

**ACTION RESEARCH TEAM: ANDREW KARAMATH, LISA MACLEOD**

**ACTION RESEARCH QUESTION: How can Intermediate teachers at Bellmoore use inferencing to increase the level of refined written responses and student engagement using Smart Board technology?**

<b>Team Information:</b>	<b>School:</b>	<b>Contact Information:</b>
<b>ANDREW KARAMATH LISA MACLEOD</b>	<b>BELLMOORE</b>	<b>2121 #56 HIGHWAY Binbrook, Ontario L0R 1C0 905.692.5435</b>

**Abstract:**

Staff at Bellmoore School has wondered whether student engagement in lessons impacts student achievement. As technology is an integral part of our lives today, we wanted to know if the use of Smart Board technology has an effect on student achievement and engagement. Therefore, the purpose of this action research study was to examine the relationship between the uses of technology versus the use of traditional teaching practices within the framework of the Ontario Curriculum. Overall, our results showed that students in the Smart Board Technology class were more engaged than those in a Traditional group setting while those in the Traditional group setting seemed to make larger academic gains, which could be attributed to student use of a written response answer model.

**Introduction:**

Bellmoore Public School (K-8) is located in Binbrook, Ontario. Its student population of approximately 400 comes from an evolving & growing community. Up until 5 years ago Binbrook was primarily involved in agricultural practices, but recently, urban sprawl has resulted in a transformation of the school's dynamics. Bellmoore students are a mix of students who have attended since Kindergarten along with recent enrollment of urban students. Due to the gaps in learning and attention difficulties found by Bellmoore teachers, it was decided to participate in an action research study.

The purpose of this study is to determine the role Smart Board technology plays in student engagement and student written responses. The study consisted of one class of 28 grade 7 students, (control group), and one class of 30 grade 8 students, (test group). It is an area of interest to the school for the reason that the school is interested in purchasing more technology to support the students. We feel that it is important to develop strategies that keep the students' engaged and active learners. Do students really benefit from the use of technology in the classroom?

The Intermediate School Effectiveness Framework (SEF) goal that channeled the study was to increase the percentage of intermediate students who achieve L3 or higher, using inferring as a reading strategy, will increase from 28% to 55% by the end of a school term.

**Literature Review:**

There have been numerous studies on the influence of computer technology, (including Smart Board technology and Whiteboard technology) and its impact on student engagement and achievement. The following are abstracts of articles directly relating to our Action Research Study:

1. "Instruments for Assessing the Impact of Technology in Education" (Christensen, R. and Knezek, G., 2001) reports its major findings as teachers who are in Stage One in computer technology (awareness) also rated themselves lower in computer enjoyment, computer avoidance, e-mail, productivity, and overall perceptions of computers. They rated themselves as being more anxious toward computers and more negative in their feeling about the impact of computers. Teachers who reported being in the sixth stage of technology adoption had the highest mean scores among the six stages of adoption category groupings in computer enjoyment, email, productivity, semantic perception of computers, e-mail for teachers, WWW for teachers, multimedia for teachers, productivity for teachers, and productivity for classroom use. This subset of teachers also rated themselves the lowest of all the groups of teachers in anxiety, computer avoidance, and a negative feeling toward the impact of computers. The authors conclude that seven well validated instruments spanning the areas of attitudes, beliefs, skills, competencies, and technology integration proficiencies have been developed by the authors and their colleagues over the past decade and assembled within a framework for technology integration. Research related to the development of these instruments, and findings that *will* (motives, positive attitudes), *skill* (ability to use software applications), and *tools* (access to hardware and software systems) are all essential ingredients for a teacher to effectively integrate information technology into his/her daily classroom practices. The authors conjecture that effective technology integration at the classroom level will then lead to a positive impact on student learning and achievement. Future research is planned to more fully explore parameters influencing level of technology integration, and to test the extent to which classroom technology integration influences student achievement.
  
2. "Interactive Whiteboards: Real Beauty or Just "Lipstick"?" (Slay, Sieborger, Hodgkinson-Williams, 2008) examines the extensive investment by governments and individual schools in interactive whiteboard technology in developed countries premised on the assumption that their use in education will impact positively on learners' achievements. Developing countries, such as South Africa, keen to raise attainment among their learners are following suit. While at least one of the nine provinces in South Africa had undertaken pilot roll-outs of interactive whiteboards (IWBs) in schools, the Eastern Cape Department of Education commissioned a feasibility study to determine teachers and learners perceptions of the potential benefits and drawbacks of using interactive pen technology, specifically the eBeam, in their teaching and learning environments, before embarking upon a large scale roll-out. This paper reports on a case study of three government schools and highlights the learners and teachers' enthusiasm about the "big screen" and the multimedia options, but also raises concerns about the lack of ICT literacy displayed by teachers and learners and the cost of technology. As most of the benefits mentioned by the teachers and learners seemed to accrue to the use of the laptop and data projector combination and most of the drawbacks emanated from the use of the interactive pen technology itself, the authors suggest that it may not be expeditious to attempt to "leap-frog" the use of interactive technologies. Instead we suggest that an evolution of ICT related pedagogy is necessary to make optimal use of interactive pen technologies such as the eBeam and that teachers should be offered technologies, not have them imposed upon them.

