

## The Effects of Interactive Whiteboard on Teaching Geometry

Hamdi Serin<sup>1</sup>

<sup>1</sup>Ishik University, Department of Mathematics Education, Erbil, Iraq

Correspondence: Hamdi Serin, Ishik University, Erbil, Iraq. Email:hamdi.serin@ishik.edu.iq

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**Abstract:** The wide use of interactive whiteboard in the classroom has been a significant source of motivation in teaching and learning process, and consequently leads to better achievement. Likewise, interactive whiteboard has enormously contributed to geometry teaching in that it has created a relaxing learning environment for learners where learners can study geometry in a stress-free atmosphere. This paper aims to investigate the facilitating role of interactive whiteboard in geometry teaching. Furthermore, the study explores how interactive whiteboard motivates learners to achieve better in geometry.

**Keywords:** Interactive Whiteboard, Motivation, Learning Environment, Achievement

### 1. Introduction

The use of technology has changed the way we teach in the classroom. Compared with traditional methods, Interactive Whiteboard (IWB) is an effective tool in teaching process. As Zevenbergen & Lerman suggest, IWB is “an innovation that is gaining considerable presence in many contemporary classrooms” (2008, p. 107). IWBs have been recently gaining popularity in the classrooms, because they enable teachers to teach in an enjoyable and motivating way. The use of IWB provides a lot of functions in the classrooms: “drag and drop (objects on the board can be moved around); hide and reveal; highlighting; animation; indefinite storage and quick retrieval of material and immediate feedback (When a particular object is touched, a visual or aural response is generated)” (Kennewell, 2006, p. 2). All these functions create a useful learning environment and learners pay more attention to materials that are being learnt.

### 2. The Benefits of Interactive Whiteboard in the Classroom

IWBs are useful tools to be employed in the classrooms, as they allow learners to achieve better. Learners stand a better chance of accomplishing, if teachers conduct teaching through IWBs. Schut (2007, p.33) commented on the benefits of IWB as:

- IWB facilitated learning
- IWB initiated learning
- IWB multimedia capabilities

The use of IWBs facilitates the learning process, and learners are encouraged to learn more. By the same token, Akbas and Pektas (2011) emphasize the facilitating and encouraging role of IWBs in the classroom and conclude that “easier comprehension, higher concentration, improved student participation, more effective presentation of information, use of games, aiding memory, and facilitating and provoking thought” (p.4) are possible outcomes of using them. Teaching is not an easy process. Teachers need to apply different methods at times, so that learners understand with ease. Yet it is not always easy to attract learners’ attention. Teachers can create various activities with IWBs. Reardon (2002) states that “with the use of whiteboards, teachers can develop many creative ways to capture students’ attention and imagination” (p.26). When IWBs are employed in the classroom, students get involved in the learning process more; therefore “IWB has a positive effect on student engagement and can have constructive effects on teacher attitudes” (Aytac, 2013, p.1908).

Motivation has a key role in the classroom. Smith et al. (2006) writes “the most widely claimed advantage of the IWB is that it motivates pupils because of its capacity for quality presentation incorporating large visual images, which satisfy the expectations of pupils already immersed in a world of media images” (p. 445). Richardson (2002) similarly stresses the importance of IWB in the classroom since it enables learners to participate. When learners are motivated they are prone to participate and respond in the classroom.

Some useful IWB instructional strategies that have a positive effect upon learning include (Türel & Johnson, 2012, p.382):

- Highlighting, coloring, or annotating important content
- Flipping back and forth to review previous content providing reviewing techniques better understanding
- Using pictures for discussion and brainstorming, collaborative writing, shared reading, peer-teaching, and collaborative problem solving
- Hiding and reveal, drag and drop, and matching items activities
- Observing different media—essential for visual learners
- Touching and feeling the material—good for tactile learners
- Accommodating lower ability and special needs—zoom feature for visually impaired students
- Presenting ideas and reflections about the course content
- Finding hidden parts of a picture with spotlight or screen-shade
- Capturing screenshots from web pages synchronously and manipulating them
- Correcting mistakes in the materials
- Playing games

In a nutshell we can list the benefits of IWB as a teaching tool as follows (Povjakalová, 2012, p.18).

- is well adapted to whole class teaching
- encourages an interactive approach in that setting
- enables to use a variety of multimedia resources
- enables faster pace through the use of prepared materials

- encourages sharing materials among other teachers
- teacher can control and lead all activities on the touch board
- gives teachers possibility to use a wide range of resources in preparing the materials
- through the new technology encourages teachers in trying out new ways of teaching, using more ICT
- supports demonstrating and modeling
- gives great opportunity to integrate ICT in lessons while teaching from the front of the class
- enables to increase spontaneity and flexibility if teachers can draw on a variety of internet resources
- enables teachers to save and print whatever on the board, notes written in the lesson

And some other benefits of IWB as a learning tool are as follows (Povjakalová, 2012, p.18):

- support pupils of a variety of learning styles
- increases pupils' motivation and engagement in learning
- increases pupils' interest with visual stimuli
- keeps pupils focused on the board for a longer time
- makes pupil's attention and concentration better
- develops pupils' personal and social skills
- pupils do not have to use a keyboard to engage with the technology, increasing access for younger children and pupils with disabilities

### **3. The Use of Interactive Whiteboard in Geometry Teaching**

Interactive whiteboard is an effective tool to increase student subject-matter knowledge because motivation and concentration that is created by the use of interactive whiteboard in the classroom lead learners to achieve better.

Geometry has always been a source of frustration for learners because most learners find it hard to learn. But recent developments in teaching have brought a new perspective to geometry teaching. Technology has become an essential tool for doing geometry in today's world. It can be used in many ways to develop the learning of geometry. Technology can facilitate geometry-related problem solving, communication, reasoning, and proof; moreover, technology can provide students with opportunities to explore different representations of geometry-related ideas and support them in making connections both within and outside of geometry.

Visualized lectures are of great help in developing abstract thinking in geometry. The use of technology has enabled students to visualize geometry, engage in active learning strategies, have positive attitudes, and build confidence in their ability to do geometry. Comprehension of presented definitions and theorems and solving the given tasks and problems visualization is essential. Visualization enables learners to solve problems in a much easier and more interesting way. Learners are more motivated in geometry learning, if geometry is presented to them through well-organized presentations.

#### 4. Conclusion

Motivation holds an important place during the learning process. Lack of motivation does not lead to accomplishment. IWB is a useful device to employ in the classroom because it can draw attention of learners. The enjoyable learning environment created by IWB allows learners to participate and respond in the classroom. Teaching of geometry which has been daunting for teachers is facilitated by the use of IWB.

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