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# EFEKTIVITAS PENGGUNAAN SMARTBOARD INTERACTIVE TERHADAP INOVASI PEMBELAJARAN DI SEKOLAH

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**Abstrak:** *SmartBoard Interactive* merupakan sebuah alat yang menggabungkan teknologi sentuh dan proyeksi, yang memungkinkan guru dan siswa untuk berinteraksi secara langsung dengan konten pembelajaran melalui layar sentuh. Penggunaan *SmartBoard Interactive* merupakan implementasi dari *Smartclass*. *Smartclass* sendiri adalah penerapan IoT (*Internet of Things*) dalam dunia pendidikan. Internet of Things adalah jaringan objek fisik yang terhubung ke internet. Penelitian ini bertujuan untuk melihat efektivitas penggunaan *SmartBoard Interactive* dalam meningkatkan inovasi pembelajaran di sekolah. Metode penelitian ini dengan survei melalui kuesioner. Responden pada penelitian ini adalah guru dan siswa pada tingkat SD, SMP, dan SMA yang menggunakan *SmartBoard Interactive* dalam proses pembelajaran sehari-hari. Penerapan *SmartBoard Interactive* dalam pembelajaran meliputi penggunaan papan tulis interaktif, multimedia, animasi, video, dan gamifikasi. Hasil penelitian menunjukkan bahwa penggunaan *SmartBoard Interactive* memiliki dampak positif terhadap inovasi pembelajaran. Guru menyatakan bahwa alat ini meningkatkan keterlibatan siswa, meningkatkan motivasi belajar, dan memfasilitasi pemahaman konsep yang lebih baik. Sebanyak 96,9% siswa menunjukkan respons yang positif terhadap penggunaan teknologi ini, merasa lebih termotivasi, dan menunjukkan peningkatan hasil belajar yang signifikan. Penelitian ini akan mendorong penerapan teknologi ini secara lebih luas dalam konteks pendidikan, dengan tujuan mencapai hasil pembelajaran yang lebih efektif dan meningkatkan pengalaman belajar siswa.

Kata-kata kunci: *SmartBoard Interactive, Internet of Things,* Inovasi

# THE EFFECTIVENESS OF USE SMARTBOARD INTERACTIVE TOWARDS LEARNING INNOVATION IN SCHOOLS

***Abstract:*** *SmartBoard Interactive is a tool that combines touch and projection technology, allowing teachers and students to interact directly with learning content through touch screens. SmartBoard Interactive is an implementation of Smartclass. Smartclass is the application of the Internet of Things (IoT) in education. The IoT is a network of physical objects connected to the Internet. This research aims to examine the effectiveness of using SmartBoard Interactive in improving learning innovation in schools. The research method is a survey that uses questionnaires. The respondents in this study were teachers and students at elementary, junior high, and high school levels who used SmartBoard Interactive in the daily learning process. The application of SmartBoard Interactive in Learning includes the use of an interactive whiteboard, multimedia, animation, video, and gamification. The results show that the use of SmartBoard Interactive has a positive impact on learning innovation. Teachers stated that it increased student engagement, improved learning motivation, and facilitated better concept understanding. A total of 96.9% of the students showed a positive response to the use of this technology, felt more motivated, and showed a significant improvement in learning outcomes. This research will encourage the wider application of this technology in educational contexts, with the aim of achieving more effective learning outcomes and enhancing students' learning experiences.*

***Keywords:*** *SmartBoard Interactive, Internet of Things, Innovation*

## INTRODUCTION

Internet of Things (IoT) is a concept that refers to a network of physical devices connected simultaneously via the internet and communicating with each other and sharing data. IoT connects devices such as sensors, electronic devices, vehicles and other equipment to the internet network, allowing them to interact with each other and operate autonomously. Essentially, IoT enables real-world objects to become "smart" by expanding their computing and connectivity capabilities. These objects can collect data, share information, and respond to the environment or commands given over the network.

IoT(Internet of Things)is a network of physical objects connected to the internet (I.Arends, 1999) such as sensors, cameras, household devices, vehicles, which can communicate with each other and allow data to be shared and analyzed online.*real-time*. An example of the application of IoT in the world of education is *Smartclass*.*Smartclass* is a learning concept that uses information and communication technology (ICT) to facilitate a more interactive, dynamic and effective teaching and learning process.