3. “Potential Pedagogical Benefits and Drawbacks of Multimedia Use in the English Language Classroom Equipped with Interactive Whiteboard Technology” (Cutrime Schmid, 2008) analyses the process of multimedia integration in English language classrooms equipped with interactive whiteboard (IWB) technology, and offers insights into the theoretical underpinnings of multimedia use in language learning from the perspective of cognitive learning theory. The data discussed here are drawn from a study carried out as part of a PhD research programme at Lancaster University (UK). The study was conducted within an interpretative research paradigm, and data were collected and analyzed according to a qualitative approach. In the first part, the paper discusses some perceived pedagogical benefits of adopting a multimedia-oriented approach in the IWB-based classroom. Secondly, it discusses a variety of potential problems related to the use of multimedia resources in the language classroom in question. Finally, the paper draws upon the literature on multimedia learning to address the potential pedagogical implications of these research findings.
4. “Leading Changed Classroom Culture—The Impact of Interactive Whiteboards” (Glover and Miller, 2007) notes that as most schools have installed whiteboard technology in at least one teaching area by year in primary schools and by subject in secondary schools there is evidence that not only technology and teaching approaches change but so too does the totality of learning experience summarized as "culture." As part of a research project concerned with the large-scale introduction of interactive whiteboards into all rooms in mathematics departments in seven secondary schools, a total of 46 lessons were video-recorded six months after the introduction of interactive whiteboards into the schools. Subsequent analysis showed that the total experience of pupils does appear to be changing in several ways when teachers have developed competence in teaching with the interactive whiteboard as an increased focus of work. Several factors in this experience have been affected by the introduction of new whiteboard technology. These factors appear to generate a culture of learning within each classroom. In this article, the authors contend that the interactive whiteboard has introduced a new factor into the culture by prompting changes in relationships, work patterns, and lesson preparation.
5. “Interactivity and the Digital Whiteboard: Weaving the Fabric of Learning” (Haldane, 2007) presents the interactive whiteboard as a unique teaching and learning medium and explores the distinctive pedagogy that is emerging as its functionality continues to be exploited by increasing numbers of teachers. It draws on Kozma's studies of the characteristics of other learning media and how these define pedagogic opportunities to benefit individual learners. His analytical approach is extrapolated into the context of a technology-enhanced whole group teaching and learning environment. Interactivity between teachers, learners and the medium of the digital whiteboard provides the focus for analysis of learning and teaching within this emergent learning environment. The process of learner's engagement with the medium is explored from the perspectives of both pupils and teachers, drawing on lesson observations and data elicited through interviews.

These articles demonstrate that there are benefits to using technology in the classroom. Caution, however, is raised when the researchers addressed teacher experience and comfort-level with computer technology. We found a major question that still needed to be addressed is whether or not use of technology positively impacts student performance in literacy.

**Intervention / Innovation:**

Our intervention focused on two groups: one grade seven class and one grade eight class. Both groups focused on the reading comprehension strategy of Inferring and both groups used the same literacy resource: Nelson Literacy. The grade seven students went through the Nelson Literacy 7 program “Mysteries” and the grade eight students went through the program “Secrets.” Only grade eight students would receive the benefit of using the Smart Board to enhance their literacy lesson. Which group will show the greatest improvement in engagement and written responses to reading questions: the grade eight “Smart Board Tech” group or the grade seven “Traditional” group?

We began our inquiry study by completing our classroom Research Ethics form and going through the process of making sure it was ethically sound. Following the approval of our Principal and E-Best, we completed permission forms, (passive assent) and developed teacher and student surveys that would be used to track engagement, (Appendix 1).

We also developed common assessment tools and rubrics. E-Best assisted our team in creating a spreadsheet tool to measure and track student progress through each of our “checkpoint” lessons for our inquiry study, (Appendix 2).

Our intervention began by creating on-line baseline information. The two teachers for each class completed “Teacher Attitude towards Computers” survey and students completed the “Student Attitude towards Computers and Engagement,” (Appendix 3).

Prior to beginning our lessons with our students, both teachers introduced the concept of inferring with the respective classes involved in the study. Nelson Boldprint books were used for this purpose and the assessment rubric was introduced to students. Following these introductory lessons, students completed an exit card activity that was moderated by the teachers participating in the study.

