

# Exploring the Power of Interactive Classroom Response Systems for Formative Assessment



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## Essential Question:

Does the use of interactive technology improve teacher attitude toward formative assessment?

## The Tool:

The Senteo Interactive Response System is a set of handheld wireless remotes (or clickers) which integrates with SMART Notebook software. This tool allows the teacher to create assessments and manage, track, and evaluate the results immediately.

## Background:

The Bruce-Grey Catholic District School Board has provided opportunities during the 2008/2009 school year to explore the power of formative assessment.

A group of 18 teachers (grades 7-12) formed a Differentiated Instruction Focus group and examined issues related to formative assessment. From this focus group, the idea for this project was formed following a discussion about ways to simplify formative assessment through the use of technology.

Damian Cooper presented the 8 big ideas of assessment during a board wide PD day. He emphasized the use and importance of formative assessment.

Within the board, individual schools have implemented the teaching-learning critical pathway through PLC's. Through this process, it has become evident that many teachers find it difficult to implement formative assessment into their daily practice. Although the importance of formative data is



*Grade 7/8 students at Immaculate Conception School, Formosa as they utilize the Senteo clickers for a formative assessment task*

recognized by many, it is challenging to create, assess, give feedback and determine next steps within an appropriate time frame.

Assisting teachers to find quick, user-friendly means of collecting and managing formative assessment data is crucial when moving from knowing to doing. Interactive technology is one way that formative data can be gathered and managed quickly and easily.

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## Data Collection Methods and Analysis:

*"The learning curve in using this tool is small. Formative assessment provides teachers with the information needed to guide instruction."*

Thirty teachers in the Bruce Grey Catholic District School Board joined together to investigate the impact of interactive technology on teacher attitude toward formative assessment. A cross-section of teachers (K-12) received a full-day in-service on the Senteo Interactive Response

Systems for use with classroom SMART Boards. Teachers had an opportunity to use pre-developed assessments as well as create assessments based on student need. Job embedded support was provided as necessary. Pre- and post – questionnaires were

completed. The questionnaire was used prior to the clicker training and again after teachers had the opportunity to utilize the clickers to gather assessment data within their own classroom.

## Teachers Reflect:

- "I think the clickers are quite valuable for formative assessment. I used them especially with math for quick responses. We are currently working on integers and many students think it is easy, yet make many mistakes. This was a great way for me to determine that they were able to add and subtract positive numbers, and add negative numbers, but really struggled with subtracting negative numbers. I think the clickers are also great for quick "yes-no" questions in any subject. A common question I asked was, "Do you understand?" Click A for yes, B for somewhat, and C for no. Doing this type of assessment anonymously made students feel completely safe to answer truthfully." (Grade 7/8 teacher)
- "I had difficulty with the software and registering the clickers. By the time I was finished setting up the questions and trying to get them to work, I had spent several hours with little results."
- "They are very effective for math assessments. Some students guessed rather than attempted the questions. Students definitely enjoyed the clickers." (Grade 7 teacher)
- "It was very frustrating getting started. Without access to a Smart Board, you cannot use many math diagrams in your assessment tasks. Students loved it when it worked." (Grade 12 teacher)
- "I have only used the Senteo clickers a few times. The learning curve in using this tool is small. Formative assessment provides teachers with the information needed to guide instruction. Using Senteo clickers increases ease for gathering information, a risk free environment for students to respond to learning and is fun for teachers and students to use." (Computer Consultant)
- "The experience has been a positive one for our grade 7/8 students. The immediate feedback given to the students after a quiz allows them an opportunity to assess their understanding of the topic and to find the areas in which they may or may not understand. In addition, when the answers to the quiz are discussed in class, it becomes another opportunity for the students to review and understand the material that has been taught. Moreover, the teacher is also allowed the opportunity to decide what concepts need to be re-visited (and for what student or students) before moving on to the next concept. Since we have a classroom of a wide variety of needs, the use of the clickers has been an extremely motivating device in encouraging the students to assume responsibility for their own learning. Every student is held accountable in completing the assessment as their responses are recorded immediately." (Grade 7/8 Teacher)

