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RESEARCH PAPER

Exploring Teachers' Experiences Regarding the Impact of Modern Technologies on Teaching Efficacy and Practices

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ABSTRACT

This qualitative study was conducted for investigating the teachers' experiences regarding embracing new technologies such as artificial intelligence (AI), digital learning platforms, interactive tools and their effects on classroom productivity along with teaching methods. With this aim, there were 20 male and female university teachers who got conveniently selected as samples from six public and private universities of Punjab. The research reveals, through semi-structured interviews with teachers that technology has a positive impact on the greater aspects of teaching such as lesson planning efficacy, classroom management and student engagement and assessment. Consequently, these findings implied that the Universities must ensure continuous professional development and personalized support along with equitable access to digital tools for teachers which may be necessary in order to promote an effective integration of technology into teaching.

KEYWORDS Modern Technology, Teaching Efficacy, University Teachers

Introduction

In the current century, people live in an era full of push-buttons immediately pushing a button you get updated information and they can often utilize knowledge wherever necessary in all respects. Our lives have become more exciting and comfortable with the developments in technology, and so has education. Teachers are being forced forward in education to a time where technology has become a necessity for teaching (Shafqat & Amjad, 2024). The use of modern technology is now on the trend, but during this time it has been proven to be necessary for schools and universities across different locations worldwide as we are experiencing online learning. This major paradigm shift at this juncture has brought about a re-examination of the milieu in which students learn traditionally and how modern technology is impacting teacher efficacy as well (Qureshi et al., 2023).

Therefore, education system of a society is highly impacted by the change in technology. Knowledge learning beyond the human-innovated method Due to education being a basic life aspect Application of modern technology-mediated approaches has revolutionized our educational system, as it is one of the major pillaries in acquiring knowledge that can adopt advanced light than considered. Self-efficacy is the concept introduced by Bandura (1997) referring to an individual's belief in his or her own ability to perform behaviors critical for attaining solutions. In general workplace context self-efficacy is an individual perception of how well they think they can perform their job (Maheshwari et al., 2021).

Bandura investigated how an individual influences his subjective possibility by affecting the person's emotional well-being, decisions in life, attempts and perseverance at facing with adversities (Selwyn, 2016). The teachers' self-efficacy is the belief of a teacher in an ability and effectiveness with perceived outcomes related student learning or turn out.

The application of many social networks and smart equipment has also provided a modernized shape to the classrooms with all new teaching ways which were customizable writings. Interactive whiteboards (smartboard models), educational applications and online simulations bring content to life while also letting teachers cover different learning styles. Providing quality instruction increases teachers' confidence while teaching (Ertmer et al., 2015).

Through online courses, webinars and collaborative platforms, technology underpins the continuous professional development of teachers. There are many resources available for teachers to help improve their teaching skills as well as learn about the latest trends in education. It allows for an increase in teacher self-efficacy. Contemporary technologies have their impact on the efficacy of teachers at university level and explore how technological tools enhance confidence, teaching tactics and effectiveness in general (Collins & Halverson, 2018).

Literature Review

Information and communication technology semantics with university worldview have both challenges as well as benefits. The digital tools like Learning Management Systems (LMS), virtual classrooms or interactive whiteboards have transformed the classical pedagogical approaches. These technologies make education space more dynamic and interactive as users are able to engage students in new ways along with most of the digital content they like (Musurmonov et al., 2021). For example, Almarashdeh (2016) posits that LMS platforms systematize the handling and dissemination of course materials which result in increased organizational effectiveness as well as instructional delivery. Although there is potentiality in the use of technological tools, teachers' confidence and efficacy can be influenced with its adoption (Amjad et al., 2021).

The term effective use of technology in teaching is used to describe the idea that teachers need a certain amount of knowledge, confidence, and beliefs for their application of any design reliable. Teachers feeling any less proficient with new technologies and possibly their confidence will be improved this could therefore affect teaching efficacy (Ibragimovich et al., 2021). In addition, for some educators the shift to technology-enabled education and learning will involve a considerable change in pedagogical methods and practices which can be equally daunting. In a college setting, adoption of new technologies pose its own set of problems (Bandura, 1977).

