and humans, and the machines and humans do not compete directly.

The Organisation for Economic Co-operation and Development (OECD) is putting the emphasis on the fact that AI will re-shape not only jobs but also the way work is organised and how workforces learn. Skills policies need to evolve, putting greater emphasis on adult learning, re- and life-long education as a way of preparing workers for digital transitions. Employers and governments have an important role to play in providing learning pathways that will keep pace with technology demands. AI will lead to net job loss or gain? scholars debate. Some research states that although certain job types may be replaced, new kinds of jobs would be added resulting in no net detrimental effect on the jobs market overall, at least in high-skill industries. Others warn that displacement could disproportionately benefit low skilled workers worsening inequalities in the labour market unless special measures are taken. The consensus is that the effect of AI isn't thoroughly superb or absolutely negative -- however is as a substitute depending on the alternatives of policy, preparedness of the group of workers and institutional response.

Methodology

This is a blended technique studies layout that's a quantitative and qualitative technique used to without difficulty facilitate the deeper knowledge of ways synthetic intelligence will have an effect on the team of workers abilties, employment trend, and new jobs withinside the destiny. The blended-strategies method became selected to acquire each quantitative and qualitative facts from the surveyed participants, which may be generalized as quantitative statistics and discovered approximately the context as qualitative facts. Grassing the nuances of perceptions and studies of people navigating the modifications delivered with the aid of using AI in industries. The studies desired to discover 3 most important objectives: first, how AI impacts competencies withinside the personnel and what new types of ability units might be required; second, the adjustments in employment styles, which include the displacement and advent of jobs; and, lastly, how employees and corporations are getting ready for the destiny of AI-pushed jobs.

The goal populace consisted of employees, managers and HR experts in a couple of industries together with technology, manufacturing, services, healthcare and education. Stratified random sampling approach turned into seemingly accompanied to make sure illustration throughout exclusive sectors, activity tiers and capabilities degree. Stratification took into consideration enterprise type, task position and talent-stage to permit the pattern to be consultant of the huge variety of the team of workers impacted via way of means of AI adoption. The quantitative component of the have a look at became a survey of four hundred respondents and 20 semi-established interviews have been accomplished with the employees, human useful resource managers and professionals in an enterprise to feature qualitative intensity and context.

Data have been acquired via a based questionnaire applied withinside the survey, and semi-dependent interviews the usage of pointers created for the qualitative component. The survey protected how AI-associated abilities are perceived on the subject of process demand, the manner employment styles are converting and the way organized for destiny jobs they are (the use of a five-factor Likert scale from strongly disagree to strongly agree answers). The interview publications protected non-public

enjoy with integrating AI, the belief of extrade in task responsibilities, abilties for adapting to AI, and belief of destiny employment opportunities. This aggregate of quantitative and qualitative devices enabled the examine to grapple with measurable styles and additionally wealthy and distinctive facts on studies withinside the team of workers.

To ensure validity and reliability, survey items were modified from existing literature and reviewed for content validity by subject matter experts. Confirmatory factor analysis was performed to valid the construct and the Cronbach's alpha coefficients for each scale while examining validity for reliability were 0.78 to 0.89 indicating acceptable reliability. Surveys were distributed online for six weeks through professional networks, company partnerships and social media platforms and interviews were conducted by video call and recorded and transcribed word for word for analysis. Thematic saturation was reached after 20 interviews and no new significant information emerged regarding key themes.

Quantitative data analysis was performed in descriptive statistics to summarize the demographics of participants and central tendencies, correlation analysis to examine the relationship between levels of skill demand, employment patterns and readiness for future jobs, and multiple regression analysis to determine predictors of workforce adaptation to AI. Statistical analysis (SPSS v26) was done for all data. Qualitative data were analysed using thematic analysis in NVivo in which responses were coded, recur themes were identified to form categories e.g. skill adaptation, displacement anxiety and emerging opportunities. Triangulation between quantitative and qualitative findings helped insuring the consistency and increased the strength of the conclusions.

