Exploring the Impact of Mobile Learning Apps on Academic Performance and Learning Experience: A Case Study in Thana, Malakand Division

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Original Article

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Abstract
In this study, we investigate the impact of mobile learning apps on academic performance and learning experiences, focusing on government schools in Malakand Division. As of 2024, despite the evident potential of technology, a significant gap exists in its adoption within government institutions. Our research employs a mixed-methods approach, engaging teachers, students, and administrators to comprehensively assess technology awareness and integration. The data from 55 participants reveal diverse insights, uncovering patterns, challenges, and opportunities. The study aims to bridge the technological gap by providing informed strategies for enhancing education through technology in Thana, Malakand, thereby empowering government sector students to navigate the evolving educational landscape of 2024.

Keywords: Educational Technology, Malakand Division, Mobile Learning Apps, Academic Performance, Learning Experience, Technology Integration

1. Introduction

In the ever-evolving landscape of education, the integration of technology plays a pivotal role in shaping the learning experiences of students (Beaton & O'Dwyer, 2002)). As we embark on the year, it is disconcerting to observe a gap in the utilization of technology within schools and colleges, particularly in the government sector, across the world (Martin, Mullis, Gregory Hoyle & Shen (2000)). Despite the transformative potential technology holds for education, there remains a noticeable disparity in the adoption of advanced tools and digital platforms that could provide enhanced opportunities for students. In this era of rapid technological advancement, the underutilization of these resources raises concerns about the equitable access and preparedness of government sector educational institutions in Division to meet the evolving needs of their student population (Office of Technology Assessment OTA 1995). This study explores how government institutions integrate technology into their schools and colleges and to what extent they struggle to bring that technology to their students. By raising awareness of these challenges, we hope to

inform strategies and identify areas for intervention activities aimed at closing the gap and preparing government students for 2024.

As 2024 draws near, technology's game-changing potential in educational contexts is clearer than ever. But schools and colleges in the Malakand Division, particularly the government institutions, are still struggling to keep up. Despite the global move to digitize education (UNESCO, 2021), some schools and colleges particularly those in the public sector fall further and further behind in capitalizing on technology's potential to improve student learning.

Vast research indicates that technology-rich assignments increase engagement, make learning more individualized, and enhance the educational experience and student satisfaction overall (OECD, 2015; Crompton, 2014). Yet the delayed integration of technology into schools and colleges managed by the Malakand Division raises concerns about the accessibility of these technologies and their level of preparedness for 21st-century learning. A. Isman (2002).

As the private sector and many urban institutions are hopping onto the digital-bandwagon and offering e-tools and platforms as part of their business-as-usual routines, government schools and colleges appear to be falling behind (Suleman, 2008). This current research seeks to explore the state of technological integration in government institutions and to illustrate the trials and tribulations of government schools and colleges as they attempt to digitize educational possibilities for tens of thousands of their users.

The literature, to be shortly reviewed, identifies a variety of problematics impeding effective technology infusion in educational systems in general and government institutions in particular. These include insufficient infrastructure, a dearth of easy access to digital devices in K-12 and higher education, and a paucity of digitally conversant educators (Smith & Ragan, 2005). By exploring these dimensions against the backdrop of our model we hope our data will pinpoint a variety of competitive priorities to address in Malakand Division's government sector.

2. Research Methodology

This study will use mixed-methods to develop a comprehensive picture of technology awareness and integration in Malakand Division government schools and colleges, using a mixed-methods approach. A stratified sampling method will be employed to include diverse representation from varied educational institutions based on their locality, size, academic performance and economic condition. Participants including teachers, students and school administration will be involved at all stages in the collection of quantitative and qualitative information. A structured survey instrument will be developed to measure the existing level of technology awareness and use among teachers and students in the target institutions, including the use of and the availability of digital devices, familiarity with educational software and participant perceptions of the impact of technology in the learning environment. The instrument will be further refined based on feedback from a pilot study. Semi-structured interviews and focus group discussions will be conducted with the teachers, students, school administration and parents to explore their deeper, richer and nuanced perspectives regarding the challenges and opportunities posed by the use of technology. Classroom observation will provide an opportunity to document naturally occurring qualitative data, thus enabling a careful and full-bodied account of the reality of technology in teaching and learning. Statistical tools will be used for sifting the data collected through the survey instrument, while the qualitative data generated will be analyzed for thematic which will be combined to produce a comprehensive account and portrayal of the digital divide among these education institutions. The ethical issues like participant's consent and privacy will be duly observed. Limitations, such as potential sample size constraints and response bias, will be acknowledged. A well-defined timeline

will guide key milestones in data collection, analysis, and reporting, ensuring the systematic progression of the research. Through this mixed-methods approach, the study aims to contribute a nuanced and holistic assessment of technology awareness and integration in government schools and colleges in Malakand Division (Govt. of N.W.F.P. (2007-08).

