Educators Unplugged: Assessing the Readiness of Secondary School Science and Arts Teachers for Mobile Learning Integration

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ABSTRACT

Mobile learning enhances classroom engagement and accessibility, fostering personalized and interactive learning experiences for students while accommodating different learning styles. The study aims to investigate the readiness for mobile learning integration among science and arts teachers from Bhimber district of AJK. It was a quantitative study and researchers used descriptive research design. The researcher used the Mobile Learning Readiness Survey (MLRS) developed by Christensen and Knezek (2017) for data collection about mobile learning integration readiness. The data were collected from 230 secondary school teachers. The collected data were analyzed using mean, standard deviation and t-test. The major finding of the study showed that the level of secondary school teachers' mobile learning readiness was high. It was found that no significant difference exists between science and art teachers on their readiness for Mobile Learning. The study suggested the importance of providing training for teachers to gain the necessary knowledge and skills for effective mobile learning integration in classrooms.

Keywords: *Teachers' Readiness, Mobile Learning, Technology Integration, Secondary School Teachers*

INTRODUCTION

Mobile devices have become an integral part of our daily lives, with mobile learning (m-learning) being a key component of e-learning. Various types of mobile devices, such as notebook computers, tablets, PCs, PDAs, cell phones, and smartphones, have been employed in educational settings (Behera, 2013; Al-Adwan, Al-Madadha, & Zahra, 2018; Padmanathan & Jogulu, 2018). The National Education Policy (2017) emphasizes the shift from rote memorization to a more modern, research-driven, and innovative approach to education through the integration of technology (as cited in Rukh, Iqbal, & Shams, 2021). Because of massive use of Mobile technology (MT), students enhanced their learning. In countries, both developed and developing, the capability of MT is quite different. Due to reliable infrastructure in developed countries, the performance of MT is better than in the developing countries (Ramli, Ismail, & Idrus, 2010 as cited in Mir, Iqbal, & Shams, 2019).

Mobile technologies have seamlessly integrated into the daily routines of educators and students. The global trend is unmistakably shifting toward mobile engagement (Sharples, Taylor & Vavoula, 2010). The constant evolution of mobile technologies not only promises immersive multimedia experiences but also provides access to location-specific resources. These compact

devices conveniently fit in our pockets, serving as gateways to a wealth of information and facilitating communication from virtually any location. The educational community is keenly interested in harnessing the widespread popularity and immense educational possibilities offered by these technologies (Naismith, et al: 2008). Mobile technology is widely used in Pakistan, including the distribution of tablets to teachers as part of the USAID-funded Pakistan Reading Project. This ubiquity is especially prevalent in the field of education. However, the extent to which teachers embrace technology is influenced by their perceptions (Zehra & Bilwani, 2016). Pakistani university teachers and students have shown technological readiness, demonstrating a willingness to invest time and resources in learning mobile-based applications (Shams, Butt & Iqbal, 2014).

Mobile devices are increasingly coming to penetrate people's daily lives (Rukh, Iqbal, & Shams, 2021). Science teachers leverage mobile technology in various ways to enhance the learning experience for their students (Twum, 2017). They use it for data collection and analysis. M-learning is learning with the use of mobile devices; it can happen anywhere without considering time and location (Iqbal**,** Shams, & Duha, ,2019). The mobile devices equipped with the sensors and the data collection apps make it easy for the students to gather real time data and analyze during experiments or fieldwork. Some of the examples are like measuring temperature, pH levels, or record observations using mobile devices, providing a hands-on and interactive learning experience. Moreover, it facilitates access to virtual labs and simulations, which is particularly valuable for distance learning or situations where physical labs are unavailable. These virtual labs enable students to perform experiments and simulations on their mobile devices, aiding in understanding complex scientific concepts. Science teachers also rely on a variety of science apps to engage their students (Grindal, Silander, Gerard, Maxon, Garcia, Hupert, Vahey, & Pasnik. 2019). These apps range from interactive periodic tables to astronomy apps and anatomy apps, offering an immersive and interactive approach to science education.

Furthermore, mobile technology supports communication and collaboration within the science classroom. Teachers can use messaging apps and online platforms to interact with students, share resources, and provide feedback, fostering a more dynamic and connected learning environment. Finally, for field research and observations, mobile technology allows teachers and students to capture images, record audio, and take notes on-site, streamlining the data collection process. Arts teachers harness mobile technology to nurture creativity and artistic expression in their students (Twum, 2017). Creative apps, including drawing, painting, music composition, and video editing apps, become powerful tools for introducing students to a wide range of artistic forms. Students can explore their creative talents and express themselves through these digital platforms, often more accessible and cost-effective than traditional art supplies (Shams, Butt & Iqbal, 2014).