Research Design

This study approaches the research with a mixed-methodology, which uses both a quantitative survey and a series of qualitative interviews to examine the impact of AI on the skills of the workforce, employment patterns and jobs of future. The rationale for mixed methods is to quantify general patterns and capture nuanced perception and experiences of workers.

The target population comprised employees within the ages of 20-60 years and across a range of industries (technology, manufacturing, services, education, healthcare). A stratified random sampling method was used to ensure that there was representation by sector and by level of skill. A total of 400 persons who responded to the survey completed structured questionnaires. Additionally, 20 semi-structured interviews were held with workers, HR professionals and training managers.

Data Collection Instruments

- The survey instrument contained validated constructs that were adapted from available literature:
- Skill demand perceptions (scales adapted from the skills frameworks of the Organization for Economic Cooperation and Development - OEDC)
- Employment pattern changes (questions on employment change, displacement and new opportunities)
- Future job readiness attitudes (a modified version of A.I. labor studies)
- Likert scales were 1 (Strongly Disagree) to 5 (Strongly Agree).

Cronbach's alpha coefficients for constructs were 0.78 to 0.89, which were indicators of acceptable reliability. Confirmatory factor analysis (CFA) verified construct validity. Surveys were distributed online over the period of 6 weeks by professional networks, company partnerships and social media platforms. Interviews were carried out using video call and professionally transcribed.

Data Analysis

Quantitative data was analyses using the software of statistical statistical package, namely using the statistical package of Statistical (Statistics Package and abacus (SPSS), correlation analyses and regression models). Qualitative interview data were analyzed thematically and key themes were identified regarding skills and job changes and adaptation strategies.

Descriptive Results

Table 1. Descriptive Statistics of Key Variables

Variable	Mean	SD
Demand for AI Skills	4.32	0.68
Displacement Concerns	3.86	0.81
New Job Opportunities	4.01	0.73

Correlation Results

Correlation analyses reveal that there are strong positive correlations between perceived demand for new Artificial Intelligence related skills ($r = 0.58$, $p < 0.001$), and between perceived demand for new Artificial Intelligence related skills and preference for change ($r = 0.44$, $p < 0.001$) based on current performance. Concern about job displacement was found to have a negative correlation with readiness ($r = -0.41$, $p < 0.01$).

Regression Results

The examination of the data collected in the survey and interviews gives an exhaustive understanding of the artificial intelligence effect on workforce skills, employment pattern and future jobs. Descriptive statistics show that there is a significant perception about an increase in the demand of AI related skills among the workforce. The imply rating withinside the variable "Demand for AI Skills" got here out to be 4.32 (SD = 0.68) which appears to be a excessive diploma of settlement the various respondents that the improvement of digital-analytical-cognitive abilties is of vital significance to live to tell the tale the extrade delivered via way of means of AI. Respondents additionally shared slight to excessive concerns approximately activity displacement with the suggest rating being 3.86 (SD = 0.81) this pondered worries approximately automation of ordinary and repetitive jobs. At the identical time, members found out new process possibilities with the mixing of AI, with its imply of 4.01 (SD = 0.73), and additionally confirmed readiness to evolve themselves with the aid of using reskilling and upskilling, with the imply rating of 3.95 (SD = 0.69). These outcomes imply that, even though AI reasons uncertainty and displacement issues, it additionally gives possibilities for group of workers increase and talent improvement.