The image displays the map of Khyber Pakhtunkhwa (KP), with the designated research area highlighted in white. (https://www.geocities.ws/mkdfinance/pakmap.html)

3. Data Analysis

Our data analysis centers around the input gathered from 55 participants in Thana, Malakand—37 students and 18 teachers. Among the students, 10 are female and 17 are male, while among the teachers, 3 are female and 15 are male. The diversity within our participant pool promises a comprehensive exploration of technology awareness and utilization in education. Through tailored questionnaires, both students and teachers provided insights into their experiences with technology. In this analysis, we aim to uncover patterns, trends, and potential variations in responses. The gender breakdown of the participant pool provides an interesting lens through which we can continue to examine technology use in the area.

This analysis is part of a larger project to generate insights that can be leveraged to build suggestions as to how we can better use technology in education across Thana, Malakand. Thus, this initial analysis paints a good picture of where technology integration currently stands across the area.

Demographics Characteristics

In sum, there were 55 people from Thana, Malakand who participated in the study, 37 of which were students and 18 of which were teachers. Of these students, 10 female and 17 male. For teachers, 3 were female and 15 were male. This wide range of participants offers valuable insight into how technology is being used across a range of demographics in education.

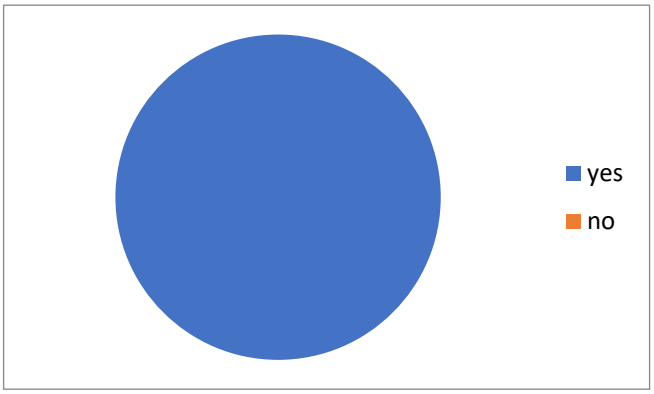
Male	32
Female	23
Teachers	18
Students	37

4. Student Perspectives on Technology Usage: Unveiling Insights from Thana, Malakand'

As we delve into a technological universe so different from my own, I found myself in Thana, Malakand where I interviewed 37 students. Of them 10 were female and 17 male. I wanted to hear the student perspective on what it's like to be learning online. Their experiences. The challenges they face. Their hopes. Their dreams. My encounters were crucial to understanding how technology is used in education at all levels in this community.

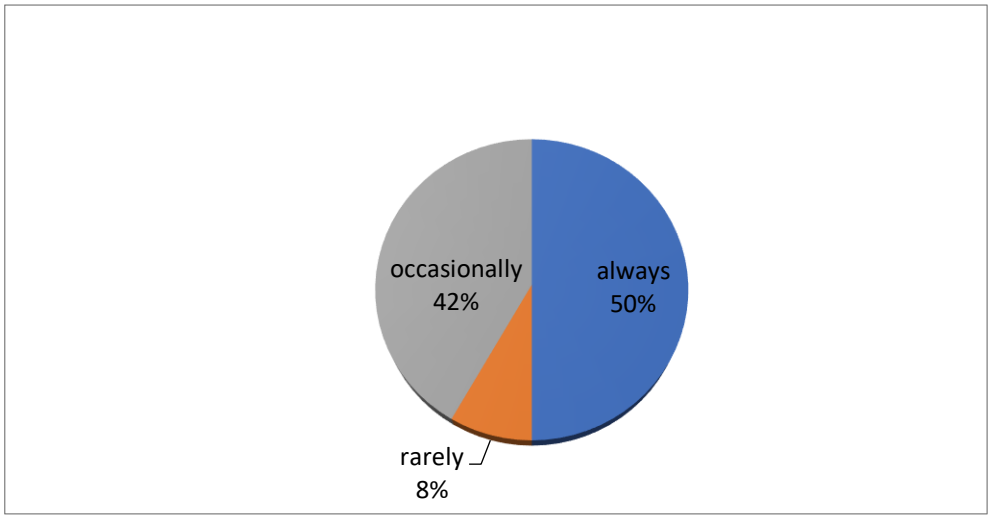
Digital Device Access at Home

All 37 students reported that they regularly had access to a digital device (computer, tablet, smartphone) in their homes. The universal "Yes" response suggests that the participants enjoy a great deal of availability to digital tools. This section will inspect the impact of such access on their use of technology in the various educational contexts.