Digital art has become a prominent part of arts education, and mobile devices play a significant role in this transformation. Students can use tablets or smartphones to create digital art, which can be easily edited and shared. These devices facilitate the integration of technology and art, allowing students to experiment and innovate in their artistic endeavors. Another valuable application of mobile technology for arts teachers and students is portfolio management. Through mobile apps and platforms, students can create and curate digital portfolios showcasing their work and artistic progress. These portfolios serve as a visual record of a student's artistic journey, making it a useful tool for assessment and sharing with peers, parents, or potential colleges and employers.

Additionally, mobile technology supports remote critiques and feedback sessions, which can be crucial for arts education, especially in today's context of virtual and hybrid learning (Hurst, Wallace, & Nixon, 2013). Arts teachers can conduct virtual critique sessions where students share

their work with their peers and the teacher, facilitating feedback and collaboration, even when not physically present in the classroom. Arts teachers and students can benefit from mobile technology as a resource for art history and reference. Mobile devices provide access to art history databases, enabling students to explore famous artworks, research artists and art movements, and deepen their understanding of the artistic world (Padmanathan & Jogulu, 2018).

Furthermore, considering the unique challenges and opportunities in the Kashmir region, it is essential to understand how the integration of mobile learning can bridge gaps in education and enhance the learning experience for both science and arts teachers and their students. The study aims to shed light on the specific challenges and prospects in the context of Kashmir's secondary education, providing valuable insights for educational policymakers, school administrators, and educators.

Research Objectives

The objectives of this study were to:

- Investigate the level of secondary school science and arts teachers' readiness for integrating mobile learning in the classroom.
- Compare science and arts teachers' readiness for integrating mobile learning in the classroom at secondary level.

METHODOLOGY

In order to investigate the readiness of secondary school teachers in Azad Jammu and Kashmir (AJK) by their subject, a descriptive research design was used. A total of 350 Secondary school teachers were selected using random sampling techniques. The questionnaires were distributed to 350 teachers and 230 teachers responded to the questionnaires. The data was collected with the help of colleagues and students of the researchers. The researcher attached consent forms and got permission from administration for data collection.

The questionnaire used in this study was MLRS which comprised of four constructs of readiness such as possibilities, benefits, preferences, and external influences (Christensen & Knezek, 2017). According to Christensen and Knezek (2017), "the MLRS is a useful tool for measuring teachers' readiness for incorporating mobile devices and mobile learning strategies into the classroom." There were 28 items in the tool, related to the preparation of school teachers for the use of M-learning. A five-point Likert scale was applied to measure teachers' readiness to integrate M-learning in the classroom.

Eight experts in the field of education technology reviewed it and ensured the content validity of this adapted version of the MLRS. Experts determined that questions 1 to 9 effectively measure possibilities, 10 to 21 effectively measure benefits, and 22 to 24 measure preferences and 25 to 28 effectively measure external influences in the Pakistani context. Some minor changes related to language were suggested that were addressed. The content validity was measured through content validity index and it was found appropriate for this scale.

The survey was administered to 30 secondary school teachers. Cronbach's alpha, a reliability coefficient, was used as a measure of reliability. In this study, its value was found to be 0.823. The instruments reported coefficient alpha for reliability of the entire instrument as follows: Possibilities (.734), Benefits (.772), Preferences (.827), and external influences (.750).

RESULTS

Table 1

Difference between science and arts teachers' readiness for integration of mobile learning in the classroom at secondary level

Variables	Subjects	N	Mean	SD	df	t	p-value
Readiness	Science	95	3.61	.44	228	1.004	.317
	Arts	135	3.57	.49			
Possibilities	Science	95	3.73	.416	228	1.204	.231
	Arts	135	3.54	.506			
Benefits	Science	95	4.63	.657	228	1.535	.127
	Arts	135	4.54	.639			
Preferences	Science	95	2.89	.970	228	.297	.767
	Arts	135	2.84	.988			
External	Science	95	2.72	1.004	228	-0.982	.328
Influences	Arts	135	2.88	.949			

Table 1 showed that science and arts teachers are ready on the indicators such as readiness, possibilities, and benefits of using mobile learning in the classroom as the mean scores in each case is above 3 but they are slightly not ready on the indicators of preferences and external influences as their mean scores is below 3 as shown on the chart below. Moreover, there is no significant difference between science and art teachers' readiness for integration of mobile learning at 0.05 level because the calculated p-value (.317) is more than the table value of 0.05. Similarly, no significant difference is found for possibilities ($t= 1.204$, $p< 0.231$), benefits ($t= 1.535$, $p< 0.127$) , preference ($t= 0.297$, $p< 0.767$) , and external influences ($t= -0.982$, $p< 0.328$). It showed that teachers of arts and science are not taking the technology integration differently as per collected data on the four constructs of readiness. The descriptive statistics that mean scores also showed very close values between science and arts teachers' readiness.