Some features that are usually included in *Smartclass* includes touch screen interactive devices, interactive projectors, digital whiteboards, or tablets that allow teachers and students to interact with learning content directly. In addition, stable internet access allows access to online learning resources, up-to-date information, and collaboration between students and teachers. Next is audio-visual equipment such as speakers, microphones and other audiovisual systems to enhance the hearing and seeing experience in learning. There is also a learning management system in the form of a platform or software that allows teachers to manage learning materials, assignments, assessments and interact with students effectively *on* line.

Smartclass provides various benefits, including increasing student engagement. Feature interactive and multimedia content allows students to actively engage in learning, increasing their interest and understanding. Next is better collaboration. Students can collaborate with their peers via digital platforms, share ideas, work together on projects, and provide feedback online. Access to extensive learning resources. Internet connections and access to digital resources enable access to e-books, learning videos, interactive simulations, and other educational content. Lastly, better monitoring and evaluation. Learning management systems can help teachers monitor student progress, provide real-time feedback, and carry out more effective evaluations (Yati, 2022).

Learning innovation is a very important aspect in the development of the education system in the digital era. In the midst of changes occurring in human civilization, education must also adapt itself through educational innovations designed to improve and solve problems in the world of education, especially in facing changes amidst the times (Ritonga et al., 2022). Computer-based or multimedia learning in the learning process can help students improve understanding learning concepts and motivation (Hutasoit et al., 2022). The application of Internet of Things technology in the education sector can be done to improve student learning outcomes, improve the quality of teachers' learning methods and make activities easier, shorten time and lighten workload (Nurkhofifah, 2022).

The development of information and communication technology has had a significant impact on the world of education, including the use of interactive and sophisticated learning tools such as SmartBoard Interactive.SmartBoard Interactive is a tool that combines touch and projection technology, which allows teachers and students to interact directly with learning content via a large touch screen. Smartboard is one of the ICT technologies used in Smartclass. Smartboard is one of the innovations in learning media which is currently widely used by educational institutions.

Use SmartBoard Interactive has received widespread attention in context learning innovation in schools. This tool has benefits in the teaching process, starting from more interesting presentation of material, active student participation, increasing understanding of concepts with visualization, to collaboration in completing learning tasks. SmartBoard Interactive as one of the innovations in digital

learning media, it is also used to improve reading comprehension lesson skills in language learning in elementary schools (Hala & Arifin, 2020). However, despite its potential, the effectiveness of use SmartBoard Interactive improving learning innovation in schools still requires more in-depth research.

The aim of this research is to determine the effectiveness of useSmartBoard Interactivein increasing learning innovation in schools. Through comprehensive analysis and research, the hope is to provide a better understanding of the benefits provided by this tool, as well as understand the challenges that may be faced in implementing it.

To achieve this goal, this research will refer to relevant current research, which includes empirical studies and literature reviews related to use SmartBoard Interactive in the learning context. In previous research, vocational school students' skill competencies could be significantly improved through Internet of Things training. Previous research used a trial method on teachers in Makassar, the results of which prepared teachers to be able to design and implement information technology-based learning in accordance with current developments (Samsugi et al., 2021). The learning media application that has been developed is equipped with interesting features and makes it easier for users (Arsyad, 2015).

Research regarding effectiveness of use SmartBoard Interactive This study has novelty that previous research has not had. Much previous research discussed the Internet of Things using library research or literature review methods, there was also research using the workshop method. Apart from differences in methods, previous studies did not take devices SmartBoard Interactive as the object of his research. Previous research only took one subject, be it teachers or students. In this research the subject is teacher and validated by students.

By understanding the effectiveness of use SmartBoard Interactive, this research is expected can make a valuable contribution to the development of learning innovation in schools. The novelty of this research can be a guide for educators and educational practitioners in utilizing technology effectively to improve student learning experiences.

## RESEARCH METHODS

Responding to technological developments that have influenced the field of education, the use of SmartBoard Interactive in schools becomes innovation in learning. SmartBoard Interactive with many uses, it is still only used as a replacement for whiteboards. Use SmartBoard Interactive has not developed other features that are already available on the device.SmartBoard Interactivein the future it will become a familiar used item. This leads to researching the extent of use SmartBoard Interactive effective for learning, both for teachers and students.