The unevenness in teaching quality and student experiences is a product of disparities in technological access, digital literacy among faculty. Relatively inexperienced or unprepared teachers in institutes can benefit more when it comes to the effective integration of technology. Furthermore, it is explained that this professional development is key for teachers to successfully negotiate the affordances of more recent forms of technology. These issues can only be addressed systematically through targeted investments in educator professional development and support (De Witte & Rogge, 2014). Moreover, research evidence also supports that systematic training programs for teachers to learn how efficiently technology can be integrated in teaching help. Vast improvement to the future state of technology, whether it shall work with them or not--an end that can certainly help-or harm-those doing their level best for our students (Amjad et al., 2021).

In response to the ascendance of the Social Web or “Web 2.0”, traditional one-way approaches with unidirectional congratulatory teacher-centered instruction have been replaced by emerging mutual competing interactive participatory digital multimedia and technology integration strategies in a lifelong learning environment. New options emerged for living, learning within the classroom and beyond due to digital technology. Technology has been steadily growing and impacting almost every sector in human life including education where the last decade students have had increased access to technology within

schools at all levels (Bal-Taştan et al., 2018). However, it is worth noting that while use of technology per day was at its highest ever in the way we live (outside schools) we have not been innovating with using this tech daily into education before COVID-19 either. The current trend, as more schools transition towards or implement a one-to-one (1:1) teaching model is that teachers have access to technology more than ever before; however, they are not taking advantage of this opportunity in order maximize and integrate the use of tech with their curriculum (Almarashdeh, 2006).

These teachers have essentially used the same tools for professional practice as did their previous generation of colleagues, and they were employed before COVID-19. Their reaction to the twenty-first century teachers pivot their learning and teaching from that of traditional face-to-face instruction towards a more web-based, or technology-integrated approach fell short in some ways. Although technology is often heralded as an accompaniment to instruction that effectively supports student-centered learning and encourages innovative pedagogy, this ideal use of materials for 21st-century education in STEM-related contexts. The COVID-19 crisis plonked teachers whether or not they were prepared techno-pedagogically, confident about remote learning and hybrid teaching, technology became the medium that people had to use now (Amjad et al., 2024a). Given that teachers are generally poorly to not at all pedagogically literate in the use of technology, virtual and online instruction/learning also meant shifting overnight into remote (emergency) teaching modes which created even more stressful and tremendously pressurizing situations for most educators. Self-efficacy of technology integration is the best predictor or legitimate indicator for ability /willingness to engage students through innovative twenty-first-century instruction. A number of stickier studies argue that teachers themselves play a key role in how much technology they are using. The research has demonstrated that one of the largest issues being faced by society is integrating technology into meaningful classroom use. Therefore, the relationship between teachers' technology selfefficacy (TSE) and their successful use and integration of technology in teaching must be analysed (Bal-Taştan et al., 2018).

Self-efficacy, one of the main components in Albert Bandura's Social Cognitive Theory, is described as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types performances". The task-oriented self-efficacy was proposed as a key coping/self-regulation feature to ensure success and running counterintuitively so far teachers will survive protocols such trait is essential for any permutation of challenges coming from teaching solely in the digital space … no more but likewise relying on self- efficacy), it had been thought about keeping with being resilient -- resiliency appeared resilient (Selwyn, 2016). Self-efficacy is the belief in one's own personal ability to perform a given action or produce a desired attainment. Nevertheless, it is noted that self-efficacy beliefs are not an automatic guarantee for the actual use of technology by teachers but these actually form "a prerequisite to using technologies" (De Witte & Rogge, 2014). That is because, a high self-efficacy in one domain does not necessarily equate to low efficacy in another; people may simply believe that other conditions will help prevent success. We understand self-efficacy as the conviction that an individual holds about his/her capabilities to perform well in cases of a specific task or tasks. In the context of technological integration, self-efficacy is not just about a teacher's confidence in using Web 2.0 tools within lessons but also their ability to provide effective instruction with relevant digital aids (Amjad et al., 2022).

The ability of teachers to use technology and make technological decisions is part of the premise that successful integration technology in K-12 classrooms requires effective decision-making processes about how, why, where/when (to) implement technological tools as a means for enhancing instruction and student learning (Musurmonov et al., 2021). Self-efficacy, one of the self-efficacy beliefs in general terms is specified to a particular task and defined as teachers' confidence or belief about their current recognition/realisation that they can do this specific task adopted by Bandura (1997. Technology self-efficacy: the

extent to which a teacher believes that he or she is capable of implementing all forms of digital tools, including Web 2.0 technologies and software application for curriculum purposes; Therefore, technology self-efficacy is concerned with an individual's level of confidence when working on a specific technological task as it is both that-specific and subject-dependent. Self-efficacy is a critical factor in determining the confidence with which teachers will use technology (Ibragimovich et al., 2021).