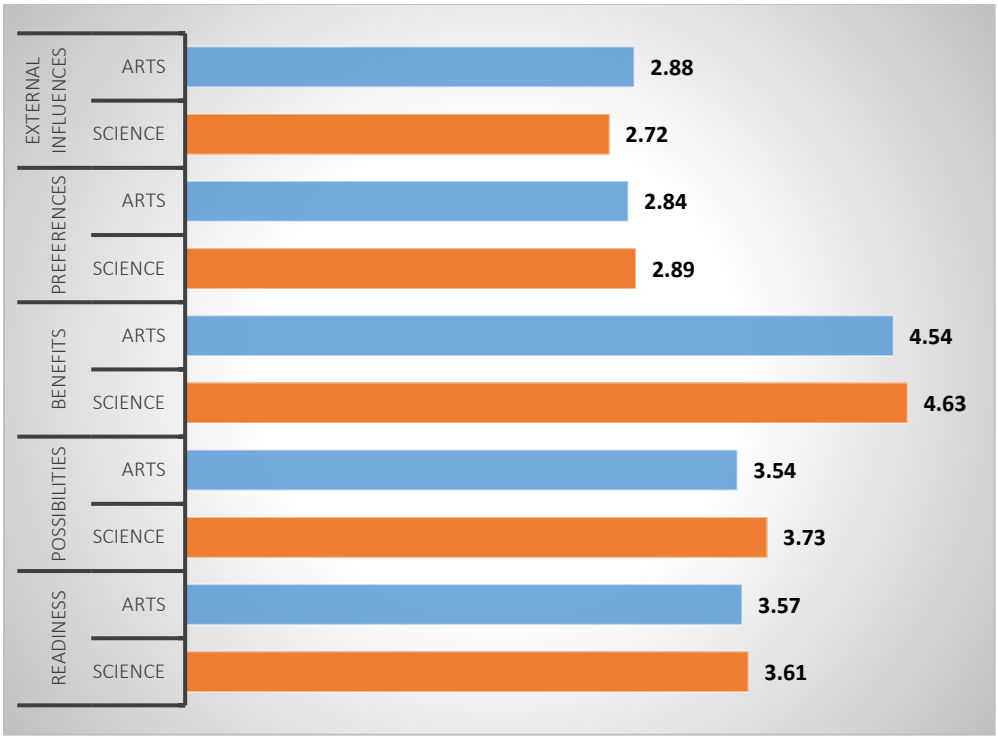

Figure 1: Chart showing four constructs and total readiness mean values of science and arts teachers.

The chart shows that the highest mean values were found for the agreement of arts and science teachers with the benefits of integration of mobile learning. In the same line they showed that there are possibilities for this integration, and they are ready for it. These results are important because when the people take something as instrumental, they want to adopt it.

DISCUSSION

Pakistan is a developing country, and it is very interested in providing modern education to its people. Therefore, the education sector emphasized the need for skilled teachers to use technology in educational institutions and to incorporate technology into the curriculum. For the development of education and the provision of technology for schools, a large provision was made in the budget.

Providing resources to address technology in education will not be effective (Gulbahar, 2007). The use of technology in the teaching process and teaching strategies in a formal educational setup depend on the teacher's ability to present the classroom environment without following the flow of the students' reasoning and without guaranteeing the quality of attention required.

In a formal educational setup, the use of technology in the teaching process and teaching strategies depend on the teacher's ability to present them without neglecting the classroom environment, following the flow of students' arguments, and ensuring the quality of attention required. If teachers are not prepared with sufficient knowledge, it is challenging for them to integrate mobile learning. The role of teachers in technology integration cannot be ignored and teachers are an important part of determining the success of mobile learning integration. Their

beliefs, attitudes, discernments, and readiness for technology play an important role in their adoption of technology. According to (Churchill, 2020), Technical enrichment in education is more dependent on teachers' readiness to adopt, plan, and integrate learning technologies and initiatives. This quantitative study aimed to examine the readiness of secondary school science and arts teachers for mobile learning integration in Kashmir.

It was found that there is no significant difference between the readiness of science and arts secondary school teachers for their readiness to integrate mobile learning in their teaching. This was consistent with a study conducted by Badri, Rashedi, Yang, Mohaidat & Al Hammadi (2014) and also the study of Summak, Baglibel, & Samancioglu conducted in 2010. These studies revealed that the readiness of teachers to integrate technology is not linked with the subject they teach. However, the result werenot found to be inline with the stdy of Al-Awidi, & Aldhafeeri, 2017 and Howard, Chan & Caputi 2015, that found a significant difference between the readiness of teachers to integrate mobile learning based on their subject areas.

RECOMMENDATIONS

1. This study revealed that there is no difference in teachers' readiness based on their subjects taught so the same strategy for integration of mobile learning can be applied.
2. This study was about the readiness of science and arts teachers but new research is required to study other variables.
3. This study revealed that the readiness of secondary school teachers was positive, future research could be conducted to determine the readiness of primary school teachers such research could be beneficial to integrating mobile learning.

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