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A REFLECTION ON THE USE OF DIGITAL WHITEBOARDS

Transforming Classroom Learning Among Medical Students

a chapter by

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Introduction

Finding ways to engage students and improve their learning is of utmost importance in the field of education. Significant technological tools that are used nowadays by many educators in this regard include digital whiteboards (David & Weistein, 2023; Tan et al., 2015). This critical technological tool offers a wide range of features that support and expand teaching methods in typical classroom settings. The use of digital whiteboards is associated with a more dynamic and interesting classroom setting, which according to research leads to a better overall learning experience. According to several studies, incorporating this technology into teaching methods not only diversifies teaching approaches but also enhances student performance (Luo et al., 2023; Hendawi & Nosair, 2020; Dudaitė & Prakapas, 2019).

Digital Whiteboard Tools

Digital whiteboard tools are becoming increasingly popular and this industry is growing at a rapid pace. The expansion is propelled by the increasing popularity of digital learning techniques and the demand for efficient communication and collaboration tools, particularly in educational and business environments. Tools with cutting-edge capabilities like multimedia integration, real-time collaboration, and simplicity of use for both in-person and distant interactions are probably popular and earned them widespread recognition. The following are some of the digital whiteboard tools that are commonly used: Miro, Zoom, Mural, Web Whiteboard, Whiteboard.fi, Classpoint, Microsoft Whiteboard, Stormboard, Limnu, Google Jamboard, LucidSpark, Ayoa Ultimate, Seewo, and many other tools that are rapidly growing in the industry. All these tools provide a number of premium versions in addition to free ones.

Strategies for Utilizing Digital Whiteboards in Physical Classroom

1. Design Engaging Teaching:
By incorporating students' personal devices, like iPads, tablet or phone, as participatory tools, digital whiteboards in the classroom make it easier to create interactive classes. This approach allows educators to display student feedback or responses on a larger screen, promoting a collaborative and participatory learning environment. Adopting this technique enhances enjoyment and engagement in lectures, while also allowing for accustoming to meet the diverse needs and preferences of students (Mosina, 2019; Platinum Copier, 2017).

2. Promote Class Discussion, Inclusive to All:
The use of digital whiteboards has revolutionise classroom discussions by giving students a safe space to share their thoughts and opinions with their educators. This technological advancement in education creates a setting that is friendly to honest and open communication, which in turn encourages students to speak up more, share their ideas, and take risks with their thinking (Alqurashi, 2019). For this reason, digital whiteboards are being used to foster an environment where all students feel welcome and can actively participate in the learning process (Remón et al., 2017; McGrath et al., 2016).

3. Evaluate the Progression of Students in Classroom:
The use of digital whiteboards in classrooms greatly simplifies the procedure for gauging students' development. This technology empowers the educator with the ability to perform quick and effective evaluations throughout the entire classroom. The implementation of digital

whiteboards not only optimizes the usage of time and resources but also generates significant data. It provides a rapid insight and data on the extent to which students grasp the learning objective in the classroom (Barbarić et al., 2018). Recent studies (Chen et al., 2020; Panero and Aldon, 2016) have underlined the importance of these insights in improving teaching approaches and more effectively matching them to the various learning needs of students.

4. Customise Teaching to Suit Each Unique Learner.
Student interactions with assignment content, discussion, or questions may be observed in real time with digital whiteboards. This technology enables educators to actively track student participation, resulting in valuable data that can be utilised to personalise teaching and provide targeted support based on each student's unique learning requirements. The real-time monitoring enables teaching approaches to be more adaptable, which is believed to boost learning effectiveness and promote better educational results for all students (Richards et al., 2018; Schmid, 2016).

Digital Whiteboards in Medical School

The use of digital whiteboards in medical education represents a notable progression in instructional methodologies. Medical institutions are increasingly using these interactive technological tools to improve student engagement and allow more effective learning in both paraclinical and clinical settings.
Research conducted by Jain et al. (1994) examined how first-year medical students utilized electronic whiteboards in the classroom. The purpose of the study was to evaluate the educational efficacy of these interactive electronic whiteboards and to explore how their interactive and visual features can improve the way medical topics are taught.

A recent study conducted in paraclinical students provides more evidence that the Google jam board as a digital whiteboard is a practical resource for anatomy classes that encourages student-teacher collaboration and hands-on experience (Shamsuddin et al., 2023).

In a clinical setting, Gouzi et al. (2019) notes that clinical reasoning sessions may be greatly enhanced with the use of digital whiteboards, which enable an engaging presentation of clinical cases and encourage active student engagement.

Interactive whiteboards are acknowledged for their capacity to enhance the teaching of specific medical ideas, therefore bridging the divide between traditional methods of teaching and the technology demands of today's learners. This shift to digital whiteboards in medical education reflects an adjustment toward more innovative, dynamic, and student-centred learning practices that are in line with current educational demands.

Figure 1: Digital whiteboard utilization in a classroom setting, image generated by OpenAI's DALL·E 3, (Dec 29, 2023).