This research uses a survey method with a 1-4 scale questionnaire. The questions on this questionnaire are closed with 1 open question at the end of the questionnaire. The respondents of this research were 43 teachers from elementary, middle and high school levels with varying lengths of teaching. Questionnaires were distributed to teachers in one school whose learning uses SmartBoard Interactive. Apart from teachers, students at the same school from elementary, middle and high school levels consisting of 32 students also filled out a questionnaire to confirm the use of SmartBoard Interactivein classroom learning. This research was conducted in May 2023, questionnaires were distributed within 3 weeks. The preparation of this statement is based on several aspects; function of SmartBoard Interactive, how to use it, and how to develop it. On function SmartBoard Interactive the basic things that teachers need to master are how to activate it which can be done in various ways. The function of the connecting feature between SmartBoard Interactive with other devices such as laptops or Android. Other features that teachers also need to know and understand are: SmartBoard Interactive not only as a replacement for a whiteboard, but can be used as a projector, interactive board by creating images, a means of gamification, searching for data, calculating duration, and viewing temperature and air levels. On development of use SmartBoard Interactive in the questionnaire, teachers are asked questions about online applications that have been used. Apart from that, teachers were also asked questions regarding their motivation to develop themselves, especially in learning media for use SmartBoard Interactive increasingly mastered. Before this questionnaire was distributed to

respondents, this questionnaire had been tested and criticized by the supervisor.

Data analysis uses the average of questionnaire results and is described descriptively to determine the effectiveness of use SmartBoard Interactive towards learning innovation in schools. Research by distributing questionnaires in the form of Google Forms to teachers containing 15 questions; 14 questions in the form of statements with answers on a linear scale of 1-4 (strongly agree – agree – disagree – strongly disagree) and 1 open question. Of the 14 statements with linear scale answers, they are divided into 2 question parts; firstly regarding understanding and secondly regarding potential use object in this case SmartBoard Interactive and 1 open question regarding innovations that have been carried out by the teacher. Meanwhile, the validation questionnaire for students consists of 6 questions whose contents confirm use SmartBoard Interactivein the learning carried out by the teacher, and students' interest in learning by using SmartBoard Interactive.

## RESULTS AND DISCUSSION

### *Result*

Based on the results of the analysis, it appears that the teacher's understanding of use SmartBoard Interactivein learning quite well, it can be seen from the results of filling in the data that 3.47 respondents have used it SmartBoard Interactive. Teacher's ability to use SmartBoard Interactive It's good, but there are big challenges for teachers in using it. ActivateSmartBoard InteractiveUsing an NFC card, using the EZWrite application, connecting with other devices using and without using cables can be done smoothly by teachers. It was also proven that in the validation questionnaire filled out by the students, they stated that all teachers had been able to activate it SmartBoard Interactive smoothly. There are also things that teachers still pay attention to when using it SmartBoard Interactive as a learning medium, it is necessary to increase the use of other online applications that can be connected using SmartBoard Interactive. For example, using gamification. Games that are related to learning material or contain learning content are currently popular with students. SmartBoard Interactive can facilitate gamification to make learning more interesting and challenging for students.

Table 1. Results of Analysis of Respondents' Understanding of SmartBoard Interactive

| No | Pernyataan | Hasil |
|---|---|---|
| 1 | Saya mahir dalam menggunakan smartboard interactive untuk mengajar. | 3,47 |
| 2 | Saya tahu cara mengaktifkan smartboard interactive dengan menempelkan kartu NFC. | 3,85 |
| 3 | Saya tahu fungsi aplikasi EZWrite pada smartboard interactive. | 3,71 |
| 4 | Saya dapat membuka drive pribadi di smartboard interactive tanpa menghubungkan ke perangkat lain. | 3,71 |
| 5 | Saya dapat menampilkan tayangan di smartboard interactive dari perangkat lain tanpa menggunakan kabel (Instashare). | 3,80 |
| 6 | Saya dapat mengakses internet di smartboard interactive tanpa menghubungkan dengan perangkat lain. | 3,80 |
| 7 | Saya mengetahui banyak aplikasi online untuk presentasi materi. (Seperti Canva, Slides Go, Slide Carnival, Prezi, Emaze dll) | 3,57 |
| 8 | Saya mengetahui banyak aplikasi online untuk kegiatan interaktif siswa. (Seperti kahoot, quizizz, mentimeter, wordwall, padlet) | 3,80 |