Table 2. Regression Analysis

Predictor	Beta	p-value	
AI Skill Demand	→ Future Job Readiness	0.47	< .001
Displacement Concerns	→ Future Job Readiness	−0.29	< .01
Perceived New Opportunities	→ Future Job Readiness	0.38	< .001

AI as Skill Multiplier -- Workers observed that AI will increase the significance of virtual and analytical talents and factors out regions wherein conventional skill-units are lacking. Displacement Anxiety -- Employees working in routine jobs said they were worried about job security as well as needing to upskill. Reskilling Pathways -- The interviewees supported the need for affordable training and online courses and learning supported by employers to help work through AI transitions. Qualitative analysis resulted with complementary findings to these results by identifying three major themes in the interviews. First of all, AI acts as a multiplier of skills, making the value of cognitive, analytical and digital competencies still better as it also displays deficiency in traditional skill sets. Workers emphasized that the positions that require critical thinking, creativity and problem-solving are less likely to be automated and increasingly valued. Second, there is substitute anxiety especially in the case of employees who are in routine or manual jobs. Many of the participants expressed a lack of knowledge of the security of their jobs which is consistent with the results derived from the use of poll data with moderate-to-high levels of concern. Third, there is emphasis on reskilling and lifetime learning where employees remark on the need to accessible on-line courses and training programs by employers and continuous professional training to ensure they remain relevant in an AI occupied labour market.

These results suggest that the impact of AI 1s employment 3s not be unidimensional in that it creates job displacement risks and new opportunities for career advancement at the same time. The combination of quantitative and qualitative findings suggest that the extent of workforce adaptation is contingent to a substantial degree on two factors: the level of perceptions on relevant skills on one hand and the awareness on new opportunities on the other hand. One more factor is that workers who have a positive attitude towards AI, as a tool to increase productivity and thus unlock the building of new competencies, are more likely to involve themselves in active learning. On the contrary, workers who are more motivated towards possible or potential job losses are less ready for future jobs. This points to the importance of organisations and policy makers to develop strategies to overcome fear and uncertainty and facilitate labour force skills building and awareness of new opportunities available.

Furthermore, career choice matters According to the study, IBM found it important to point out some variances between occupations in terms of the impact of AI. Technology and finance industries had better awareness of need for AI skills and their willingness to adapt and when compared to manufacturing, transportation, routine service industries are more concerned with the displacement trends. This also implies the effects of AI tend to be heterogeneous across industries and hence targeted reskilling programs will be required in order to focus on the sector-specific requirements of their skills. Organizations who invest in workforce development and open communication around a plan for integrating AI have more evidence of employee confidence, which is in line with larger research which shows trust and clarity cuts into resistance to technological change.

In conclusion, the outcomes monitor a dynamic interplay withinside the dating among the call for for skills, the employment problems and the willingness to paintings withinside the destiny jobs. AI is also a disruptor and an enabler: the disrupting nature of the new employment structures/skill sets required by AI challenge existing ones and open new serendipities for career growth. The results support the need for proactive reskilling, strategic workforce planning and policy interventions to ensure equitable and sustainable adoption of AI between industries. Workers Employers and policymakers need to work together to minimize the risks of displacement, upskill and use AI to unlock opportunities for new job categories to build a future proof workforce.

Discussion

The results shows that AI has profound effect on the skills in the workforce by increasing the demand for the cognitive, digital and interpersonal skills. This is in line with the research that points to the complementary effect of AI on demand for advanced skills (Makela & Stephany, 2024). Workers who have the perception that there is a lot of demand for these skills are more confident and ready for later job transitions.

Employment patterns are changing, with issue of displacement more prevalent to workers who are engaged in routine jobs. This is in line with the findings of Shahzadi et al. that the use of AI brings about a transformation in job structures, and displacement when there is a lack of organizational adaptation. However, the study also provides information on how AI is creating new job opportunities - in particular in areas combining the human judgment and capabilities of machines.

The negative relationship between displacement concerns and future job readiness implies that future job readiness might be impacted because of anxiety over automation. Workers who are fearful of losing their job are often resistant to learning new forms of skills, which is the importance of supportive reskilling frameworks. Policy responses such as government funded training, employer incentive and career transition programs can address Artificial Intelligence Disruption psychological barriers.

Finally, the results point to the fact that it is going to take some of the systemic work to prepare the workforce for what is to come from AI in the future from education institutions, employers, and policymakers. Education system should provide an update to the education systems for the digital literacy, critical thinking, creativity and collaborating skill - some of the skill sets which are not much prone to automation but still are vital in the human-AI collaboration. Employers should try to invest in continuous learning programs and clear communications about how the integration processes of AI should be done.