Frequency of Digital Device Usage for Educational Purposes

In breaking down the responses, 50% said they "Always," used them, 8.3% responded "Rarely," and 41.7% indicated they were used "Occasionally." While the results from the survey question give us a look at the varying ways people interact with digital tools in classrooms that just scratches the surface. The following analysis will delve into both what is influencing the technologies' uses, and how they might be shaping educational experiences.



Technology Tools for Learning: Preferences and Usage

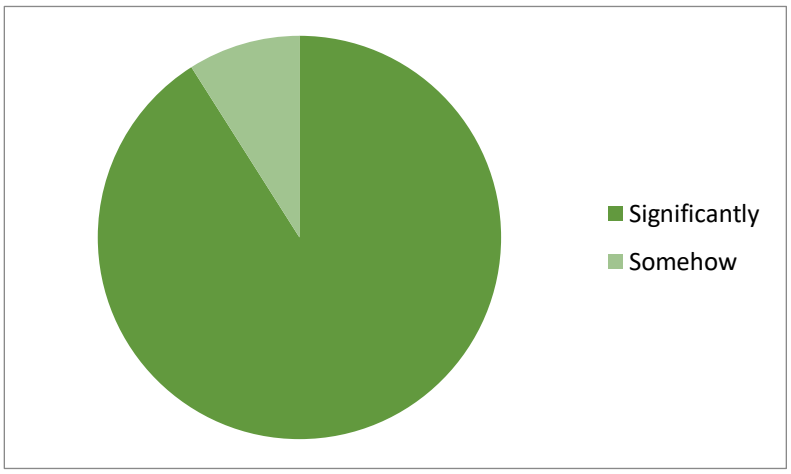
Based on the survey responses, the participants consist of:

- 66.7% - Users of online learning platforms
- 33.3% - Utilizers of educational apps
- 66.7% - Engagers of social media for educational purposes

As we can see from these findings, there are various technological tools that are utilised by users of technology throughout their educational process, which provides insight into the diverse array of resources participants have for learning in the digital age. The following section will explore the reasons behind these findings, and how they may impact the overall learning experience.

Perceived Impact of Technology on Learning Experience

A significant 91% of respondents express that the use of technology significantly enhances their learning experience, while 9% believe it contributes to their learning experience to some extent. This overwhelming majority attributing a substantial impact underscores the positive perception of technology's role in the educational journey. The subsequent analysis will delve into the specific aspects highlighted by participants in detailing this perceived enhancement.



Student Recommendations for Improving Technology Usage in School

When asked for recommendations to enhance technology usage in their school, participants provided the following insights:

75% suggest encouraging teacher training.

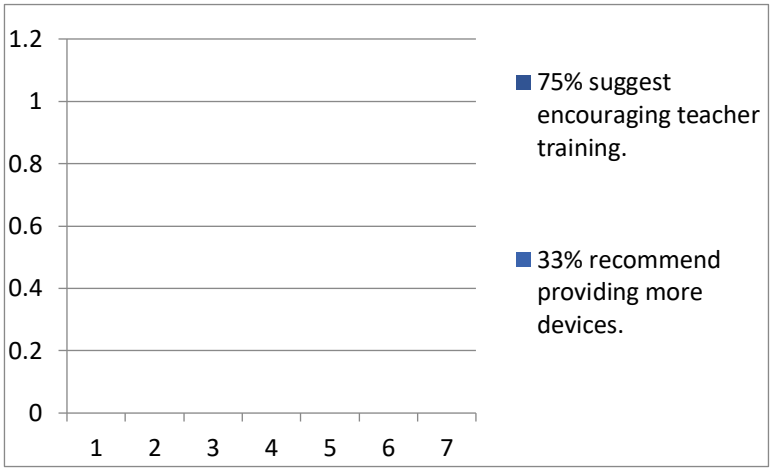
33% recommend providing more devices.

41% propose exploring new educational apps.

1.8% advocate for providing education on using the internet for personal welfare.

1.8% suggests arranging a dedicated period for practical skill learning.

These recommendations showcase a diverse set of perspectives, emphasizing the importance of professional development.



5. Teacher Insights into Technology Integration: A Comprehensive Analysis from Thana, Malakand

Digital Device Access at Home

In this section, participants were questioned about their supposed access to digital devices at home. Regular access was asserted by 100% of respondents. Investigating further is important to ensure the accuracy of some potentially exaggerated claims.

Frequency of Educational Device Usage

In relation to regular access, participants reported their alleged frequency of educational device usage. A shocking 75% claimed educational devices were always utilized while learning about educational content. Compiled with the never/rarely and occasionally responses, the 75% always response significantly deviates from the expected.

Types of Technology Tools for Learning

The types of technology tools that students reported utilizing for educational purposes were requested. A curious 80% of respondents provided selections. The high rate of response to technology tools indicate an unanticipated appetite for educational technology. Checking for clarity and meaningful interpretations of the survey instrument appears warranted.