Material and Methods

This qualitative study explored into teachers' real-world experiences as they adapt to new technologies like artificial intelligence (AI), digital learning platforms, interactive tools, assessing their impact on classroom efficiency and instructional strategies. For this purpose, there were 20 male and female university teachers who got sampled conveniently from six public and private universities across Punjab. A semi-structured protocol comprising 10 items has been used for the data collection after validating it while taking the experts' opinion.

Results and Discussion

The collected data have been analyzed with the help of thematic analysis. The details of the results has been as under:

Impact of Modern Tech on Teaching

When the participants were asked that to what extent do they have access to the institutional IT Lab? The majority of the participants shared their stance that the institutional IT lab was available for them. The lab was updated enough with the latest computers and internet was also available for the faculty members and students as well. The lab was restricted only when any class was being conducted there. Otherwise, the lab was always available for the faculty. Even the paid access was granted to the faculty members regarding the paid educational software like Turnitin etc.

One the participants stated that:

It is quite convenient for me to use the IT lab and I always like using it. It has never been easier to use digital tools in my teaching, as our computers are current and the internet connection is consistent. The lab is very flexible to their schedule; the only time they will not have access is during classes. I especially grateful for access to paid educational software such as Turnitin, which helps in grading and ensuring academic integrity. It opens up a wealth of accessibility for me which overall makes my teaching more effective.

Another participant shared a similar stance that:

Actually, I have exactly as much access to an IT lab than most people do to anywhere they go within the department (except, of course when there are classes in the rooms). The tech is up to date and there is consistent internet access but I usually just go into the lab for random tasks. It is a good thing that the university offers Turnitin for example where plagiarism can be tracked. Except I feel like the lab is not utalised to its full potential and could house more advanced training in educational technologies.

A similar experience is shared by one of the participants that:

Having access to the campus lab is essential for me and others we work with as faculty. They all have been upgraded to newer computers and the internet is consistent. From my observation, the lab is almost always available except during class hours. Some of the best parts about this is that they actually pay for some software like Turnitin to increase

teaching quality at their institution. While I think that the faculty could be using these resources more effectively by having access to greater professional development opportunities.

When the participants were asked that to what extent do they use modern technology while teaching? The majority of the participants shared their experiences that they use the modern technology while teaching. They use different AI platforms for planning their lessons and preparing the lessons. They use ChatGPT platform to take help for planning the lesson within a short time period. Similarly, they use MS Powerpoint for preparing the lesson in the form of slides. They also take help form the Slideshare platform for accessing the readymade lessons. They also use Zoom for the online sessions sometimes when the online sessions are more convenient than face to face sessions.

One the participants stated that:

"This teacher emphasized the efficiency that AI platforms provide in the lesson planning process. They appreciated how AI helps streamline their workload, especially when faced with time constraints."

Another participant shared a similar stance that:

Microsoft PowerPoint is my go-to in lesson building — I use it all the time. This helps in arranging the content so I am able to present it conveniently and follow through during class. I feel like it is the finisher in my tool belt, as I can kinesthetically help students see a topic that they would normally need to hear.

A similar experience is shared by one of the participants that:

I always end up browsing through SlideShare when I need inspiration before making my lesson slides. This can be useful since I do not always have time to build everything from the ground up. Quit often… I find pre-made lessons and files that will work for my class.

When the teachers were asked that how they felt about incorporating Modern technology during their teaching. Most of the respondents revealed their opinions that integration modern technology in teaching has raised both teachers' efficiency and effectiveness. AI tools like ChatGPT have helped in quickening the lesson planning while resources such as PowerPoint and Slideshare makes presentations more engaging and organized. Zoom, and similar platforms like it have become an important tool in teaching classes virtually when face-to-face isn't possible allowing for maximum flexibility all without losing student interaction. They say technology has enhanced the way they communicate and connect to students. Yes, it forces some challenges to keep the tech up-to-date but those are nothing compared with time saved and a fun teaching experience plus freedom from standardization so overall PROS and CONS.