Apart from that, the results of data analysis show potential uses SmartBoard Interactive in learning, it was stated by the teacher that it could make it easier to teach. With many features on SmartBoard Interactive teachers can use it to make learning easier. For example, keeping notes on a whiteboard, searching for information directly, viewing examples through videos that are available on YouTube or related websites. SmartBoard Interactive it is also felt by teachers to make teaching more enjoyable, which has also been confirmed by students through validation questionnaires. SmartBoard Interactive in learning makes teachers more challenged to develop innovative learning and learn new media that can be implemented into SmartBoard Interactive. Learning innovations that have been carried out by teachers from their questionnaire answers include; drawing using EZWrite application tools, gamification including Kahoot, Quizizz, and Wordwall, using interactive tables, collaborative projects, and exploration of learning materials. Collaborative learning is currently popular with many students, because they can work together with their friends. There are also various models for collaborative learning, there is collaboration between friends, collaboration between students and teachers, as well as collaboration between fields of study.SmartBoard Interactivecan be used for integrated presentation media from internet-based data storage such as Google Drive.

Through SmartBoard Interactive teachers are also quite able to see students' increased interest in learning, confirmed by students' answers in the validation questionnaire, as many as 81.3% of students stated that they

were more motivated when teachers taught using SmartBoard Interactive. The results of the questionnaire given to teachers also showed that teachers felt challenged to develop learning. Want to innovate in the use of learning media and develop learning methods that will be integrated into use SmartBoard Interactivehas been stated by the teachers in their questionnaires. The following is a table of data on the results of the questionnaire filled out by the teacher.

Table 2. Results of Analysis of Respondents' Potential for UseSmartBoard Interactive

| No | Pernyataan | Hasil |
|---|---|---|
| 1 | Smartboard interactive memudahkan saya untuk mengajar. | 3,90 |
| 2 | Saya senang menggunakan smartboard interactive untuk mengajar. | 3,95 |
| 3 | Saya melihat minat belajar siswa meningkat saat menggunakan smartboard interactive. | 3,57 |
| 4 | Saya tertantang untuk mempelajari smartboard interactive sebagai media pembelajaran baru. | 3,85 |
| 5 | Smartboard interactive membuat saya lebih tertantang untuk mengembangkan metode pembelajaran yang inovatif. | 3,90 |
| 6 | Saya tertantang untuk mempelajari media pembelajaran baru yang bisa diimplementasikan ke smartboard interactive. | 3,90 |

Respond to a questionnaire given to teachers who teach using SmartBoard Interactive, validation research is also provided to the students. Research “Use SmartBoard Interactivein Learning" through filling out questionnaires to 32 students consisting of 8 elementary school students, 11 middle school students and 13 high school students. It can be seen that 81.3% of teaching teachers always use SmartBoard Interactive. Teachers are quite adept at using it SmartBoard Interactive. Expert here with a comparison of yes or no all applications can be used properly. In addition, the questionnaire asked about the use of features on SmartBoard Interactive. All respondents decide SmartBoard Interactiveused by teachers as a blackboard. SmartBoard Interactive used to display presentations (as many as 96.9%) and used to search for information (as many as 93.5%). The remaining respondents answered sequentially SmartBoard Interactive used to display videos, play interactive or gamification games (such as kahoot, quizizz, mentimeter, wordwall, padlet), display practice questions, and display time meters for tests.

As many as 81.3% of students are motivated to learn by being thereSmartBoard Interactivein the classroom. According to students, teachers always provide innovative methods SmartBoard Interactive. So students are also more interested when teachers teach using it SmartBoard Interactive instead of using a regular whiteboard. Learning that is not monotonous, which follows the development of students, which always changes to adapt to situations, is considered by students to be innovative learning. It can be said that it is effective once used SmartBoard Interactive in learning at school.

Use SmartBoard Interactive impact for teachers and students on the process learning. The use of learning media in the teaching and learning process can generate new desires and interests, generate motivation and stimulate learning activities. As stated in the previous explanation, students confirmed the teacher's statement with the validation questionnaire. It can be seen in the student response diagram that students are more motivated to learn in their presenceSmartBoard Interactivein the classroom. Students are also more interested when teachers teach using SmartBoard Interactive compared to using a regular whiteboard. The following are the responses from the student validation questionnaire in the form of a diagram.