Educator Experience on the Use of Digital Whiteboard among Medical Students in UiTM

1. Introduction
The popularity of digital whiteboard tools in the classroom has skyrocketed in the past several years. It makes it possible to have learning experiences that are more engaging and dynamic by providing a virtual area in a physical setting that can be used for brainstorming, visual mapping, and collaboration. Having the opportunity to implement this technology tool in my teaching and

observe how it will improve learning outcome for my students was something I was really excited about as an educator.

2. Description

For my physiology tutorial/ small group session (SGS) with first-year medical students, I choose to utilize the "Whiteboard.fi" tool with two groups of 24 students. In this session, students were given a few written questions and were also assigned to make a visual diagram depicting the process of potential generation in cardiac cells. Through the use of their devices, students were able to view the digital whiteboard that was available to them. It is not necessary for students to have an account to participate in a session on Whiteboard.fi. All that is required of them is a code that is provided by the educator, and the application may be used on any device that has an Internet connection. The only thing that students see on the whiteboard is the educator's question and their own. The most advantageous aspect is that you don't need to log in and that it is compatible with any device. Although students are required to write their names on their whiteboard, they were given the option to either decode their names or write them anonymously, as they had been informed that the educator will give feedback on their responses in the classroom.

With the help of Whiteboard.fi, I was able to monitor what my students were doing on their own digital whiteboards at the same time. Whiteboard.fi is a digital whiteboard with features that are very straightforward and easy to use. It allows educators to view at any time all of the whiteboards their students have created. Whiteboard.fi is accessible with any Web browser. Educator or students do not need to register an account to use Whiteboard.fi and there is no collection, storage, or sharing of personal information with any third party. The educator is able to incorporate text, photos, backdrops, and shapes into the whiteboard. In order to keep as a teaching record, capturing student work is as easy as recording a snapshot or converting any whiteboard image to PDF.

During the process of providing feedback, I display all of the students' whiteboards on the screen and then provide more custom instructions and corrections to each individual in accordance with the feedback. One of the advantages of using this method is that it allows everyone to learn from other answers while also allowing them to improvise their answers.

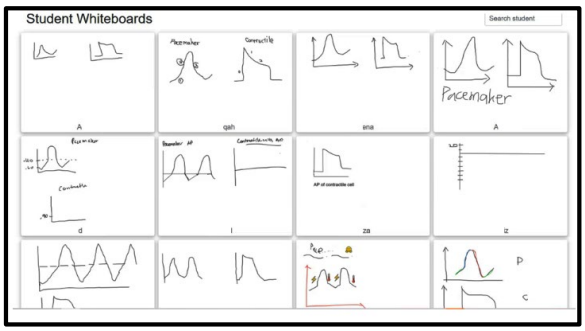

Figure 2: The whiteboard of all students was displayed on the screen.

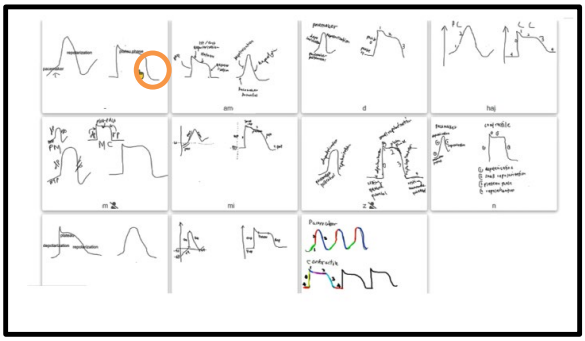

Figure 3: Feedback was given to each student's response. In the figure, the index finger in a yellow circle represents the educator providing feedback to the student.

3. Reflection

In retrospect, I can say that the use of Whiteboard.fi was fruitful and I continue to use this tool now. Students gave their all and participated in every step of the activity. Nevertheless, I encountered a few difficulties while working on it.

The main challenge was to make sure that everyone in my SGS group had the same opportunity to answer and draw the respective diagram and contribute to my questions. It seems like certain students were more involved in my responses than others. Because of this, it was challenging for me to provide feedback to all the answers. I also realized that I needed to give feedback to

everyone's responses in the group so that I provided them with guidance and tailored them accordingly.
Technical difficulties, such as not knowing how to use Whiteboard.fi or having a reliable internet, were another obstacle. Some students needed additional time and assistance to complete the assignment because of this. Regardless of these issues, I found that students' active participation improved when Whiteboard.fi was used. The students gained a better understanding of the questions through their verbal feedback.

In conclusion, students' engagement and learning may be significantly improved by using virtual whiteboard technologies such as Whiteboard.fi in classroom activities. However, educators should be aware of any obstacles and offer assistance and direction to ensure that everyone has the opportunity to participate and finish the activity. Incorporating such tools can also help students become more versatile and adaptable by preparing them to utilize similar tools in their future.

Educators must also be flexible to take advantage of technological developments that will allow them to provide their students with a more engaging and participatory learning experience. Miro, Google Jamboard, Microsoft Whiteboard, and Web Whiteboard are a few other virtual whiteboard technological tools that educators could think about using in their classrooms. The features and benefits offered by each of these online tools are designed to increase student engagement and learning in their own unique ways.

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