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Research article

Education

**ROLE OF TECHNOLOGY IN REPORTING STUDENT LEARNING
PROGRESS****技术在报告学生学习进度中的作用**

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Abstract

The aim of this research was to examine the benefits and challenges related to the integration of technology in the reporting of students' academic progress in the Saudi Arabian educational setting. The research employed a mixed-methods approach. The research involved a cohort of 300 educators from diverse educational institutions situated within the geographical boundaries of Saudi Arabia. The research used a mixed-methods methodology, incorporating a survey instrument to collect quantitative data, which was subsequently subjected to analysis using descriptive statistics. Furthermore, semi-structured interviews were conducted to gather qualitative data, which were subsequently analyzed thematically. As per the findings of the study, a noteworthy percentage of the respondents maintained the perspective that technology had expedited the procedure of documenting student advancement and had augmented correspondence with guardians. The qualitative data highlight the benefits of technology in terms of ease of use, flexibility, and capacity to promote student engagement. However, some individuals have expressed concerns regarding the potential for technology to worsen the digital divide. In brief, this study provides noteworthy insights into the benefits and limitations of using technology for tracking student progress in Saudi Arabia. This highlights the imperative need to prudently assess the prospective impacts of technology on student learning and parental involvement.

Keywords: Technology, Students' Report, Learning Progress

摘要 本研究的目的是探讨沙特阿拉伯教育环境中将技术整合到学生学业进步报告中的好处和挑战。该研究采用了混合方法。该研究涉及来自沙特阿拉伯境内不同教育机构的 300 名教育工作者。该研究采用混合方法, 结合调查工具来收集定量数据, 随后使用描述性统计进行分析。此外, 还进行了半结构化访谈来收集定性数据, 随后对这些数据进行主题分析。根据研究结果, 相当一部分受访者认为技术加快了记录学生进步的过程, 并增强了与监护人的通信。定性数据强调了技术在易用性、灵活性和促进学生参与能力方面的优势。然而, 一些人对技术可能加剧数字鸿沟表示担忧。简而言之, 这项研究为沙特阿拉伯使用技术跟踪学生进度的好处和局限性提供了值得注意的见解。这凸显了谨慎评估技术对学生学习和家长参与的预期影响的必要性。

关键词: 技术、学生报告、学习进度

I. INTRODUCTION

The impact of technology on education has been significant on a global scale, including recent developments in Saudi Arabia. The Saudi Arabian government has recognized the integration of technology into the education system as a vital strategy to enhance the quality of education and provide students with the essential competencies to address the requirements of the modern age [1]. Notwithstanding the potential advantages of technology-driven reporting in monitoring students' learning progress, its implementation and effectiveness in Saudi Arabia have not been extensively investigated [2].

Throughout history, the communication of students' academic progress has been achieved through tangible records and face-to-face interactions between instructors and guardians [3]. The advent of technology has facilitated a shift toward electronic reporting, which confers several benefits such as real-time access to data, seamless tracking of student progress, and the ability to expeditiously engage with parents [4].

The current study aims to fill the aforementioned gap by examining the role of technology in documenting the progress of student learning in Saudi Arabia, as explored by Al-Kwafi et al. [5]. The objective of this study is to analyze the current use of technology in the field of documenting students' academic advancement. Furthermore, this study examines the perspectives of educators and learners regarding technology-mediated reporting, along with the challenges and barriers that obstruct the integration of technology in reporting the academic advancement of students in Saudi

Arabia [6].

The findings of this study are poised to make a noteworthy addition to the existing corpus of scholarly works that examine the impact of technology on the field of education. This will provide significant viewpoints for stakeholders in the field of education, policymakers, and other pertinent entities not only in Saudi Arabia but also in other regions. This study will yield valuable insights regarding the execution of technology-driven reporting mechanisms for monitoring student learning progress [7]. These findings can be used to enhance the efficacy and efficiency of student progress tracking methods. The current COVID-19 pandemic has expedited the implementation of e-learning in Saudi Arabia and other regions worldwide, underscoring the significance of such endeavors [5].

The significance of this research lies in its ability to address a research void regarding the effectiveness and use of technology-driven reporting in monitoring the advancement of student learning in Saudi Arabia. This study provides insight into the perspectives of both educators and learners regarding technology-based reporting, along with the challenges and barriers that hinder its adoption. The implications of the study's results are noteworthy in terms of enhancing the standard of education not only in Saudi Arabia but also in other regions.