Figure 1. Student response diagram

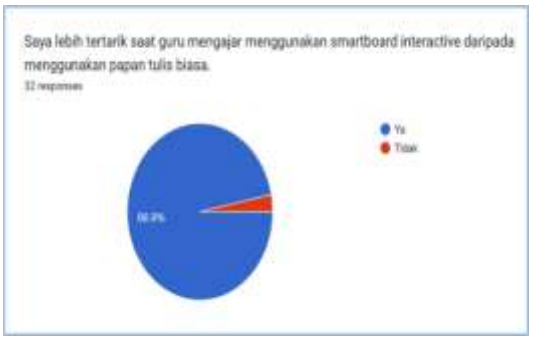


Figure 2. Student response diagram

***Discussion***

Teachers can see students' interest in learning increases when using it SmartBoard Interactive. Teachers are challenged to

learnSmartBoard Interactiveas a new learning medium. Teachers are more challenged to develop innovative learning methods. Students are more motivated to learn. Implementation is still lacking in useSmartBoard InteractiveAccording to this research, teachers still need to get used to exploring the features available on SmartBoard Interactive. The use of this learning media is very dependent on the internet connection, if there is internet interference, the teacher needs to use alternative methods to operate it. Teachers are required to use many online presentation applications to make learning more interesting and interactive. Use SmartBoard Interactive has revolutionized the way learning is conducted in schools around the world. This technology not only enriches students' learning experiences but also provides teachers with powerful tools to present course material in a more interactive and engaging way. In this context, SmartBoard Interactive plays an important role in facilitating learning innovation in the educational environment.

Impact SmartBoard Interactivefor teachers is very significant. This tool allows teachers to present lessons more dynamically, integrating multimedia and resourceson line directly into their teaching. This not only increases student engagement but also deepens their understanding of the subject matter. Besides that, SmartBoard Interactive facilitates real-time classroom management and student assessment, which directly contributes to learning effectiveness. SmartBoard Interactive significantly simplifies classroom management, giving teachers an efficient tool to organize and deliver lesson material in a more dynamic and interactive way. Through use SmartBoard, teachers can easily draw, write, or display lesson material directly on the screen, allowing all students to view and participate in learning simultaneously. This feature reduces the time required to set up a traditional whiteboard, allowing more time for in-class discussion and interaction. Besides that, SmartBoard Interactive allows integration of various media such as videos, graphics and presentations, which can be saved and easily accessed again, making material revision more efficient.

SmartBoard's interactive features also support classroom management by providing real-time feedback to students. Teachers can use apps and software designed for quick quizzes or surveys, allowing for instant assessment of student understanding and adjusting teaching methods as needed. Furthermore, the ability to record class sessions makes it easier for students to review lessons at home, supporting independent learning and reinforcing concepts taught in class.

Use SmartBoard Interactive also promotes discipline and engagement in the classroom by utilizing educational games and interactive activities that capture students' interest, keeping them focused and actively participating. The ease of switching between applications and learning materials allows teachers to maintain a smooth learning flow, reduce distractions, and maximize effective learning time. Overall, SmartBoard Interactive offers a variety of features that support effective classroom management, from delivering material, assessing students, and increasing student discipline and involvement. This technology helps create a learning environment that is more structured, interactive, and responsive to the needs of students and teachers.

For student, SmartBoard Interactive offers a more interactive and engaging learning experience. This technology supports visual and kinesthetic learning, allowing students to actively participate in the learning process. Interactive features such as writing directly on the screen, touching, and dragging objects can increase student engagement and motivate them to learn (Higgins et al., 2007). For example, visual learning in geography lessons; Exploring the Map: Students can use a finger or stylus to zoom (zoom in) and zoom out (zoom out) maps, allowing them to see geographic details more clearly, such as mountains, rivers, and country borders. Additionally identify Climate: teachers can display the various climate zones in the world and ask students to identify the characteristics of each zone by tapping or dragging the appropriate weather icon to a geographic location on the map in SmartBoard. SmartBoard also allows teachers to enrich lesson material by showing videos or animations that explain geographical processes, such as the formation of mountains or the movement of tectonic plates, making complex concepts easier to understand.

Apart from visual learning, kinesthetic learning can also be further explored when using SmartBoard Interactive,With educational applications or software available on SmartBoard, students can build virtual models of space. They can use their finger or stylus to draw sides and angles, and manipulate these objects to see different perspectives of shapes. In group activities, students can work together at the front

SmartBoard to solve problems related to the volume or surface area of spatial figures. They can physically drag and drop the correct formula onto the displayed figures, allowing them to kinesthetically “feel” the problem-solving process. Some educational applications for SmartBoard provides simulations that allow students to experience the laws of physics that affect the shape of space, such as gravity or friction. Through direct interaction, students can understand these abstract concepts in a real context.

