

Interactive White Board Module in an Architectural Classroom: An Evaluation

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Abstract

Educators were the early group of people to acknowledge the interactive whiteboard's possibilities as a device for learning, meeting and presenting. This study aims to evaluate the effectiveness of integrating Interactive Whiteboard in conducting visual presentation in an architecture classroom. The evaluation process was divided into formative evaluation which involved two content experts and two educational technologists. The summative evaluation included a group of five students. The results showed that the module was interactive and enhanced inquiry oriented learning. It captured students' interest and sustained their motivation level besides enhancing their self-esteem in visual presentation. The interview responses of experts in instructional design revealed that the instructions were coherent and comprehensible for the intended group of learners. Besides, they also found the navigation to be user friendly. Meanwhile, the content experts found the module Interactive Whiteboard to be an effective instructional tool and it enabled them to be more resourceful in their ICT integration. The module also made the pedagogical instructions interesting for both, students and instructors. This also encouraged higher order thinking skills indirectly. Further recommendation is suggested.

Key Words: *Interactive Whiteboard, Instructional, Evaluation, Visual Presentation.*

Introduction

Technology can be integrated into the various teaching styles. Unfortunately many teachers have been timid to test the waters using technology for instruction. As such, the interactive whiteboard is an effective appliance to assist a presentation especially using visual aids. The Interactive Whiteboard also encourages student participation.

According to (Smart Technologies Inc., 2006); an Interactive Whiteboard can be used in a learning environment for the following activities:

- a). manipulating texts and images
- b). taking notes in digital ink
- c). save notes for review via email, the web or print
- d). viewing websites as a group
- e). demonstrating or using software at the front of a room without being locked behind a computer
- f). creating digital lesson activities with templates and images
- g). showing and writing notes over educational video clips
- h). using presentation tools built into the interactive whiteboard software to enhance learning materials
- i). showcasing student presentations.

Problem Statement

Educators are blamed if students are unable to grasp classroom instruction. This is simply because most of the activities are not stimulating and the students are unable to comprehend classroom instruction. Nevertheless, Türel (2011) highlighted that using Interactive Whiteboard in classroom instruction will increase students enthusiasm to learn if it is carried out in a traditional classroom approach. Besides, interactive whiteboard also creates a hands-on opportunity with multimedia expedients (Smart Technologies Inc., 2006). Therefore such pedagogical approach enhances student interaction as well group learning (Beeland, 2002). On the whole, as claimed by Underwood and Dillon, (2011) a module integrating Interactive Whiteboard will be of a great use if it is adopted with appropriate pedagogical facet and apt instructional design.

The Purpose and Scope of the Study

This paper aims to examine the criteria necessitated in the evaluation a module using an Interactive Whiteboard to boost interactive teaching and learning in a higher learning institution as well as to bring forth the experts' opinion on integrating Interactive Whiteboard in the architecture module. The feedback obtained can be used as a platform for the teachers to develop an appropriate instructional tool using the Interactive Whiteboard. Additionally, it can put forward supportive guidelines to establish vital aspects and features in developing and assessing a teaching and learning material. Therefore, this analysis will attempt to achieve this research niche.

- What are the methods or criterion entailed in evaluating an Interactive Whiteboard module?

Interactive Whiteboard as a Teaching and Learning Instrument

Contemporary learning theories focus on student encouragement and knowledge construction. Beeland (2002) advocates that Interactive Whiteboard is a powerful tool for communication among students regardless of accessibility of computers. The Interactive Whiteboard supports communication and exchange of ideas as a new roadway for class presentation (Becta Publication, 2003). Additionally, Marzano (2009) too found an increase in student achievement especially in learner response device, use of graphics to represent information and reinforce correct responses.