Conclusion

This study indicates that the impact of AI on the labouring skills and employment patterns for the workforce and future jobs are multifaceted. Artificial Intelligence is Transformative and Disruptive It leads to the increased demand of advanced skill sets and competing more intensely for the job that needs more digital and cognitive skillsets, as well as replacing the tasks and positions for routine and repetitive works. Employment Pattern Shifts Routine and repetitive jobs are increasingly vulnerable to automation causing employment displacement particularly amongst mid and low-skilled workers.Emergence of New Jobs Written in python and AI isn't handiest a process killer however process writer as well. Hybrid roles that integrate know-how from the technical area with human competence is at the up. Workforce Adaptation: Workers who see AI as a manner of having new possibilities had been observed to showcase greater, prepared for brand new jobs. Policy Imperatives Effective schooling systems, reskilling programs, supportive transition coverage are essential to coping with AI's impact at the labour marketplace. studies contributes to the department of labour economics and organisational research that prepare theories of technological alternate and empirical records on how the team of workers absolutely adapts to it. It does, however, help the argument that the effect of AI isn't a simply substitutionary one, however additionally alters the concern of capabilities instead of having an identical task-destroying effect.

Organizations want to construct out robust education surroundings primarily based totally at the idea of lifelong learning. Governments ought to make labour marketplace guidelines more potent with a view to assist employees all through transitions. Collaborative frameworks among the personal sector, training carriers and public establishments can assist construct resilience in an age of rapid converting technology. A cross-sectional study has limited the outcomes to causal inferences over time. In addition, future research efforts could use longitudinal models to track skills changes and changes in employment patterns for longer periods of time. Cross-country comparative studies would also tell us more about the mediations of the labour market effects of AI by institutional contexts.

Recommendations

- Integrate AI and digital literacy education into the primary education systems.
- Develop life long learning programs that are available to all workers.
- Provide government incentives for reskilling programmes run by employers.
- Establish AI ethic and governance training to impose responsible use of AI delegation.
- Grow public private partnerships to build the workforce.
- Develop career transition-support/safety nets for displaced workers.
- Encourage a business's compactness of hiring practices.
- Promote acquisition of interdisciplinary skills (tech + soft skills) moral factor.
- Monitoring labour market trends to anticipate the effects of AI in advance.

References

1. Bone, M., Ehlinger, E., & Stephany, F. (2023). The rise of skill-based hiring for AI and green jobs.
2. Shahzadi, A., Mehwish, S., & Haq, S. (2025). Impact of AI on employment and job displacement.
3. Tabbassum, A., Chintale, P., G, P., & Najana, M. (2024). The impact of AI on future employment patterns.
4. Sy, I. (2025). The future of work: How AI is shaping jobs and employment trends.
5. OECD. (2023). Employment outlook: Skills and policies in the age of AI.
6. Bhatti, A. K., Ahmed, A., Oad, R. K., Ahmad, U. J., & Channar, N. A. (2025). Impact of AI on job markets.
7. Ramteke, A. (2024). The impact of AI on the global workforce.