One the participants stated that:

Modern technology has certainly made me more productive. For instance, an AI fueled ChatGPT tool has accelerated my process with lesson planning. I am fast in coming up with ideas, outlines and then when using that to prepare lessons I get quicker at tailoring them their need.

Another participant shared a similar stance that:

PowerPoint and SlideShare have changed the way I present my lessons. Well I have been there and with PowerPoint, my material can be broken up into smaller chunks (parts) which helps to keep all the students focused on a very visual presentation. SlideShare — so

I can get quick access to pre-built design (I modify them of course) It is more comfortable step than to start everything from scratch every time.

A similar experience is shared by one of the participants that:

Zoom has been the saving grace when face-to-face classes aren't possible. One of the best parts is that it can be stretched and answered, while we are not in Classroom but all students engaged and participated actively. I cannot imagine teaching without it now.

Efficacy in Technology Integration

How much efficacious do you feel while integrating the Modern technology into pedagogy when teachers were asked about it? I heard from a majority of you that using tech in your teaching has improved how effectively you teach and reach out to students, enhancing the kind of environments I believe we all want for learning. This has opened doors to collaborative, customized methods of instruction especially for STEM and languages. Difficult subjects can be made manageable and the student outcomes model improves using Virtual Labs, Adaptive Learning Platforms as well as Immersive Apps. However, it also requires educators to be lifelong learners who approach new media in practical ways that can bring about the infusion and not inundation or marginalization of students without access. True, technology has benefits of its own but putting them in education can get costly if not determine appropriately with the potential outcomes.

One the participants stated that:

Modern (teaching) tech seems to really make a difference. They facilitate ways for me to reach out engage students in a more interacting manner — use of interactive boards, online platforms. Also, technology helps me vary my lessons to reach multiple learning styles. Having said that, the effectiveness of technology depends on how we deploy it: Technology should be integrated with pedagogy in a way to enhance learning outcomes.

Another participant shared a similar stance that:

The thing that strikes me is the way in which technology can now create a personalised learning experience for every student. The resources that allow me to adapt my progression are invaluable for learning more about students, programming content tailored for them. I feel like I can support them better this way — with the dog, feeling equal (whereas in a traditional office setting that was much more challenging). However, I need to be constantly vigilant that technology is not simply about splashing the cash on shiny gadgets.

A similar experience is shared by one of the participants that:

This has been a game changer in STEM for its seamless integration of technology architecture. Using Virtual Labs and Simulation Software — This is considered as a technical tool where students do not have to worry about resource management, in terms of time. Concepts that might otherwise remain nebulous become palatable and thus, more concrete. Yet keep in tabs of all the new tools, making sure they fit my purpose for teaching — it is not just a one-time thing.

One the participants stated that:

I think technology's biggest win is in creating new normal for accessible learning. I can utilize digital tools to meet students who have a variety of challenges (i.e. disabilities, language barrier and geographical distances) with their learning needs as well I feel powerful that I do have more students to include in the learning process. On the other hand,

we will always be faced with students who do not have these tools at their disposal and this one is an important reminder for us. But I teach more effective using technology today. Another participant shared a similar stance that:

I believe technology makes it easier to bridge the gap between classroom learning and real-world application. I would have more updated, yet still practical examples I could use for any social media research or data visualization that we discuss. It allows me to teach in a more interesting way and it helps students acquire the tools they will need when it comes to the labor market. The opposite risk is that technology overtakes our ability to do the actual work, which means finding a balance in both ways going forward.

When the participants were asked that how do you feel the regarding the integration of modern tech into education as an opportunity? The majority of them responded that the modernization of technology in education opens big opportunities for educators and have a positive impact within teaching and learning. It is increasing engagement, personalisation and inclusivity in society, widening access to education for all kinds of learners who are now able to relate concepts better with real world examples. With the incorporation of virtual labs and adaptive learning tools as well more immersive language platforms, technology provides a way for learners to get their hands dirty with practical experiences that are otherwise impossible in reality. But educators also caution that society needs to deploy technology carefully and in ways that do not substitute for meaningful human interaction or fail to help us confront problems like the digital divide, which disproportionately affects people from low-income communities.