Besides, it is also believed that planning lessons using Interactive Whiteboard can facilitate instructors to trim their time spent organising their teaching materials and be extra resourceful in their ICT integration (Mercer, Warwick, Kershner & Staarman, 2010). Meanwhile, Becta Publication (2003) claims this medium of instruction as a valuable learning tool because it enables the teacher to utilise available tools such as highlighting, circling or using different colour. This facilitates the students to systematise new concepts through visual learning.

In addition to that, Smith (2001) mentioned that using Interactive Whiteboard encourages teachers to develop interactive materials with content and context because this digital lesson supports handling of information from various expedencies. Furthermore, Interactive Whiteboard too encourages a greater classroom appreciation and inspiration. It enables the students to concentrate on the given task, increasing their enthusiasm to attend and focus on classroom instructions.

Evaluation of a Module

Assessment possibly will respond two corresponding functions; formative and summative evaluations to foresee learners' improvements. A formative evaluation is done mainly for enhancement of a program in a learning environment. It provides feedback to teachers on their students' ability to master a particular knowledge. This in return will assist teachers in making apt instructional decision to enhance pedagogical instruction (Stiggins, 2007). Summative evaluation on the other hand, involves gathering of data after implementing a particular instruction. It is done to appraise actual achievement (Bhola, 1990). These evaluations analyse a wider perspective of students' achievements as well as gauge the effectiveness of learning materials. This also will facilitate educators in making decision of any new intervention is necessary.

Research Methodology:

A case study approach was used in this qualitative study. The participating respondents in this study were two educational technologists who were instructional designers, two architecture lecturers who were content experts and five architecture students from the Bachelor of Architecture programme from a private higher learning institution in Malaysia. Two modes of evaluation were conducted for this study. Firstly, a formative evaluation was conducted by engaging two educational technologists and two content experts. Then, a summative evaluation was carried out by interviewing a group of five students. All five students were guided to work with the interactive module. After that, they were required to execute an interactive presentation and finally they were interviewed. All the respondents were encouraged to provide a detailed feedback about the interactive module as an instructional tool in their classroom. Respondents were briefed about the interactive module before it was introduced in the architecture classroom. Data were mainly obtained through classroom observation and semi structured interview.

The interview questions were adopted from three elements of design in interactive learning as put forward by Kristof and Satron (1995). The three main areas were information design, interactive design and presentation design. The central focus of Information Design is analysis of the objective, learning outcome, structure and organisation of the content of a particular lesson. The second element is known as Interaction Design which encapsulates navigation aspects like scrolling of bars and interaction tools like emails and discussion board as well as links and picture gallery. The final area which is known as Presentation Design focused on screen layout, selection of colour for background and text, font size and type along with use of animation.

The participating student respondents' course requires them to conduct a presentation using an Interactive White board as an instructional tool to enhance their presentation skills. The main reason for selecting the Interactive White Board is to diversify the teaching and learning process to focus on independent learning with diversified learning styles.

Results & Discussion

The evaluation was based on Kristof and Satron's (1995) interactive learning system. The three elements were information design, interactive design and presentation design. Two experts in instructional design and two experts in the content did the formative evaluation of this interactive presentation module. The two experts in instructional design had the ability and knowledge in instructional design. They evaluated the

instructional structure, interaction, (navigation and usability) and presentation aspects. They felt that the instructions were coherent and comprehensible for the intended group of learners. One of the experts also shared that the content and subject matter in the module were grouped accordingly, making it simple for the learners to articulate themselves well. Both educational technologists felt that the navigation was easy to handle. Rizal, a technology expert said that “I didn’t have any problem in navigating the module” while another technology expert Alex felt that the module was applicable and suitable for the learners’ level. Interview results showed that both educational technologists perceived this module to be apt for the targeted learners. One of them highlighted that the module had reflected a certain level of improvement especially in exploring and developing new research ideas. The comments and responses from the two educational technologists shared that the interactive module has been carefully designed to match the target group of learners. Hence, it attracted the students present successfully.