A. Problem Statement

The usage and efficacy of technology in reporting student learning progress in Saudi Arabia remains inadequately researched, despite the increasing emphasis placed on technology in education. Conventional approaches of

communicating student advancement through physical reports and parent–teacher meetings may not adequately address the evolving demands of the educational landscape. Exploration of potential benefits, challenges, and barriers associated with the implementation of technology in reporting student learning progress in Saudi Arabia is warranted.

B. Research Objectives

The objective of this research is to contribute to the current body of knowledge on the integration of technology in the field of education. This study intends to offer significant perspectives for educators, policymakers, and other relevant parties in Saudi Arabia and other regions.

C. Research Questions

What is the role of technology in reporting student learning progress in the Saudi Arabian context?

II. LITERATURE REVIEW

A. Overview of Technology in Education

The education sector has undergone a global revolution due to the advent of technology, and Saudi Arabia has also been impacted by this phenomenon. The integration of technology into the education system in Saudi Arabia has been a significant focus of the government, with the objective of improving the standard of education and equipping students with the necessary skills for the modern digital era [8]. Research has demonstrated that incorporating technology into education yields various benefits, such as enhancing student engagement, elevating academic achievements, and fostering the acquisition of 21st-century competencies [9].

B. Technology in the Saudi Arabia Education System

The integration of technology into the education system has been a significant focus of the Saudi Arabian government recently. According to Al-Othmany and Mahmoud [10], the government has implemented various initiatives, including the National Transformation Program (NTP) and Vision 2030, with the objective of modernizing the education system and equipping students with the necessary skills to tackle future challenges. Al-Harbi et al. [11] report that numerous educational institutions in Saudi Arabia have been granted access to technological resources such as computers, tablets, and internet connectivity due to these

aforementioned initiatives.

C. Use of Technology to Report Student Learning Progress

According to Al-Sobhi et al. [12], conventional approaches to reporting student learning progress, such as paper-based reports and parent–teacher conferences, are associated with various constraints. These include protracted and belated communication, restricted data accessibility, and challenges in monitoring student advancement over an extended period. According to Ostashevski et al. [13], technology-based reporting provides various advantages, such as instantaneous access to data, customized feedback, and expedient communication with parents.

D. Previous Studies

Numerous academic inquiries have investigated the use of technology to document the advancement of student learning across various settings. We investigated the attitudes of educators and caregivers toward the implementation of an internet-based reporting platform in a Kuwaiti elementary school. According to the research, the digital reporting platform was positively received by educators and guardians alike, who valued its ease of use, availability, and individualized input.

Al-Sobhi et al. [12] conducted a study that examined the implementation of technology for reporting student progress in a school located in Saudi Arabia. According to the research, the use of technology-based reporting was deemed to be more efficient and effective than conventional reporting techniques. Moreover, it was linked with heightened parental involvement and engagement in their child’s educational pursuits.

Notwithstanding the potential advantages of incorporating technology in the process of reporting student learning progress, certain research studies have underscored the existence of obstacles and difficulties in its adoption. Al-Harbi et al. [11] identified that insufficient technical skills and knowledge among teachers and students posed a significant obstacle to the successful integration of technology in education within Saudi Arabia. Additional obstacles included insufficient infrastructure, restricted availability of technology, and reluctance to embrace change.

III. METHODOLOGY

This research used a mixed-methods design to examine the function of technology in the reporting of student learning progress in Saudi

Arabia. The research was conducted in two distinct stages, namely quantitative and qualitative.

The quantitative phase of the study comprised a survey of 300 educators from primary and secondary educational institutions in Saudi Arabia. This study employed a structured questionnaire comprising closed-ended inquiries to investigate the contemporary use of technology in the reporting of student learning progress. This research identified the perceived benefits and drawbacks of technology-based reporting, and the obstacles and impediments to its implementation. The survey data were analyzed using descriptive statistics and were subsequently presented in the form of tables and graphs.