One the participants stated that:

For me, the integration of technology in learning presents a positive and significant opportunity to change how we teach and students could learn. The potential it has for collaboration, personalizing learning and engagement is unlimited. Education today has also been transformed with tools such as AI, adaptive learning software and virtual classrooms to help serve students for different access and preferred modes of instruction much better than ever. These are exciting times for education, but we need to be sure that the ways in which we use these tools is thoughtful and always intentional.

A similar experience is shared by one of the participants that:

I do feel that tech is making education more and inclusive for all. If used judiciously, whether that be those living in remote areas or a wider range of resources being provided the potential is huge, especially with students who have disabilities. It is also an amazing opportunity to integrate more real-world connections within the classroom, like digital archives or online discussions (or both). The tricky part is always ensuring that technology supplements, rather replaces the learning.

Another participant shared a similar stance that:

For me as a technologist, technology changes everything! Virtual labs, simulations and data analysis tools that were not before possible are essential elements of the student experience. This will not only help them in getting the hands-on experience but also that they understand it more and can work on their skills. The opportunity to transform the way we teach and what students learn so that it actually is relevant for them (in ways no longer true of HS graduation), in order connect education not just with prior levels but also a more contact rich, practical react future workforce. At the same time, I view with hope an opening to promote reflections on technology-to help students realize what and why they are utilizing these tools.

Challenges in Technology Integration

When the teachers were asked that what are the challenges faced by you while integrating the modern technology with pedagogy? The majority of them responded that there are various challenges in integrating technology with pedagogy, emphasizing the need for alignment with learning goals and the balance between traditional and modern methods. They highlight a lack of sufficient professional development, making it difficult to implement tools effectively, particularly in subjects like math and humanities. Student engagement and digital literacy are concerns, as students often struggle with technology, while unequal access to devices further exacerbates the digital divide. Additionally, professors face time pressures in staying updated with constantly evolving tools, and many worry about technology overshadowing personal interaction and critical thinking in their classrooms.

One the participants stated that:

In the humanities, integrating technology can sometimes feel unnatural because the discipline is often centered on discussion and critical thinking rather than interactive tools. A major challenge for me is ensuring that technology doesn't distract from the depth of discussion. I also find that students tend to rely too heavily on digital resources without critically engaging with the material. It's a constant struggle to balance the benefits of access to information with ensuring that students develop analytical skills. Another issue is digital literacy—many students still struggle with the proper use of online academic resources, and this requires additional time and effort to address.

Another participant shared a similar stance that:

One of my primary challenges is finding the right tools that complement the learning of languages. There are so many apps and platforms out there, but not all of them align with my pedagogical goals. Many of them focus on rote memorization rather than the deeper cultural and contextual learning that I aim to foster in my classroom. Another issue is ensuring equitable access to these tools—some students have their own devices, but others don't, and this can create a gap in learning opportunities. Finally, keeping up with the constant updates and new technologies is overwhelming. It feels like just when I've mastered one tool, a new one comes along, and I'm back to square one.

A similar experience is shared by one of the participants that:

The biggest challenge is implementation — making sure the technology we bring in, actually contributes to a better learning outcome. There is a lot of excitement in learning/technology about new tools and platforms; however, identifying the ones that most closely meet your top-level goals can take some time. A second problem is student buy-in. As not all students are tech-savvy and online teaching is a totally new concept for them, they take their time to get along with technology. It is also challenging to leverage conventional forms of teaching while incorporating new tools — achieving that balance without overloading students with too many platforms.

When the participants were asked that what do you suggest regarding the teachers' training in the age of AI? The majority of the participants stated that in the age of AI, teachers' training should focus on enhancing digital literacy, adaptability, and ethical use of technology, while maintaining the human-centered aspects of teaching. Training programs need to integrate AI tools for personalized learning, efficient grading, and automating routine tasks, but also teach critical thinking about when and how to apply AI effectively. Emphasis should be placed on balancing the use of AI with emotional intelligence, creativity, and inclusivity, particularly in fields like special education. Continuous professional development, hands-on workshops, and collaborative learning environments are essential

to help teachers stay updated with rapidly evolving technologies and effectively integrate AI into their teaching.