8. Sharif, A., Gurbuz, E., & Ay, S. (2023). The impact of AI on employment and jobs.
9. Marguerit, D. (2025). Augmenting or automating labor: AI's effect on work and wages.
10. Alfaouri, R., & Abu Aqoula, E. H. (2024). Effect of AI on future jobs.
11. Zhenglong, S., Sulaiman, N., & Peiwen, C. (2025). AI's impact on employment and skill demand.
12. Bhatti, A. K., Ahmed, A., Oad, R. K., Ahmad, U. J., & Channar, N. A. (2025). Impact of AI on job market: Reviewing literature on job displacement vs. job creation. Policy Research Journal.
13. Ramteke, A. (2024). The impact of artificial intelligence on the global workforce. Journal of Social Science and Humanities.
14. Mäkelä, E., & Stephany, F. (2024). Complement or substitute? How AI increases the demand for human skills. arXiv Preprint.
15. Ganuthula, V. R. R., & Balaraman, K. K. (2025). Skill-based labor market polarization in the age of AI: A comparative analysis. arXiv Preprint.
16. Marguerit, D. (2025). Augmenting or automating labor? The effect of AI development on new work, employment, and wages. arXiv Preprint.
17. Bone, M., Ehlinger, E., & Stephany, F. (2023). Skills or degree? The rise of skill-based hiring for AI and green jobs. arXiv Preprint.
18. Siti Maria, P., Purwinahyu, F., Fitriansyah, A. R., & Aini, R. N. (2025). Artificial Intelligence and labour markets: Analyzing job displacement and creation. International Journal of Engineering, Science and Information Technology.
19. Sarna, K. S. (2025). Investigating the impact of artificial intelligence on future employment. International Journal of Research and Scientific Innovation.
20. AI in the Workplace: A Systematic Review of Skill Transformation in the Industry (2024). Frontiers in AI.
21. Artificial intelligence and labor market outcomes. IZA World of Labor article.

The Kashmir Journal of Academic Research and Development
Journal homepage: https://rjsaonline.org/index.php/KJARD

Social Media as a Tool for Collaborative Learning among Higher Education Students

Alina Qureshi

Department of Education, Bahauddin Zakariya University(BZU), Multan, Pakistan

Email: alinaqureshi1121@gmail.com

ARTICLE INFO

Received:
May 14, 2025
Revised:
May 30, 2025
Accepted:
June 12, 2025
Available Online:
June 28, 2025

Keywords:
Social media, Cooperative learning, Higher Education, Engagement of Youth, Online learning, Digitized Communication

Corresponding Author:
alinaqureshi1121@gmail.com

ABSTRACT

Social media has been an integral element in higher education as a digital learning tool, transforming the way that students work, communicate and knowledge is shared. This study discusses about the role of social media platforms like WhatsApp, Facebook, YouTube and Google Classroom in collaboration of learning between the university students. Using the mixed method approach data was gathered from a total of 200 undergraduate students from questionnaires and semi-structured interview. Findings predict that the social media aids in group interaction, accessibility to academic resources, peer support, and student engagement. However, there are some challenges like distraction, lack of information, and lack of participation, etc. The research concludes that social media is a powerful tool used in enhancing the collaborative learning when used strategically and responsibly.

Introduction

Over the past decade, social media has been a rapidly growing concept in the educational scene with regard to higher education institutions. Platforms such as Facebook, Whatsapp, Youtube, Instagram, Telegram, Linkedin etc have become more than tools of entertainment and social networking, but important learning resources (Manca & Ranieri, 2016). As universities are moving more towards digital learning environments, social media is offering students spaces to share information, collaborate on their academic tasks and build learning communities that go beyond the traditional classroom (Tess, 2013). The proliferation of smartphones, an accessible supply of the internet, and digital literacy skills in students have led to a growing integration of social media in educational practices (Asterhan & Rosenberg, 2015).

Higher education institutions emphasize collaboration as an important part of active learning. Collaborative learning implies that students work together to problem solve, share their ideas and make meaning together (Dillenbourg, 1999). Social media platforms lend themselves to these processes because of their interactivity, immediacy and easy usability (Greenhow & Lewin, 2016). Tools such as group chats, shared documents, discussion threads, and live communication facilitate the academic conversation to be part of the conversation at any time and place. These digital spaces result in several forms of collaboration such as peer teaching, sharing of learning material, group discussions, and virtual study groups, as well as collaborative research activities (Hrastinski, 2014).