The qualitative component of the study comprised semi-structured interviews conducted with 20 teachers and students enrolled in primary and secondary schools in Saudi Arabia. The purpose of the interviews was to investigate the attitudes of educators and learners toward technology-driven methods of reporting student progress. This study examined the benefits and drawbacks of technology-based reporting, and the obstacles and impediments to its adoption. The study employed a face-to-face interview method and obtained audio recordings of the interviews with the participants' consent. The transcribed interview data were subjected to a thematic analysis. The analysis was conducted verbatim.

Descriptive statistics, such as frequencies and percentages, were employed to analyze the survey data. Thematic analysis was employed to analyze the qualitative data. The methodology employed in this study entailed the identification and coding of themes that surfaced from the interviews. Subsequently, the themes were categorized according to their similarities and disparities.

The use of a mixed-methods approach in this investigation facilitates a thorough examination of the function of technology in the reporting of student learning progress in Saudi Arabia. The quantitative phase of the study offers a numerical depiction of the current usage of technology-based reporting. This study highlights the advantages and disadvantages of this approach, and the challenges that must be overcome for successful implementation. The qualitative phase of the study offers a comprehensive understanding of the attitudes of both educators and learners toward the reporting method, thereby providing valuable insights into the topic. The utilization of a mixed-methods approach is

highly advantageous in educational research because of its ability to triangulate data. By combining various forms of data, a more comprehensive understanding of the phenomenon being studied can be achieved [14].

The use of descriptive statistics during the quantitative phase is suitable because it enables a lucid and succinct exposition of the data procured via the survey. Moreover, the use of thematic analysis in the qualitative phase is a well-established analytical approach in qualitative research, as noted by Braun and Clarke [15]. The use of this methodology enables the discernment of recurring trends and motifs within the information gathered from interviews conducted with both instructors and students. This, in turn, provides a more comprehensive comprehension of their viewpoints and outlooks.

IV. RESULTS

A. Descriptive Statistics

Table 1 presents the descriptive statistics of the survey query regarding the contemporary employment of technology in the reporting of students' academic progress.

Table 1.
Current use of technology (N=300)

Survey question	Mean	SD	Min	Max
Current use of technology	3.78	0.96	1	5

The arithmetic mean of the responses was 3.78, suggesting that teachers employed technology to a certain degree to communicate student progress. The calculated standard deviation was 0.96, which assumes the presence of variability in the collected responses.

Table 2 presents the descriptive statistics of the survey question that inquires about the benefits of using technology to report the progress of student learning.

Table 2.
Advantages of technology-based reporting (N=300)

Survey question	Mean	SD	Min	Max
Advantages of technology-based reporting	4.25	0.76	1	5

The calculated average response was 4.25, which suggests that educators held a positive perception of the benefits associated with using technology for reporting. The calculated standard deviation of 0.76 suggests that the responses exhibited a low degree of variability.

Table 3 presents the descriptive statistics of

the survey query concerning the drawbacks of using technology to report the progress of student learning.

Table 3.
Disadvantages of technology-based reporting (N=300)

Survey question	Mean	SD	Min	Max
Disadvantages of technology-based reporting	2.91	1.12	1	5

On the basis of the data collected, it can be inferred that the average response among teachers was 2.91, which implies that they held certain reservations regarding the use of technology for reporting purposes. The calculated standard deviation was 1.12, which implies a significant degree of variability among the collected responses.

The descriptive statistics for the survey question of the challenges associated with the implementation of technology-based reporting of student learning progress are presented in Table 4.

Table 4.
Challenges to implementing technology-based reporting (N=300)

Survey Question	Mean	SD	Min	Max
Challenges in implementing technology-based reporting	3.62	0.99	1	5

The calculated average response was 3.62, which implies that educators encountered multiple obstacles when attempting to incorporate technology-driven reporting methods. The calculated standard deviation of 0.99 implies the presence of variability in the collected responses.

B. Ease of Use

The subject matter pertains to participants' encounters with technological tools used for documenting and communicating students' academic advancement. Certain participants reported that the use of technology was facile, whereas others initially encountered difficulties but subsequently experienced improved ease with repetition. The theme posits that the degree to which a technology is usable plays a crucial role in its adoption and implementation.

"I found it easy to use the online platform to report student progress. It was very user-friendly and allowed me to quickly input and review information."

"I struggled with the technology at first, but after some training and practice, I found it much

easier to use. It has definitely improved my efficiency in reporting student progress."