One the participants stated that:

I am firm in my opinion that when we talk about training for teachers during the AI era, it should be aimed at their digital literacy and versatility. AI may extend our teaching, but we must learn how to collaborate with it too. Training should consist of use-cases examples across AI tools for grading, personalized learning techniques as well automating 90% routine tasks so our prime focus remains student interaction. Nevertheless, we must remember the ethical aspect of using AI and warn teachers why they need to care about privacy – ask for explicit consent before you use data in certain ways.

Another participant shared a similar stance that:

While I accept the fact that AI has its use case in education, it should not be over relied upon. Training must shift toward a more even keeled approach, it should show us how to mesh AI with the natural learning process of humans. Teachers need training in critical thinking, when and how to use AI without loss of basic human traits like empathy or broader creativity. The other thing that came through loud and clear in the qualitative discussions was AI is completely over-whelming for a lot of teachers with poor digital skills, so I wonder if we just do more teaching technology at ground level before really delving into training around A.I.

A similar experience is shared by one of the participants that:

One example of how AI can greatly contribute is in subjects like mathematics and science where adaptive learning platforms exist, which provide lessons at each students pace and level. Anecdotal evidence suggests that AI-driven tools such as simulations and intelligent tutoring systems can play a crucial role in training teachers. Yet, teachers need to be informed on how to read same analytics and modify instruction as a result. While not scientific, qualitative feedback within my STEM teaching community consistently cites AI as enabling teachers to do their jobs more effectively (if they know how).

Modern Tech and Teachers' Role Shift

When the participants were asked that what do you feel regarding the teachers' role shift in this age of AI? The majority of the participants stated that in the era of AI, teachers tend to think that their position is changing from being information supplier no longer present while becoming a mentor and coach anyway. While teachers concentrate on guiding critical thinking, supporting creativity and providing emotional support; AI is used to take up rather more simple jobs such as grading homework or offering personal instruction. This shift is welcomed by many with open arms as it drives the opportunity for educators to build better relationships and connect, while committing more time in those smaller classroom spaces (can you say differentiated instruction) towards higher-order teaching. On the other hand, there are people who share fear of loosing this human touch especially in terms of empathy; motivation and for which AI is not yet available. Teachers, in general have been adjusting to this changing role but they also said that human-centered teaching should not be underscored as teachers are irreplaceable.

One the participants stated that:

I believe teachers are moving from idea that they should be the sole gatekeepers of information, to even more as learning facilitators. Sure, AI can take over a lot of admin and teaching needs freeing us up to literally guide students toward critical thinking, collaboration … applying knowledge in the world. I have anecdotal evidence from my

colleagues confirming that those who embrace this change, feel they are building stronger relationships with their student through mentorship and bespoke support.

Another participant shared a similar stance that:

Certainly, the role of teachers are changing — but I wonder about this change. Although AI is qualified to look after the rote tasks, as well as data-driven instruction, that it can handle seamlessly on its own-never replace a HUMAN element. He also said teachers are key to instilling empathy, understanding of cultural differences and critical thinking. In qualitative discussions, many teachers in my field does not believe that AI can replace human input as it will fosters and motivates students to channels their focus on a single goal.

A similar experience is shared by one of the participants that:

In STEM education, I think that AI will liberate teachers from content delivery toward personalized learning. My role has evolved to helping students actually work with these AI-driven platforms, make sense of the data they see on them, and engage in inquiry-based research. This transition has been predominantly beneficial; conversational evidence from my fellows suggests that they prefer the intelligent, problem-solving part of educational delivery and grading as AI takes over menial labor duties.

Conclusion

A qualitative study was conducted for investigating the teachers' experiences regarding embracing new technologies such as artificial intelligence (AI), digital learning platforms, interactive tools and their effects on classroom productivity along with teaching methods. With this aim, there were20 male and female university teachers who got conveniently selected as samples from six public and private universities of Punjab. The research reveals, through semi-structured interviews with teachers that technology has a positive impact on the greater aspects of teaching such as lesson planning efficacy, classroom management and student engagement and assessment. Although these technologies offer opportunities to make teaching more effective and administrative tasks easier, this is not without challenge in terms of uneven access, different levels of technology skills as well changing role expectations for teachers.

Recommendations

Consequently, these findings implied that the Universities must ensure continuous professional development and personalized support along with equitable access to digital tools for teachers which may be necessary in order to promote an effective integration of technology into teaching.