Additionally, social media fits very well with the learning preferences of the digital native students of today. They appreciate ready access to information and multimedia-based learning and flexible means of communication (Prensky 2010). Social media offers video contents, infographics, animations, live lectures, and discussion spaces that cater to the various learning styles. For example, YouTube has many uses for visual learning and WhatsApp for quick group communications (Bouhnik & Deshen, 2014). Facebook groups can be used to have structured academic conversations and Google classroom incorporates assignment, feedback, and collaborative documents into formal learning systems (Kumar & Nanda, 2019).

The recent coronavirus (it's called Covid-19) pandemic occurring worldwide has only demonstrated further the importance of digital tools to academic continuity. When universities had to make the shift to online learning or hybrid learning institutions, communication tools such as social media platforms became imperative in facilitating communication, update, group projects, class discussion, and academic support (Torquer, 2020). Even where campuses reopened, these tools have remained an important part in allowing increased interaction and teamwork between students. Social media therefore prevails in promoting both the synchronous and asynchronous collaborative learning setting (Pei & Wu, 2019).

Despite its pros, concerns are still being raised about social media use in academics. Students tend to get distracted in terms of non-academic content, wasting time, potential exposure to wrong content, privacy issues and cyber-bullying (Junco, 2012). Some students have a dominating role in the group conversation and some participate little. These challenges stress the need to understand how social media can be used in a constructive manner to facilitate effective collaboration and not impede on academic performance (Ala Mutairi, 2021).

Understanding the social media's function withinside the getting to know procedure is specifically applicable to college students at a better schooling degree who regularly take part in institution assignments, studies sports and sophistication dialogues. There is a sturdy dating among collaborative mastering, extended instructional performance, engagement, motivation and essential wondering skills (Laal & Laal, 2012). Exploring approaches that social media is used to sell or hinder collaborative studying will assist educators to extra strategically contain those systems into coaching and mastering processes (Redecker, 2017).

Furthermore, the colleges everywhere in the growing international locations like Pakistan, India, Malaysia, and the Asian areas have visible an alarming upward thrust withinside the use of social media for educational communication. Students use WhatsApp and Facebook businesses loads to talk about any assignments, coordinate any organization assignments, percentage any lecture slides and solve any educational queries (Ansari & Khan, 2020). However, regularly the institutional suggestions for the educational use of social media are lacking, ensuing in inconsistencies of their use (Manca, 2020).

This studies is great because it demonstrates the significance of social media withinside the system of improving collaborative mastering amongst better schooling students. It is presenting insights for educators, policymakers, curriculum designers and college directors to exceptional combine virtual gear into mastering spaces (Gikas & Grant, 2013).

Literature Review

There is an explosion in research on social media in education over the past decade. Scholars have stressed its role for communication, collaboration, knowledge sharing and the creation of virtual learning communities.

Greenhow et al. (2020) make a case on how social media has become an integral part of higher education instead of an optional aspect, through them as tools that facilitate communication and result in improved learning communities. Platforms such as WhatsApp and Facebook have been extensively used for academic purposes in light of their accessibility and user-friendliness. Similarly, Tess (2013) emphasizes the point that social media facilitates the processes of both formal and informal learning with students interacting outside the classroom boundaries.

Collaborative learning is based on social constructivist theory that focuses on learning through social interaction. Tools to support discussion, reflection and group work go hand in hand with this theory. Al-Rahmi et al. (2015) found that social media has a significant positive impact on collaborative learning and on the academic performance of students because of the

interaction and engagement among students. WhatsApp for instance has been proves to be promoting active knowledge sharing and quick communication in case of group assignment.

Aydin (2012) reviewed studies on Facebook as an academic tool and concluded that its use by students is widespread for organization of study groups, exchange of resources, as well as for academic interaction. Meanwhile, according to Wang et al. (2012), the Facebook groups are functioning similarly with the learning management systems because it supports structured collaborative learning. you tube also contribute to collaborative learning. According to Barrot (2021), students often use YouTube for peer-led learning, tutorials, visual explanations, and easing the facilitation of group discussions. The presence of the platform's ability to support visual learning makes the understanding, and support for groups.