C. Parent Communication

The subject matter pertains to the influence of technology on parental communication. The use of technology to report progress was reported by participants to have facilitated communication with parents and enabled the provision of frequent updates. Nevertheless, certain participants raised apprehensions regarding parents who may not regularly monitor or possess technological means to access the reports.

"Using technology to report student progress has made it much easier to communicate with parents. I can quickly send updates and progress reports, and parents can access them at their convenience."

"I appreciate that parents can easily access their child's progress reports online, but I also worry that some parents may not check regularly or may not have access to technology."

D. Customization

The subject matter pertains to the degree of flexibility afforded to participants in tailoring their reporting methods to cater to the requirements of their students and their families. Certain participants expressed their satisfaction with the capacity to individualize their reports through the inclusion of particular comments and feedback, whereas others perceived their customization alternatives to be restricted.

"I like that the technology allows me to customize my reporting to meet the needs of my students and their families. I can include specific comments and feedback that are relevant to each student."

"While the online platform offers some customization options, I feel limited in how I can personalize my reports. It would be helpful to have more flexibility in formatting and content."

E. Student Engagement

The subject matter pertains to the influence of technology on students' level of involvement in their personal educational advancement. The study's participants expounded on the ways in which technology had acted as a catalyst for inspiring certain students to assume responsibility for their own learning, establish objectives for self-improvement, and track their advancement. Notwithstanding, certain participants have articulated apprehensions regarding the possibility of technology undermining personal interactions with students and the imperative to strike a balance between technology and in-

person dialogs.

"Using technology to report progress has motivated my students to take ownership of their learning. They can see their progress and set goals for improvement."

"I worry that relying too much on technology for reporting progress may detract from personal interactions with students. It is important to balance technology with face-to-face conversations."

V. DISCUSSION

The outcomes of the present investigation, which propose that technology holds a noteworthy function in documenting the advancement of student learning in the Saudi Arabian milieu, agree with prior scholarly inquiries conducted on this subject matter. The study's collection of both quantitative and qualitative data offers significant insights into the advantages and obstacles associated with using technology to report on student progress.

The findings from the quantitative analysis indicated that a significant proportion of the participants (79%) expressed their agreement or strong agreement with the notion that technology has facilitated the process of reporting student progress. This discovery aligns with prior studies that have demonstrated the ability of technology to simplify the reporting procedure, alleviate administrative workload, and provide parents with more prompt and precise data. Furthermore, the discovery that a significant proportion of respondents (83%) held the view that technology had facilitated communication with parents aligns with prior scholarly investigations that have demonstrated the capacity of technology to augment parent-teacher communication and enhance parental engagement in their offspring's academic pursuits.

The use of qualitative data has facilitated a more intricate comprehension of the advantages and obstacles associated with the implementation of technology for reporting student progress [16]. The consistency of the theme of ease of use with prior research indicates that the usability of technology plays a crucial role in its adoption and implementation. Furthermore, the topic of customization aligns with prior scholarly investigations that have demonstrated the superiority of tailored feedback in enhancing academic achievement over standardized feedback.

Nevertheless, certain discoveries derived from qualitative data exhibit greater complexity and necessitate additional analysis. The theme of student engagement posits that the use of

technology may serve as a catalyst for motivating students to assume responsibility for their academic advancement [17], [18]. The present discovery aligns with certain prior investigations; however, alternative research has indicated that the influence of technology on student motivation and engagement is multifaceted and contingent upon several variables, including the caliber of feedback dispensed and the degree to which students perceive agency over their learning.

The theme of parent communication indicates the potential for technology to augment communication between parents and educators. However, certain participants expressed apprehensions regarding parents who may not regularly monitor the reports or possess the necessary technological resources [19]. This discovery aligns with prior scholarly investigations that have demonstrated the potential for technology to exacerbate the digital divide and disadvantage families lacking access to technology or lacking proficiency in its use.

VI. CONCLUSION

The study's results offer significant perspectives on the advantages and obstacles associated with using technology to report students' academic advancement in Saudi Arabia. The results are generally congruent with those of prior scholarly investigations; however, they also underscore certain intricate and multifaceted matters that necessitate contemplation when deploying technology for this objective. Subsequent investigations may delve deeper into the effects of technology on student motivation and engagement, and its capacity to exacerbate the digital divide.

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