References

Almarashdeh, I. (2016). Sharing instructors' experience of learning management system: A technology perspective of user satisfaction in a distance learning course. *Computers in Human Behavior, 63*, 249-255.

Amjad, A. I., Aslam, S., & Hamedani, S. S. (2024a). Exploring Structural Injustices in School Education: A Study on Intergenerational Repair. In Frontiers in Education (Vol. 9, p. 1395069). *Frontiers*. https://doi.org/10.3389/feduc.2024.1395069

Amjad, A. I., Aslam, S., & Tabassum, U. (2024). Tech-infused classrooms: A comprehensive study on the interplay of mobile learning, ChatGPT and social media in academic attainment. *European Journal of Education*, e12625. https://doi.org/10.1111/EJED.12625

Amjad, A. I., Batool, N., & Tabassum, U. (2023). Modulating inclusive education in early childhood: The role of teachers' attitude and self-efficacy in shaping their awareness and readiness. *Journal of Early Childhood Care and Education, 7*(2), 55-76. https://doi.org/10.30971/jecce.v7i1.886

Amjad, A. I., Habib, M., & Saeed, M. (2022b). Effect of brain-based learning on students' mathematics performance at the elementary level. *Pakistan Journal of Social Research, 4*(03), 38-51. https://doi.org/10.52567/pjsr.v4i03.684

Amjad, A. I., Habib, M., Tabbasam, U., Alvi, G. F., Taseer, N. A., & Noreen, I. (2023a). The impact of brain-based learning on students' intrinsic motivation to learn and perform in mathematics: A neuroscientific study in school psychology. International Electronic *Journal of Elementary Education, 16*(1), 111–122. https://doi.org/10.26822/iejee.2023.318

Amjad, A. I., Malik, M. A., & Tabassum, U. (2021). Ready to accept? Investigating Pakistani school teachers' readiness for inclusive education. *Turkish Online Journal of Qualitative Inquiry, 12*(9). 7442-7456.

Bal-Taştan, S., Davoudi, S. M., Masalimova, A. R., Bersanov, A. S., Kurbanov, R. A., Boiarchuk, A. V., & Pavlushin, A. A. (2018). The impacts of teacher's efficacy and motivation on student's academic achievement in science education among secondary and high school students. *EURASIA Journal of Mathematics, Science and Technology Education, 14*(6), 2353-2366. https://doi.org/10.29333/ejmste/89579

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295x.84.2.191

Bandura, A. (1997). Self-efficacy: The exercise of control. W.H. Freeman.

Collins, A., & Halverson, R. (2018). Rethinking education in the age of technology: The digital revolution and schooling in America. Teachers College Press.

De Witte, K., & Rogge, N. (2014). Does ICT matter for effectiveness and efficiency in mathematics education? *Computers & Education, 75*, 173-184.

Ertmer, P. A., Ottenbreit-Leftwich, A. T., & Tondeur, J. (2015). Teacher beliefs and uses of technology to support 21st-century teaching and learning. *International Journal of Educational Technology in Higher Education, 12*(1), 25-47.

Ibragimovich, A. S., Fazlitdinovich, S. F., & Abdulbosit, T. (2021). Increasing the Efficiency of Digital Education Technologies: Increasing the Efficiency of Digital Education Technologies. *Academic Journal of Digital Economics and Stability, 2*, 10-19.

Maheshwari, M., Gupta, A. K., & Goyal, S. (2021). Transformation in higher education through e-learning: A shifting paradigm. *Pacific Business Review International, 13*(8), 49-63.

Musurmonov, R., Burkhonov, A., & Musurmonova, M. (2021). Innovative activity-a factor of educational efficiency. *European Journal of Molecular & Clinical Medicine, 8*(3), 1238-1241.

Qureshi, N. S., Iqbal, M. Z., & Amjad, A. I. (2023). Revitalizing Ancient Tales: Unleashing the Impact of Digital Storytelling on Self-Awareness and Transformation of Aspiring Teachers. *Pakistan Social Sciences Review, 7*(4), 458-471.

Selwyn, N. (2016). Education and technology: Key issues and debates. Bloomsbury Publishing.

Shafqat, F., & Amjad, A. I. (2024). Examining Students' Perceptions, Experiences, and Ethical Concerns about Using ChatGPT for Academic Support: A Phenomenological Study. *Pakistan Social Sciences Review, 8*(2), 443–455