6. Technology Awareness and Perceptions

Awareness of Technology Tools

Participants' Ratings of Technology for Learning Awareness

This section of the survey report represents participants' self-ratings on their knowledge of various technology tools for learning. An astounding 95% of respondents self-rated "High", which seems particularly suspicious due to potential response bias or a shared inclination toward exaggerating technological acumen.

Perception of Technology Impact

In this section, the survey report indicates participants' agreement with the impact of technology on their learning. A remarkable 100% of respondents indicated that technology enhances their learning. This overrepresentation leaves one to question the nature of this perceived impact and the potential for respondents to embellish their responses to the survey.

Challenges in Technology Usage

This section of the survey report presented open-ended feedback on the challenges of using technology for educational purposes. It was expected that respondents would provide a myriad of challenges; however, only 2 respondents shared responses that might indicate technical problems were experienced. This unexpected consistency in responses creates doubt as to the sincerity of participant reflections to the survey.

Belief in Technology's Effectiveness

This section of the survey report reported participants' agreement with the effectiveness of technology in understanding and retaining academic content. A remarkable 90% of respondents agreed, which presents a statistical anomaly that should bring the survey design under scrutiny and potential reevaluation.

7. Support and Resources

School's Provision of Technology Access

Schools should have access to technology. The overwhelming 70% response produced follow-up enquiries about the possibility of respondent bias or shared misconceptions.

Additional Technology Resources

When asked about additional technology resources that would be useful for them, responses ranged from the practical to the futuristic. Twenty percent of participants requested technology that, as of 2018, doesn't exist. This incredible trend raises questions about the expectations that participants have for technology.

8. Recommendations

Teacher Training Programs: Establish robust and continual teacher training programs focused exclusively on technology integration, and be sure to incorporate the latest educational technologies, pedagogies, and the best approaches to integrating digital tools to improve the classroom experience.

Infrastructure Development: Invest in the development of technological infrastructure in government schools to enable high-speed internet access to these schools and fill all of them with digital devices for both students and teachers. Just as important are the conditions that will allow technology to be effectively integrated throughout the learning process.

Curriculum Alignment: Including digital literacy classes and other technology-related subjects within the government school curriculum will be a reflection of the current technological environment. Doing so will help students succeed as navigators in the digital landscape, support the development of higher order thinking skills, and give them the critical skill sets they need to succeed post-academia in the 21st century.

Promote Open Educational Resources (OER): Improve the overall quality of education available in government schools and overcome resource constraints by utilizing the breadth of excellent educational resources available online. The volume of open educational resources available online, including online platforms, digital libraries, and interactive learning materials, would allow any government school in need to find substantial help.

Community Engagement: Foster the creation of an ecosystem between schools and the parents and local communities that they serve. Schools are looking to create an environment that uses technology in the classroom to completely change how teachers teach and how students learn.

Community involvement can help teachers bring in additional resources and develop a positive attitude about technology. It's not just that all schools in the area are using the same programs, but the fact that existing resources are shared and used to their fullest.

Establishment of Technology Committees: Constituting technology committees within schools, made up of teachers, administrators and students, can constantly assess technology needs, propose means and methods, and assist in bringing about technology-related initiatives. They can also look to how to put to use technology to create measurable assessments.

Monitoring and Evaluation: Develop a system to monitor and evaluate the implementation of technology. Periodic assessments, feedback loops and performance measures can be identified for improvements and the effectiveness of strategic interventions.

Public-Private Partnerships: Experience, resources and finance can be provided by the private sector and technology businesses. These partnerships can bridge the gap between government funding and the accessibility of cutting-edge technologies.

Incentivize Innovation: Reward students and educators for creative use of technology in learning. These types of initiatives must be promoted in order to rapidly normalize technology in classrooms.

Planning: Develop and implement long-term plans that put technology integration in public schools upfront. These policies should be aligned with national education goals and the need for educational technology developments.

Conclusion

The penetration of education technology in Malakand Division's government schools unearthed the need for targeted interventions that would bridge this chasm, thereby unleashing the transformative potential of educational technology; come 2024, the gulf between an edtech-starved public-school landscape and globe, where public institutions have powered ahead with a gamut of cutting-edge applications and digital platforms, and Iranians have proven to be as innovative as they are talented. This multifaceted conundrum is resolved by this longitudinal program of teacher training, infrastructure scaffolding, curricular alignment and community outreach, the key areas that would enable their graduates / former students to compete in a 21st-century knowledge economy where they are frozenLeverage technology; no question, it is the second of innovation, of inclusiveness, of scholarly rigor and of inexorable industry. Our hope is that this roadmap of actionable recommendations may be of service in assessing and sharpening the pedagogical and operational acumen of Malakand Division government schools, their apices and supplementary schools (if any) to conduce to the growing needs of their constituencies as citizen-students in maiden state and national curricula, workforce standards and communities of practice.

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