From the perspective of school institutions, implementation SmartBoard Interactive contribute to the creation of an innovative and future-oriented learning environment. This technology supports the transition from traditional teaching methods to a more collaborative and student-centric approach, which is known to improve learning outcomes. Furthermore, SmartBoard Interactivecan be used as a tool to attract and maintain students' attention, especially in the current digital era. Despite its significant benefits, the effectiveness of use SmartBoard Interactive largely depends on teachers' ability and readiness to integrate this technology into their teaching. Therefore, training for teachers is important. This training should cover the technical aspects of using Smartboards, as well as pedagogical strategies for effectively integrating this technology in learning. Ongoing training and professional support can help teachers feel more confident and creative in their use SmartBoard Interactive (De Vita et al., 2014).

Exploration of usageSmartBoard Interactivein schools shows broad potential for learning innovation. From the use of interactive apps and educational games to the integration of online resources and virtual classroom collaboration, the possibilities are nearly endless. It is important for schools to explore various ways to utilize this technology, not only to improve the quality of teaching but also to prepare students with the skills they need to succeed in the 21st century (van Laar et al., 2017). 21st century skills are a set of abilities that are essential for success in today's global and digital era. These skills include information literacy, critical thinking, creativity, collaboration, communication, and the ability to utilize technology effectively. Students are expected to not only master academic content but also develop these skills in order to adapt and thrive in an ever-changing environment.

Information literacy involves the ability to identify, find, evaluate, and use information effectively. This is important in the current information age, where information sources are so vast and easy to access (Bawden & Robinson, 2008). Critical thinking is the ability to analyze facts, construct logical arguments, and consider multiple perspectives before making decisions or conclusions. This allows students to not only receive information passively but also evaluate it critically (Anderson W. & David L, 2001). Creativity, on the other hand, involves the generation of new and innovative ideas, as well as the ability to see problems from different points of view and seek unique solutions. Collaboration and communication are interpersonal skills that enable individuals to work effectively in teams, share ideas, and convey information clearly and persuasively (Friedman & Antal, 2005).

Technological ability, often called digital literacy, is a very important skill in the 21st century. This involves not only the use of technological tools but also an understanding of how technology works and its potential impact on society (van Laar et al., 2017). Students must be able to use technology to search for information, communicate, collaborate, and create digital content. Developing these 21st century skills requires an innovative educational approach, one that focuses not only on factual knowledge but also on project-based learning, critical thinking, and collaborative interactions. Education must emphasize active learning, where students engage in activities that require the application of these skills in real and relevant contexts (van Laar et al., 2017).

## CONCLUSION

It can be concluded that most teachers already use it SmartBoard Interactive in learning. This has also been confirmed by students. Teachers see that use SmartBoard Interactivecan add innovation to learning. However, not many variations of this learning have been implemented, because all the features have not been activated. From the student side, 96.9% of students felt motivated by using learning SmartBoard Interactive. SmartBoard Interactive this is effective for creating fun and innovative learning for students. Teachers also have the challenge to innovate for learning.

Implementation SmartBoard Interactive What is still lacking is the use of online applications for presenting material. Conclusion of the journal on "Effectiveness of Use SmartBoard Interactive Against Learning Innovation in Schools" emphasizes that the use of SmartBoard Interactive significantly enriches the learning process in the school environment. This technology not only facilitates more interactive and engaging teaching methods, but also encourages the development of innovative learning approaches. With the ability to integrate various digital resources and enable direct interaction, SmartBoard Interactive has been proven to increase student engagement, deepen understanding of subject matter, and motivate students to participate actively in the learning process.

Thus, the main conclusion of this journal is that SmartBoard Interactive is an invaluable educational tool, which not only improves the quality of teaching but also encourages innovation in learning. To maximize the potential of this technology, it is important for schools to provide adequate training to teachers, so that they can take full advantage of the innovative features SmartBoard Interactive in designing and delivering effective and interesting learning.

Suggestions for further development, training in use SmartBoard Interactive it still needs to be done, or at least teachers to conduct joint exploration to get used to the use of features contained in this media that support learning innovation.

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