The Educational Contribution of Interactive Whiteboards

James W. Davis, University of Arizona, Tucson, USA

ABSTRACT

Interactive whiteboards (IWBs) are a key element of smart technology being used in classrooms. The principal concern when using interactive whiteboards in an educational setting is how effectively IWB’s serve the student and the instructor. A key question is whether the high cost of interactive whiteboards is providing enough value to justify the cost. The purpose of this article is to provide a preliminary exploration of the perceptions of students and teachers regarding their use of IWBs. The study also discusses the factor of bias that might influence these perceptions. This study reported preliminary results of what will be a larger report on the full content analysis. However, preliminary results showed wide variance between teacher and student perceptions of interactive whiteboard use that suggests a need for further research.

KEYWORDS

Bias, Education, Educational Costs, Educational Technology, Interactive Whiteboards, Perception, Smart Technology, Students, Teachers

INTRODUCTION

The principal concern when using interactive whiteboards in an educational setting is how effectively IWB’s serve the student and the instructor. What domains of learning do they impact, and what skills or learning goals do they serve (Becta, 2007; Karsenti, 2016; Small, Higgen, Wall, & Miller, 2005)? Choosing to study interactive whiteboards’ (IWBs) contribution to our educational culture is a worthy project now but will be even more so as the background technology is improved through research and technologies that are on the horizon.

The issue that must be settled is whether IWB’s significantly alter learning outcomes (Beauchamp & Miller, 2007; Buffa, 2012; Karsenti, 2016; Smith, Higgins, Wall & Miller 2005). This research examines existing literature about IWBs and provides a preliminary exploration of the perceptions of teachers and students regarding their use of IWBs.

PROBLEM

A problem with the use of IWBs in education is the unsettled nature of the effectiveness of IWBs. The research that has been conducted on this educational tool has turned up discordant results as will be shown in the literature review. Many studies have reported negative outcomes, and other reports have achieved positive but small effects. Until the essential question is answered as to whether IWBs improve learning outcomes, the future of IWBs remains an open question (Buffa, 2012; Hockly, 2013; Karsenti, 2016). The specific problem being examined in this study is that it is unknown if
student and teacher perceptions of IWB effectiveness are similar, and whether students and teachers have different biases toward IWB use for education that might affect their effectiveness perception.

Compounding the problem is a plethora of competing IWB technologies. IWBs are a profitable commercial enterprise. The competition among these commercial enterprises has led to proprietary approaches to hardware design and software design. This often makes IWBs incompatible and leads to requirements that training occur from platform to platform. In addition, the introduction of competitive new functions can make obsolescence a major issue. Keeping up with such updates can make IWBs cost prohibitive when IWBs cost in the low thousands for low-end models (Becta, 2007; Overly, 2016; Schulten, 2012). Understanding the effectiveness of IWBs is important for decisions-makers in school systems given the highly competitive sales environment for these tools. Additionally, the strong sales messages presented to faculty can contribute to teacher and perhaps student bias when they are evaluating the effectiveness of IWBs in improving learning outcomes.

PURPOSE

The purpose of this preliminary exploratory qualitative narrative inquiry research is to present the perspectives of teachers and students on the effectiveness of IWBs to determine the similarities and differences between them in order to contribute to knowledge of whether the cost of IWBs is justified by the benefits. This is a preliminary study to evaluate whether future research in this area would be justified. While a complete set of narrative data has been gathered to form a thick description of the perceived effectiveness of IWBs from students and teachers, this article is focused on examining the initial high-level perceptions of teachers and students and differences in those perceptions with regard to effectiveness. The thick description and complete qualitative thematic analysis will be presented in a future article.

LITERATURE REVIEW

The technology behind interactive whiteboards is approximately 15 years old. In that time, a considerable amount has been written about IWBs effectiveness in the classroom.

Perception of IWBs Effectiveness

One of the most extensive studies on IWBs effects was conducted in the United Kingdom by the British government (Becta, 2007). The term refers to the British Educational Communication and Technology Agency, and was designed to be a guide for secondary schools in the use of IWBs (Becta). The conclusion of this multiyear study was IWBs had a positive effect, and yet the effect was small and not lasting. Buffa (2012) conducted an experimental study that compared an experimental group with a control group. Her results were that the group using IWBs underperformed a control group which did not use IWBs. The study used the same teacher teaching the same class but with different students, and the results were statistically significant. These results from an experimental study contradicted many studies that did not employ an experimental design (Fernandez & Luftglass, 2003; Higgins, Mercier, Burd, & Joyce-Gibbons, 2012).

The research conducted using teacher perceptions on the effects of IWBs were far more positive than the research on student perceptions (Buffa, 2012). There have been numerous studies about IWBs effects on a particular subject matter such as math or language arts (Glover, Miller, Averis, & Door, 2007), and there are numerous others that focus on teacher perception and behaviors (Hollis, (n.d.); Slay, Subinger, & Hodgkins-Williams, 2007).

The experience of student perceptions is less thoroughly reported (Buffa, 2012; Hall & Higgins, 2005). The experimental method is infrequently employed, and the experimental method is seldom applied to either teachers or students (Hall & Higgins). This is not to imply that teachers’ perceptions
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