Kelvin, the content expert said, “A more advanced technology such as motion based human computer interaction (HCI) device can be used to create a seamless interactive environment. The final submissions and presentations had reflected a certain level of improvement in students’ capability to explore and develop new research ideas by using the Interactive White Board as a presentation tool.” Another content expert shared, “Preparation is necessary before the final presentation. Student had used the free hand doodle tool to illustrate ideas visually and conduct an online research simultaneously and interactively”. On the whole, the content experts were the two Architecture lecturers who are skilled in content, instructional and academic aspects in teaching and learning of architecture studies at the tertiary level. They assessed the content aspects, which focused more on the learning outcome, subject matter, mode of delivery, activities and also language.

Table 1: Content Experts Response on Information Design (summarise questions 1-4)

Expert	Comment
Kelvin	Objectives are lucid and related Instructions are straightforward Content is suitable The presentation promotes visual learning approaches through the use of doodle tools. Language is simple and clear.
Jason	Objectives are clear Directions are simple and easy to understand. Subject matter is relevant and promotes higher order thinking. The assignment is suitable and made their research assignment more handy with the tools from the interactive white board. Simple and direct language

Table 1 indicates that the subject matter experts felt that the ultimate aims of the interactive presentation brief were obvious and interrelated to the curriculum. The content of the lesson was apt for the targeted learners. The guidelines and language used were comprehensible. In addition, the presentation using Interactive Whiteboard had enable students to express their research ideas precisely. Jason, a respondent shared that the module had certainly stimulated students’ thinking process and at the same time support higher order thinking.

Apart from the above, five undergraduates participated in the summative assessment. Their responses were categorised into three different segments. The first category was information design, which included the objectives and learning outcomes, content and learning materials, language and assignment. The second category focused on interaction design, which included interaction features like exploring research themes on architectural technology such as moveable and transformable architecture while the final category includes the presentation design which stresses on screen design, background color, font, graphics as well as animation.

The feedback from the undergraduates indicated that the objectives were clearly written, easily understood and suitable for their level. Two undergraduates shared that the objectives helped them to be more focused. Respondent 1 said, “The objectives are clearly stated and it enables me to stay focus on selection of a research”

Undergraduates also perceived the content of the module was graspable, comprehensible and interesting. Additionally, they shared that the instructions were clear because the module used brief, precise and straightforward language. Respondent 3 said, “The content is simple and easy to follow. Apart from that the instructions were direct”.

Respondents’ responses showed that the interactive presentation was easy to edit by merely touching the Interactive Whiteboard and it at the same time provides immediate feedback. This creates room for correction and motivation to improve their performance further. One of the respondents mentioned that the interactive presentation promotes better interaction between the presenter and the audience as changes can be done immediately upon receiving a feedback from the instructor. “This mode of presentation is interesting as it supports better interaction between the presenter and the audience especially between the instructor and the student”, said Respondent 2. Hence, the presentation using interactive white board had transformed the teaching and learning process is more engaging through visual learning approaches.

All the student respondents informed that the navigation process was user-friendly and straightforward. Besides, they also felt that the background colour of the module and image layout were apt. This feature captured students’ interest. Student responses also showed positive feedback about the screen design. “The screen layout is appealing and suitable colour choice was used”, shared Respondent 4. Respondents also shared that the type and size were explicable, apposite and communicative. Classroom observation clearly showed that the students were excited and engaged in their presentation. Furthermore, this research base assignment is more interactive as it promotes multiple learning pedagogies such as presentation skills, critical thinking and research analysis at the same time. In future, a multidisciplinary type of projects or assignments will encourage students to share ideas faster and promote even more group discussion and collaboration. This will help students to create multiple solutions and at the same time enhance their problems solving skills. On the whole, the responses from the instructional technologist, lecturers and students stress that this interactive presentation assignment were positive and assenting.