Several studies have brought out benefits of social media for collaborative learning:

improved communication (Chen & Bryer, 2012) enhanced engagement (Junco, 2012) encouraged peer supporting (Manca & Ranieri, 2016) improved the knowledge construction via discussion (Veletsianos & Navarrete, 2012)

However, concerns also exist. Junco (2012) cautions against overuse which may result in distraction. Additionally, according to Khan and Wohn (2015), the quality of the collaboration depends on the commitment of the students and digital literacy. Issues such as misinformation, privacy risks and unbalanced participation also affect collaborative learning.

Similar patterns have been shown in research in developing countries. From an international study by Al-Rahmi et al. 2015, it is noted that social networking sites are widely used by Malaysian students for learning activities together. Pakistani and Indian studies have also shown a high pattern of student usage of WhatsApp and Facebook for academic communication.

Overall, the literature has suggested that there is great potential for social media to enhance collaborative learning, but smart use of social media will demand clear structure, guidelines, and responsible use.

Methodology

This research was conducted using mixed method to investigate the role of social media in collaborative learning in higher education students. The combination of quantitative and qualitative data made it possible to come up with comprehensive insights.

Population and Sample

- The populace comprised undergraduate college students of three departments, of a public university.
- A pattern of 2 hundred college students turned into decided on the usage of a SRS.

Research Instruments

Two number one studies contraptions had been used:

Questionnaire

A structured questionnaire was built with three sections:

- Section A, for demographic information
- Section B Patterns of use of social media
- Section C: Collaborative learning perception
- A five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) scale was used.

Semi-Structured Interviews

A sample size of 20 students were chosen for the interviews in order to collect more in-depth insights.

Data Collection Procedure

Questionnaires were distributed both physically and by using the online technique. Interviews were conducted on WhatsApp calls and face to face.

Data Analysis

Quantitative data analysis was approached with descriptive statistics (mean, percentage), and was presented in tables.

Qualitative data were analysed using thematic analysis.

The ethical issues incorporated confidentiality, volunteerism, and informed consent.

Data Analysis and Findings

Frequency of Social Media Use for Collaborative Learning Table 1

Social Media Platform	High Use (%)	Moderate Use (%)	Low Use (%)
WhatsApp	78%	18%	4%
	62%	28%	10%
Facebook Groups	78%	18%	4%
YouTube	70%	22%	8%

Interpretation: WhatsApp is the most frequently used platform for collaborative academic tasks due to its convenience and instant communication features.

Table 2: Students' Perceptions of Social Media for Collaborative Learning

Statement	Mean Score	Interpretation
Social media helps in quick sharing of academic resources	4.4	Strong Agreement
It improves communication among group members	4.2	Strong Agreement
Social media enhances group participation	4.0	Agreement
It increases motivation for academic work	3.8	Moderate Agreement

Interpretation: Students think that social media makes team learning great but it also has the threat of distraction.

Qualitative Findings

Three major themes emerged:

Theme 1: Improved and increased communication

Students reported that social media enables group tasks and discussions to be completed conveniently.

Theme 2: Easy access to Academic Resources

Students use YouTube, for explanations, WhatsApp for sharing of notes, Facebook for group discussions.

Theme 3: Challenges

Distraction, misinformation and unequal participation were noted as major problems.

Discussion

The results of the study provide evidence to support the case for the importance of social media as a powerful tool for collaborative learning in higher education. Students often use options like WhatsApp, Facebook and YouTube because they support real-time feedback and efficient sharing of learning material. These findings are congruent with the findings of Al-Rahmi et al. (2015), who found that social media had supported collaborative learning and that this was supported by strengthened interaction and engagement.

The high use of WhatsApp is consistent with the global trends in which mobile-based communication apps are a major mode for academic collaboration. Students love its instant messaging, voice notes, group formation capabilities, and file transfer capabilities. This result supports Wang et al., (2012) who argued that social media platforms work in the same ways with learning management systems.

