Using the SAMR Model to Examine the Effects of Emerging Technologies

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Teacher leaders need to be skilled in spotting emerging technologies and comprehending their potential impact on teaching and learning in the quickly changing world of educational technology. A framework for assessing the transformative potential of technology in educational settings is provided by the SAMR (Substitution, Augmentation, Modification, and Redefinition) model (Howlett et al., 2019). This essay examines the adoption, outcomes, and consequences of two technologies regularly utilized in our company using the SAMR model.

**Whiteboards with interactive technology**

Interactive whiteboards can serve as an alternative to conventional chalkboards and whiteboards. The interactive whiteboard offers extra features and capabilities beyond conventional writing surfaces while still serving the same core purpose of graphically displaying information.

Enhancement: Interactive whiteboards provide new elements to the typical classroom environment. Teachers can access interactive software and programs, the Internet for real-time information, and multimedia content for display.

Modification: The interactive whiteboard makes it possible for group learning activities. In order to create a deeper grasp of concepts, students can actively interact with the information, participate in interactive exercises, and manipulate virtual objects. By adding new features and functionalities, interactive whiteboards alter the conventional classroom environment (De Vita et al., 2018). Teachers can access interactive software and programs, the Internet for real-time information, and multimedia content for display. These changes improve the information's visual presentation, raise student interest levels, and provide hands-on learning opportunities.

Learning is redefined by interactive whiteboards, which let teachers and students design and share dynamic lessons, collaborate on projects, and connect with peers or experts worldwide. Because whiteboards are interactive, learning can occur outside of the traditional classroom setting, and new opportunities for teaching and learning are created.

**Justification of its Adoption**

I would have justified using interactive whiteboards by citing how they may improve teaching and learning. By encouraging active engagement and student-centered learning, these tools make for a more exciting and engaged learning environment in the classroom. Furthermore, interactive whiteboards help develop kids' digital literacy abilities and better prepare them for the technologically advanced society they will soon enter. Increased Engagement and Interaction are clearly among interactive whiteboards' potential advantages and effects on teaching and learning. Compared to conventional or chalkboards, interactive whiteboards offer a more dynamic and engaging learning environment (umak & Orgo, 2016). According to Pfaffe (2017), interactive whiteboards have also promoted improved visual representation, collaboration and interactive learning, access to rich digital content, digital literacy skills, and alignment with 21st-century skills like critical thinking, creativity, collaboration, and communication that are highly valued in today's workforce and help students feel more prepared for their overall future academic and career paths.

**Adoption-Influencing Factors**

Political, social, and financial reasons may have impacted the adoption of interactive whiteboards, among other things. Politically, incorporating technology into education is frequently considered a way to show development and modernity. Another factor was societal expectations for educational institutions to keep up with technological development. The availability of money or incentives to purchase these instruments encouraged their adoption financially. Notably, several factors, including the educational benefits, can affect the adoption of interactive whiteboards in educational institutions. The claimed educational benefits of interactive whiteboards are the main factor promoting their adoption. Schools and teachers may know the interactive whiteboard’s potential to improve teaching and learning situations (De Vita et al., 2018). Improved student engagement, comprehension, and subject retention can result from multimedia tools, interactive activities, and visually appealing information presentations.

Subsequently, technological advancements. The development of technology greatly influences the adoption of interactive whiteboards. Interactive whiteboards have developed to offer more functionality and capabilities as technology becomes more approachable and user-friendly. Schools could feel pressured to use these technologies to stay current with technological developments and give students access to cutting-edge educational opportunities.

**Effects, both planned and unintended**

Interactive whiteboards can affect teaching, learning, and the entire educational environment in intentional and unforeseen ways.

**The desired outcomes**

Interactive whiteboards are expected to have the following outcomes: increased student engagement by providing a visually appealing and interactive learning environment. Lessons can be more entertaining using multimedia components like pictures, videos, and interactive exercises. Additionally, interactive whiteboards encourage student collaboration (Umak & Orgo, 2016). They allow collaborative problem-solving, lively debates, and group activities. Students can participate actively in collaborative learning experiences, collaborate on projects, and manipulate digital content.

Interactive whiteboards can aid in visual learning by enabling teachers to display material in various visual ways. This facilitates conceptual understanding since complex concepts can be expressed graphically using diagrams, graphs, and pictures. The interactive whiteboards offer opportunities for differentiated instruction by allowing teachers to adapt content and personalized activities and provide personalized feedback to meet the varied learning needs of their students.

**Unintended outcomes**

Technological Dependency is one example of an unintended consequence. Using interactive whiteboards may unintentionally lead to a dependence on technology. Using alternate educational methods and resources by teachers may be constrained by an over-dependence on the interactive whiteboard as the primary teaching tool. In order to ensure efficient integration into educational methods, introducing interactive whiteboards may require extensive teacher training and professional development. Notably, Interactive whiteboards depend on having access to the right resources and infrastructure, including suitable devices and dependable internet connectivity (De Vita et al., 2018). To guarantee that all students have equal access to the advantages of interactive whiteboards, schools must address any possible equity concerns. Because of insufficient teacher preparation or a lack of pertinent educational software and resources, interactive whiteboards may not fully realize their potential for interaction, requiring modifications to classroom management techniques.