Discussion, Conclusion, Implication and Suggestions for Future Research

This study concludes based on the educational technologists, content experts and students’ feedback to assess a presentation using Interactive Whiteboard in an architecture classroom. This module was assessed based on the content suitability, aptness as well as the presentation upon integrating Interactive White board as an instructional tool. Hence, the responses obtained from all participating respondents were given due consideration, in-depth thought to ensure this interactive presentation becomes an instructional tool in all Architectural classroom.

The formative evaluation in the form of feedback from educational technologists and content experts were pertinent in deciding whether to integrate this interactive module in all architecture classrooms. This is consistent with Stiggins (2005) as well as Arends & Kilcher (2010) who claimed that formative evaluation was a method to elicit information and assist to promote the instruction to yield an effective learning material. Meanwhile, the summative evaluation included the targeted learners’ responses to measure the learning process upon intervention, the use of interactive whiteboard as an instructional tool to enhance their presentation. This result was in line with Bhola (1990) who claimed that summative evaluation should be conducted to ascertain that it has accomplished the minimum principles of knowledge, skills and attitudes among the intentional learners.

Information Design

The respondents disclosed that the objectives were apparent. This would familiarise the targeted learners to adopt this Interactive Whiteboard to facilitate their presentation. It was also obvious that this interactive board kept them attentive to achieve the expected learning outcomes. All the respondents felt that content was coherent and fulfilled the curriculum requirements.

The content experts emphasised that this interactive presentation supported visual learning styles and promoted independent learning bringing about a change in pedagogical process, from teacher centered to student centered approach. In line with this, Beeland, (2002) claimed that the Interactive Whiteboard would be an interesting tool to engage students in classroom activities as it deals a lot with psychomotor skills and co-ordination of hand and mind motivates engagement and explorations. Furthermore, the availability of internet access during the presentation has stimulated inquiry-oriented learning. This is further attested by the participating instructional technologists and lecturers who perceived the content of the module is organised and chunked accordingly. The respondents also emphasised on the aptness of language used which enhanced their comprehension. Overall, all the respondents felt that the interactive presentation was exciting and inspiring. As such, the learners were able to explore this presentation topic and comprehend it better. This is in consistent with Becta (2003) who claimed that an engaging interactive material involves students and creates leeway for different learning styles.

Interaction Design

On the whole, all the respondents did not encounter any difficulties with navigations and did not have any disruptions during the navigation. This motivated them to further explore the interactive presentation. They also felt that the characteristics of this interactive presentation were exciting. Shaumbaugh and Magliaro (1997) too advocated that a plausible module should be comprehensible, accommodating the need of the teachers and the students to enable them to witness the interrelationship between the concepts and content delivered.

Presentation Design

The respondents found the screen layout to be straightforward and alluring. They were attracted with the variety of colours that could be used for their presentation. Besides, the appropriate font size made this module comprehensible.

Conclusion and Implications

This study focused on evaluation of an interactive presentation. It addresses three essentials components of design process; information design, interaction design and presentation design which were introduced by Kristof and Satron (1995) who felt that an interactive learning system should have these three elements. Overall, the educational technologist, lecturers and students perceived this interactive presentation as an effective pedagogical tool in the classroom.

As the content of the interactive presentation was grouped and arranged systematically with attainable objectives, it was interesting and challenging to students. This also encourage higher order thinking skills indirectly. Thus, all the respondents were optimistic in using this interactive presentation. In conclusion, it is an interesting instructional tool in classrooms. In this global era, information technology is a part and parcel of our life (Yusof, 2000). Hence, it is important that teachers and learners be abreast with development to be knowledgeable nation. This will pave way to instructors to adopt various pedagogical methodologies to engage their students in their teaching and learning process.

Suggestion for Further Research

This study is narrowed to a particular group of the students and their perceptions. It is suggested that this study is conducted in a public higher learning institution with more student and content experts.

It is also recommended that a case study is carried out to investigate the effectiveness of this interactive presentation to assess academic output of students in Architectural classroom. Alternatively, a research can be conducted to examine the effectiveness of such approach in other fields.

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