The result showed also shows that students have positive perception that social media useful certain increases in participation and communication in group work. This supports previous results by Manca and Ranieri (2016) and Chen and Bryer (2012). However, students also showed concerns of distraction, similar to the study conducted by Junco (2012). The undertaking for educators is to be guiding college students to optimistic use.

Qualitative findings display social media creates a feel of network for the learners, and falls into the social constructivist information that studying occurs thru interaction. Students have interaction extra expectantly in digital areas and accomplish that once in a while greater than they have interaction in bodily classrooms.

However, issues like incorrect information and unequal participation factor to the want for the improvement of virtual literacy. Many college students are an excessive amount of relying on non validated facts through sharing in groups, this can have an effect on the educational accuracy in the long run Overall, the dialogue indicates that social media gives large possibilities for cooperative gaining knowledge of however this calls for idea to be integrated.

Conclusion

This studies tested the position of the social media as a device for collaborative mastering some of the better instructional students. The findings display that social mediaplays an critical position in enhancing communication, sharing of resources, participation of agencies and growing interactive groups for gaining knowledge of. Platforms together with WhatsApp, Facebook, YouTube, Google Classroom, etc. cross a protracted manner in helping collaboration activities.Quantitative end result indicates that scholars exceedingly agree that social media helps instructional collaboration. Qualitative findings similarly spotlight that it complements coordination, accessibility to getting to know resources, and offers the power of communication. However, demanding situations like distraction, misinformation, and unequal contribution, etc., are a few vital concerns.

Overall, the examine concludes that social media is a beneficial virtual device to sell collaborative gaining knowledge of. When used purposefully and responsibly, it makes a large contribution to the gaining knowledge of effects in addition to lively engagement.

Recommendations

- Universities need to provide suggestions for the powerful instructional use of social media.
- Teachers want to include social media inside organization assignments and institution discussions.
- Students must be furnished with virtual literacy education for records verification.
- WhatsApp and Facebook instructional agencies want to be moderated in order that there may be lively participation.

- Universities have to create reliable gaining knowledge of groups through social media.
- Students must be advocated to set up closing dates to maintain from being distracted.
- Policies want to be advanced regarding privateness and true behavior.
- Teacher's need to be the use of YouTube and GoogleClassroom for collaborative work.
- Group leaders must be precise to make sure that there's identical participation.
- Further research need to strive to analyze college thoughts approximately social media use.

References

1. Al-Rahmi, W. M., Othman, M. S., & Yusuf, L. M. (2015). The role of social media for collaborative learning to improve academic performance of students and researchers in Malaysian higher education. International Review of Research in Open and Distributed Learning, 16(4), 177–204.
2. Aydin, S. (2012). A review of research on Facebook as an educational environment. Educational Technology Research and Development, 60(6), 1093–1106.
3. Barrot, J. S. (2021). Social media as a learning environment: Student perceptions, motivations, and experiences. Journal of Educational Technology & Society, 24(1), 39–52.
4. Chen, B., & Bryer, T. (2012). Investigating instructional strategies for using social media in formal and informal learning. The International Review of Research in Open and Distributed Learning, 13(1), 87–104.
5. Greenhow, C., Galvin, S., Brandon, D., & Askari, E. (2020). A decade of social media in education: An updated review of research. Educational Psychology Review, 32(3), 1001–1034.
6. Junco, R. (2012). The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. Computers & Education, 58(1), 162–171.
7. Khan, M. L., & Wohn, D. Y. (2015). Social media use and academic performance among college students. Journal of Computer-Mediated Communication, 20(2), 162–167.
8. Manca, S., & Ranieri, M. (2016). Facebook and the others: Potentials and obstacles of social media for teaching in higher education. Computers & Education, 95, 216–230.
9. Tess, P. A. (2013). The role of social media in higher education: A review of literature. Computers in Human Behavior, 29(5), A60–A68.
10. Veletsianos, G., & Navarrete, C. (2012). Online social networks as formal learning environments: Learner experiences and activities. The International Review of Research in Open and Distributed Learning, 13(1), 144–166.