## Results and Findings:

Survey Questions	Pre-training Responses	Post-Implementation Responses
1. Do you find formative assessment data to be valuable for your instruction?	Yes – 100% No – 0	Yes – 100% No – 0
2. What challenges do you face in implementing formative assessment? (multiple responses permitted)	A – next steps (what to do with the information) – 31% B – time to evaluate the assessment – 77% C – time to conduct the assessment – 23%	A – next steps (what to do with the information) – 10% B – time to evaluate the assessment – 45% C – time to conduct the assessment – 45 %
3. How often do you use formative assessment	A – daily – 15% B – weekly – 61.5% C – monthly – 15.5% D – once per term – 8%	A – daily – 33 % B – weekly – 56 % C – monthly – 11 % D – once per term – 0 %
4. Do you believe using formative assessment is more work for the teacher?	Yes – 78.5% No – 21.5%	Yes – 37.5 % No – 50 % Sometimes – 12.5%
5. How confident are you with using formative assessment to group your students?	A – confident – 23% B – somewhat confident – 77% C – not confident – 0%	A – confident – 75 % B – somewhat confident – 25 % C – not confident – 0 %
6. Would you be more willing to use formative assessment regularly if ready made assessments were provided?	Yes – 85% No – 15%	Yes – 100 % No – 0 %
7.a) Have you used clickers in your classroom before? (pre-survey only) 7. b) How often have you used clickers in your classroom? (post-survey only)	Yes – 15% No – 85%	A – 1-3 lessons – 75 % B – 4-6 lessons – 25 % C – more than 6 lessons – 0 %
8. Do you feel clickers would be a valuable tool for formative assessment?	Yes – 100% No – 0%	Yes – 87.5 % No – 12.5 %
9. What grade level do you teach?	A – primary – 18% B – junior – 35% C – intermediate – 35% D – senior – 12%	A – primary – 17 % B – junior – 33 % C – intermediate – 25 % D – senior – 25 %
10. Would you recommend the use of clickers for formative assessment to another teacher? (post-survey only)		Yes – 87.5 % No – 12.5 %



*Let Your Light Shine*

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## Reflections and Action:

When teachers were given appropriate training, time to practice the new learning and classroom support as needed, their attitude toward formative assessment did improve. The majority of teachers already felt that formative assessment is a valuable tool to inform instruction. However, one of the more difficult tasks was to find time to evaluate and interpret assessments in a timely fashion. According to our survey results, teachers felt that time to assess was less of a challenge with the clickers because the technology gave them immediate feedback. After participating in the project, teachers indicated that time to conduct the assessment became the more challenging activity. This can be attributed to the struggles that new technology introduces. Many teachers experienced difficulty with software installation and Senteo teacher applications. Each teacher's willingness to persevere with the technical difficulties also affected their decision to continue or abandon the project. From the post-survey it was also evident that the majority of teachers in this study have only used the clickers with their students for 1-3 lessons. This issue of increased time for conducting assessments should diminish as teachers become more familiar with the technology.

The project did have an impact on teachers' beliefs. The majority of participants indicated in the pre-survey that formative assessment creates more work for the teacher. After using the clickers in their classrooms, the majority believed that formative assessment does not create more work for the teacher. These results indicate that technology can decrease teacher workload and lead to a positive attitude toward conducting formative assessment. A positive outlook toward new methods will increase the likelihood that formative assessment becomes a consistent and sustained component of teacher practice.

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## Contributions to MISA PNC:

Members of the D.I. focus group were made aware of the MISA Professional Network Centre and as a result, two action research projects from the group were implemented. As the focus group develops direction for the 2009/2010 school year, action research will be an option for continued professional development.

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## Suggestions for Future Research

We had hoped for a greater return rate on our post-surveys. Prior to the training session, teachers were informed that the expectation was that they would use the new technology and report back on their experience. However, after providing training and offering technical support in the classroom, we only received post surveys from less than half of the teachers that attended the in-service and completed pre-surveys.

Future research around how best to support teachers through the implementation of new technologies may provide insight for those in leadership positions.