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Mary M. Schroeder

University of Minnesota Extension Regional Center, hedin007@umn.edu

Connie S. Burns

University of Minnesota Extension Regional Center, burns391@umn.edu

Marla M. Reicks

University of Minnesota, mreicks@umn.edu



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Interactive Whiteboards: A New Tool for Extension Education

Mary M. Schroeder

Assistant Extension Professor
University of Minnesota Extension Regional Center
Marshall, Minnesota
hedin007@umn.edu

Connie S Burns

Assistant Extension Professor
University of Minnesota Extension Regional Center
Morris, Minnesota
burns391@umn.edu

Marla M. Reicks

Professor
Food Science and Nutrition, University of Minnesota
St. Paul, Minnesota
mreicks@umn.edu

Abstract: Use of interactive whiteboards (IWBs) in school classrooms and conference rooms is increasing. To evaluate the effectiveness of IWBs as a tool for Extension education, two groups of 3rd and 4th grade Minnesota students (n=325) were taught nutrition using traditional methods or IWBs. Significant increases in knowledge and behavior were observed in both groups after the lessons, with no differences observed between groups. Teachers and Extension staff were generally positive about using IWBs to teach nutrition. The results indicate IWBs can be effective when used for Extension nutrition education in schools.

Introduction

As the number of interactive whiteboards (IWBs) in school classrooms and conference rooms increases, it becomes essential that Extension staff know how to effectively use IWBs as an educational tool. In 2008, classroom teachers in Southwest Minnesota began asking Extension staff to use IWBs as part of their teaching. When asked for an overhead projector, a teacher had responded, "We keep this dinosaur (overhead projector) in the corner for people who don't know how to use an IWB." This response indicates that along with the need to understand the effectiveness of IWB use in classroom settings, there is a need to increase Extension staff proficiency in the use of IWBs.

What Are Interactive Whiteboards?

Interactive whiteboards are touch-sensitive boards connected to a computer and projector. They are large boards (typically 50 inches by 64 inches) and are either mounted on a wall or on a floor stand. The IWB allows people to use their hands, pens, or other objects on the screen just as they would use the mouse on their computer.

IWBs can be used to make images larger so the entire class can see them. Images can be moved or dissected to help explain difficult concepts. Educators/students can use IWBs to gradually reveal items, sort items into categories, or quickly link to the Internet so all students can view and/or work with a webpage. IWB game templates can be used to review key concepts and to assess students' knowledge.

Are IWBs Effective?

Currently, published reports on the effectiveness of IWB use in Extension teaching are non-existent. Brown (2001) called for evaluating the factors that make interactive media and technology effective in education. His advice for Extension professionals on the use of interactive media also focused on the importance of staying current with new technologies. Comparing IWBs with other educational approaches could assist in clarifying the usefulness and effectiveness of IWBs in Extension education and programming.

Therefore, a study was conducted to determine the effectiveness of IWBs as a tool for changing nutrition-related knowledge and behavior. Initially, two Extension staff attended an IWB workshop and began using the IWB software and tools. Lessons from a curriculum that focused on MyPyramid principles were adapted to allow students to better visualize and interact with concepts regarding food group functions and requirements. Other staff were then trained to use the IWBs with the adapted lessons.

Classrooms in West Central and Southwestern Minnesota (3rd and 4th grades) were randomly assigned to a control group where a series of six 35-minute lessons were taught using traditional methods (eight classrooms, n = 155 children) or a treatment group where lessons were taught using IWBs (eight classrooms, n = 85 children). The reported mean age of all children was 8.8 years. Most indicated they were in the third grade (87%) and were White (85%), while half reported they were girls, with no statistically significant differences between groups in terms of age, race, or sex. Differences in the number of children per group were based on the availability of IWBs in classrooms in selected schools. Teachers and Extension staff were very positive about the lessons regardless of the method used, with high ratings reported for student engagement and excitement.

Questionnaires to assess knowledge and behavior change were developed and tested prior to use. Pre-post test analysis (t-tests or chi-square tests, as appropriate) indicated children in both groups significantly improved reported nutrition knowledge and general nutrition behaviors following the nutrition education lessons ($p < 0.05$), with no differences between the two groups. Based on pre-post analysis of dietary intake with 24 dietary-recalls, children in the treatment group slightly increased fiber, vitamin A and B-carotene consumption, but also fat and saturated fat compared to children in the control group after the intervention ($p < 0.05$). Overall, the use of IWBs did not result in major changes in dietary intake compared to the control group.

Integrating IWB into Extension Education

A significant change in knowledge and general nutrition behaviors was observed in both the traditional and IWB groups, indicating that IWBs can be used as an effective tool for Extension Education. The fact that the

IWB group did not do significantly better than the traditional group suggests that IWB should be one of the many tools used to provide education. IWBs might be an effective tool, but in this sense the use of the IWB cannot be claimed to "transform teaching" in terms of classroom dialogue and underlying pedagogy (Gillena, Staarman, Littleton, Mecer, & Twiner, 2007). Continued research is needed to determine how and when to use IWBs.

Extension staff in Minnesota are now being trained to use IWBs. The training includes technical information on how IWBs work as well as extensive hands-on practice using an IWB. The results of the research project reported here, along with other IWB studies on academic performance (Smith, Hardman, & Higgins, 2006), were reviewed during the training to emphasize the importance of balancing traditional teaching methods with the use of IWBs.

Getting Started

The first step is to determine which brand of IWB is used most often in the educational settings where the teaching will take place. The next step is to obtain the appropriate software from the IWB manufacturer and learn how to use the technology. Attendance at a workshop on the use of IWBs is highly recommended along with online websites and blogs developed specifically to help people use IWBs. The basics of using IWBs can also be acquired from tutorials and the software itself. Last, practice with the technology prior to use is suggested. As IWBs are integrated into traditional forms of education, it is important to balance traditional teaching methods with IWBs and to keep pedagogy at the forefront when planning lessons and activities.

Conclusion

IWBs will continue to be used in school classrooms and conference rooms. Extension educators can effectively use this new form of technology by combining it with traditional teaching methods.

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