**Replaced or rendered obsolete technologies**

Traditional chalkboards, whiteboards, overhead projectors, flip charts, poster boards, print materials and handouts, physical manipulatives and teaching aids, and overhead transparency have all been replaced with interactive whiteboards. Additionally, interactive software and applications now offer virtual alternatives, reducing the need for printed materials and tangible manipulatives (umak & Orgo, 2016). Teachers may directly display and engage with digital content on interactive whiteboards, eliminating the need for these transparencies.

**Impact on teaching and learning that could occur**

Increased engagement might be one of the many benefits of using interactive whiteboards in the classroom. Students' attention is drawn to, and engagement is raised by, the more dynamic and aesthetically pleasing learning environment provided by interactive whiteboards. Lessons can become more dynamic, stimulating, and memorable with the help of interactive elements, multimedia capabilities, and access to web resources, improving collaboration. Interactive whiteboards encourage student collaboration. Students can build cooperation skills, enhance communication, and benefit from one another by participating in interactive discussions, manipulating digital content, and working together on group projects. Furthermore, according to De Vita et al. (2018), interactive whiteboards have facilitated multimodal learning, improved conceptual understanding, personalized learning, and access to digital resources.

**Second Technology: Learning management systems (LMS)**

Learning Management Systems (LMS) replace conventional paper-based approaches to organizing course content and student data. In place of physical handouts, syllabi, and paper-based records, LMS platforms offer a centralized digital platform for course delivery, assignments, assessments, and communication.

LMS platforms supplement conventional teaching methods by providing extra features like online forums, automatic grading, and real-time feedback. They allow students to access course materials and engage in activities at their own pace and convenience or asynchronous learning.

Modification: LMS platforms promote alterations in teaching methodologies by enabling chances for blended learning and flipped classroom models. Teachers can change learning by developing multimedia-rich resources, interactive modules, and collaborative spaces. As a result, (LMS) alters how instructional content and activities are managed and delivered. They include elements that supplement conventional teaching methods, such as computerized grading, online conversations, and quick feedback.

Learning management systems can potentially transform education by providing personalized learning pathways, adaptive assessments, and data-driven decision-making (Snoussi, 2019). They encourage a comprehensive and connected learning environment by facilitating the integration of various educational technology.

**Justification of its Adoption**

If I had not been a part of the decision-making process to adopt a Learning Management System, I would justify its adoption by highlighting its capacity to improve communication between teachers and students, streamline administrative tasks, and offer a central platform for organizing course materials. Platforms offered by LMSs can boost productivity, encourage student involvement, and enable anytime, anywhere learning.

**Adoption-Influencing Factors**

The requirement for centralized and standardized course management, enhanced stakeholder communication and collaboration, and the rising demand for online and blended learning choices may have all impacted the adoption of learning management systems (Rhode et al., 2017). Additionally, its acceptance may have been influenced by the potential cost savings linked to decreased paper usage and increased administrative effectiveness.

**Effects, both planned and unintended**

Adopting an LMS is supposed to have the following outcomes: increased flexibility in how teaching is delivered, improved accessibility to course materials, and improved communication and collaboration. In addition, LMS platforms can support personalized learning strategies and encourage data-driven decision-making (Rhode et al., 2017). Unintended consequences, however, could result in difficulties with technology infrastructure, the requirement for extensive teacher training, and worries about data security and privacy.

**Replaced or rendered obsolete technologies**

Traditional paper-based methods of organizing course materials, such as tangible handouts and syllabi, have been superseded or have become less common due to the use of learning management systems (Snoussi, 2019). Additionally, LMS platforms have made switching from on-site to online examinations easier and eliminated the need for physical storage of student records.

**Impact on teaching and learning that could occur**

The deployment of an LMS may significantly impact learning and teaching. It may make it easier for teachers to customize feedback for each student and differentiate their instruction. According to Rhode et al. (2017), LMS platforms can also support student cooperation, encourage self-directed learning, and provide chances for asynchronous and blended learning approaches. However, schools also need to consider the requirement for adequate digital infrastructure, continuing technical assistance, and fair access to devices and the Internet.

Finally, teacher leaders in educational technology must understand the transformative potential of new technologies. The SAMR model offers a valuable framework for assessing how technology affects teaching and learning. We can comprehend the uptake, outcomes, and consequences of technologies like interactive whiteboards and learning management systems by looking at them through the SAMR paradigm. To make decisions that benefit teaching and learning outcomes, schools should carefully weigh the possible advantages, difficulties, and costs of adopting particular technologies.

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