HIGHLIGHTS

The interactive whiteboard (IWB): Uses, benefits, and challenges

A survey of 11,683 students and 1,131 teachers

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OBJECTIVES

Over the past five years, the interactive whiteboard (IWB) has been massively introduced into most schools across Québec. The objective of this study, conducted by the team of the Canada Research Chair in Technologies in Education, was to identify how the IWB is used in Québec schools and the associated benefits and challenges. A total of 11,683 students (from 4th year elementary to 5th year high school) and 1,131 teachers participated in the study.

METHODOLOGY

Five data collection instruments were used:
(a) a survey questionnaire for all students (n=11,683)
(b) a survey questionnaire for all teachers (n=1,131)
(c) individual interviews with teachers (n = 31)
(d) group interviews with teachers (n = 8)
(e) group interviews with students (n = 16).

KEY FINDINGS

Do teachers use the IWB?
Of the surveyed teachers, 48.2% "always" or "often" used the IWB, 39.3% "sometimes" or "rarely" used it, and only 12.6% "never" used it.**Do students handle the IWB?** Of the surveyed teachers, only 4.0% said that they "always" or "often" had their students work handle the IWB, with 23.4% "sometimes" and 72.6% "rarely" or "never" responses.

What are the main ways that teachers used the IWB?
51.6%: presentations using multimedia software
19.3 %: Internet search
10.8%: video presentations
6.9%: presentation of course notes
4.8%: demonstrations of math and science concepts
1.7%: group correction of written work (in French)
1.5%: presentation of digital books and textbooks

Was the IWB preferred over the traditional blackboard?
999.2% of students preferred the IWB over the blackboard.
73.6% of teachers preferred the IWB over the blackboard.

What were the main benefits of the IWB according to teachers?
223.5%: Internet access in class
19.1%: visual teaching support
12.2%: watching videos
11.8%: higher student motivation
9.3%: diversified teaching approach
9.1%: facilitated learning

What were the main benefits of the IWB according to students?
29.2%: Internet access
18.8%: visual teaching support
11.6%: higher student motivation
9.5 %: diversified teaching approach
6.3%: generally better learning
6.1%: facilitated learning

Benefits specifically associated with certain uses of the IWB

The large study sample allowed conducting statistical inference analyses. The results revealed that the more that the students handled the IWB in class, the more positive their perceived impacts on their academic grades, school motivation, concentration in class, and overall satisfaction at school. However, we should keep in mind that only 4.0% of the teachers "always" or "often" had their students handle the IWB.

What were the main challenges of using the IWB according to teachers?
70.6%: technical problems
17.3%: time-consuming
9.6%: small screen size
1.4%: classroom management

What were the main challenges of using the IWB according to students?
33.5%: technical problems
25.4%: small screen size
19.0%: teacher's inability to use the IWB
18.3%: loss of motivation

CONCLUSION

Far from calling into question the critical need to integrate technology in education, this study instead highlights the fact that the classroom integration of certain technology tools, like the IWB, may be more complicated and time-consuming than others. The results show that the participating teachers had substantial technical problems with the IWB. This could explain why they used it primarily as an electronic projector and rarely used the interactive features to full advantage (only 1.4 % of reported uses). Nevertheless, the results also indicate that the IWB has real pedagogical potential. For example, according to the responses, the more that the students handled the IWB themselves, the more they perceived positive impacts of the IWB on their academic outcomes, school motivation, concentration in class, and overall satisfaction at school. These are promising results, and the hope is that more than just 4.0% of teachers will venture into new territory and encourage their students to work with the IWB. Furthermore, in addition to installing IWBs in classrooms, it would be important to provide teachers with adequate technological and pedagogical support as needed. Finally, we suggest that the IWB should not be imposed on teachers unless they are ready to embrace it and take advantage of its full potential. This should be accompanied by pedagogical days so that teachers can take individual or group training to learn how to use all the IWB features and functions, especially the interactive aspects, which allow students to engage more actively in learning.

MAIN RECOMMENDATIONS

1. Encourage more teachers to use the IWB regularly.
2. Provide specific training programs to prepare more teachers to use the IWB's interactive features.
3. Provide specific training programs to prepare more teachers to have their students use the IWB.
4. Recognize the time that teachers spend learning how to use the IWB.
5. Rethink technical support strategies for teachers who regularly use the IWB so that they feel genuinely supported.
6. Do not impose new technology tools on teachers involuntarily and across the board.
7. When it comes time to do major upkeeps and upgrades on the IWBs that were installed five years ago, it would be important to consider whether teachers who are not prone to realizing the full interactive potential of the IWB might prefer a new electronic projector instead.
8. When purchasing IWBs in future, consider a larger screen size, especially for high school classrooms, which typically contain 30 or more students.
9. Raise teachers' awareness of students' motivation loss and the need to apply various strategies to stimulate their taste for learning.
10. Because practically all Québec classrooms currently have an IWB, all future teachers should be trained in pedagogical and interactive uses of the IWB.
11. Continue to assess the uses, benefits, and challenges of the IWB in class.
12. Conduct further action research and case studies on educational integration of the IWB.