Each class then began the data collection portion of the study: the grade seven students received their literacy lessons using traditional methodology and the grade eight students received the same lesson as outlined in the teacher’s manual but also used the Smart Board. In this group students followed along with their own book as well the Smart Board. The Smart Board displayed scanned images of the reading and students engaged with the pages by writing their inferences on the Smart Board and having an opportunity to accountably dialogue using their inferences with their peers. During the lesson, teachers completed an observation checklist that focused on engagement. Following each lesson, students completed written reading responses that were moderated and tracked by classroom teachers. Students and teachers also completed an on-line engagement survey following each lesson, (grade 7-Appendix 4, grade 8-Appendix 5, grade 7and 8 teacher-Appendix 6). This same process was followed in each classroom for each of the four literacy lessons.

Following these four lessons, all students and teachers completed their post-test engagement data online. The teachers also had an informal debriefing session where next steps were plotted according to student data from each of their literacy lessons, (grade 7 lesson information-Appendix 7; grade 8 lesson information-Appendix 8).

## Description of the Data Gathering Process:

For the purpose of this study, the data that was collected included the following: student computer attitude questionnaires, student engagement surveys, teacher observation surveys, writing samples, rubric assessment scores and teacher moderation; (moderation samples can be found in Appendix 2).

The data was chosen to align with student engagement. The teacher data and the student data were collected by means of electronic surveys. The surveys were taken upon the completion of each lesson checkpoint.

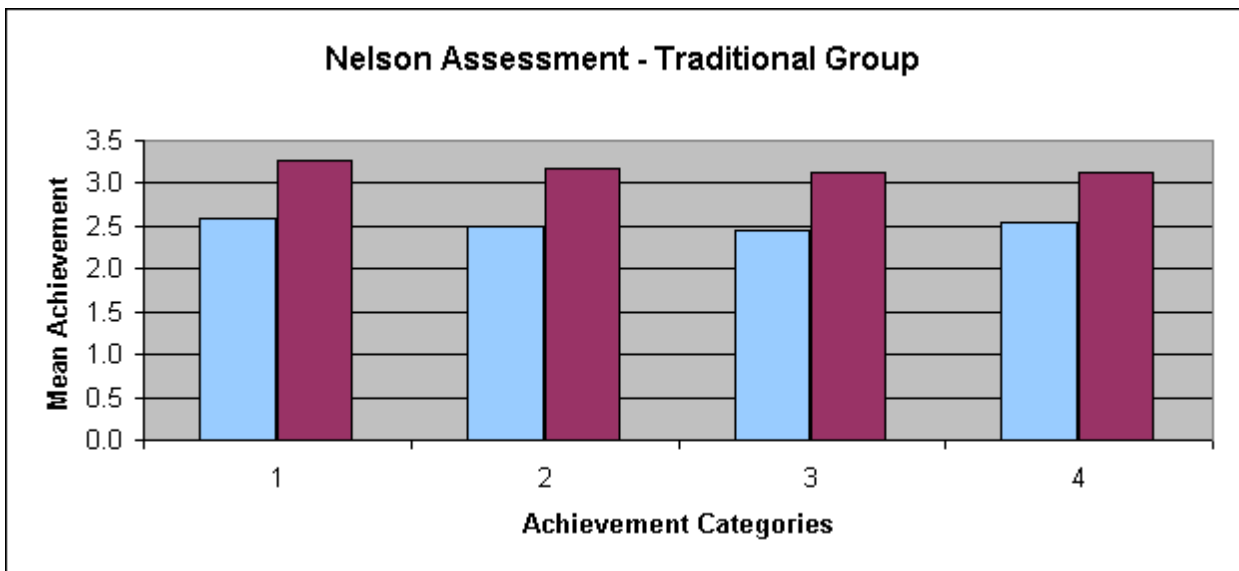
## Analysis, Results and Findings:

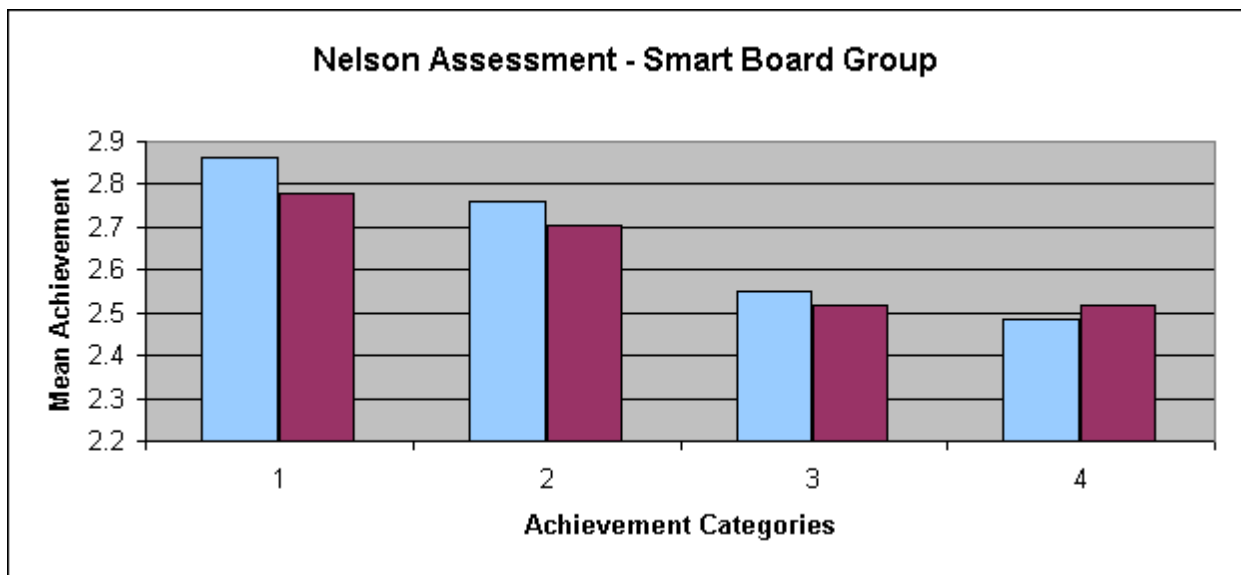
The section below outlines the project findings between the traditional group and the Smart Board Technology group. Comparisons will be displayed between the groups on data collected using student written samples and student engagement.

### Data of student writing- categorized by the Ontario Curriculum achievement chart

1 = Knowledge Understanding      Task 1 (PRE)  
 2 = Communication                      Task 4 (POST)  
 3 = Thinking  
 4 = Application

Figure 1:



**Figure 2:**

Figures 1 and 2 displays the pre and post results of both the Grade 7 Traditional group and Grade 8 Smart Board Technology group-- Nelson assessment mean achievement scores. As part of the Nelson assessment, students submitted written responses to a reading passage. It is important to note that the mean achievement displays the data from a four point rating scale (Level 1 scoring the lowest and Level 4 scoring the highest). The reading responses were marked in conjunction with the four categories of the Ontario Curriculum: Knowledge/ Understanding, Communication, Thinking and Application. The data in Figure 1 shows that students made gains in all areas with the traditional method of teaching. While for the Smart Board Technology group, as seen in Figure 2, the mean achievement results were mixed. For example, the mean achievement dropped in Knowledge/ Understanding, Communication and Thinking but rose in Application. Therefore, it appears that students made more achievement gains in the traditional group, but it is important to notice that “Application” is a higher-order skill and the data indicates that students in the Smart Board Technology group made progress in this important category.

It is also important to note that the readings in the Nelson Resources have varying levels of difficulty. The pre-assessment (in task 1) was rated as “easy” by Nelson, whereas the post-assessment (task 4) was rated as “average.” In light of these varying levels of difficulty, the data in figure 1 illustrates that students made higher gains than the mean achievement scores indicate. What this means for the Smart Board Technology group is that even though their mean scores dropped, the students were probably achieving at around the same level on three out of the four categories based on their pre and post data.

**Figure 3:****Bellmoore - Student Survey – Smart Board Group**

On a scale from 1 to 5 how much did you enjoy learning with the SMART Board today?

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Did not enjoy it		0.9%	1
Enjoyed it a little		6.5%	7
Somewhat enjoyed it		26.9%	29
<b>Quite enjoyed it</b>		<b>44.4%</b>	<b>48</b>
Enjoyed it a lot		21.3%	23
Not Answered			1
		Mean	3.787
		Standard Deviation	0.887
		<b>Total Responses</b>	<b>109</b>

**Figure 4:****Bellmoore - Student Survey – Traditional Group**

On a scale from 1 to 5 how much did you enjoy today's literacy lesson?

(Respondents could only choose a **single** response)

Response	Chart	Frequency	Count
Did not enjoy it		10.1%	10
Enjoyed it a little		20.2%	20
Somewhat enjoyed it		26.3%	26
<b>Quite enjoyed it</b>		<b>33.3%</b>	<b>33</b>
Enjoyed it a lot		10.1%	10
Not Answered			1
		Mean	3.131
		Standard Deviation	1.157
		<b>Total Responses</b>	<b>100</b>

Figure 5:

<p style="text-align: center;"><b>Tech Group</b></p> <p style="text-align: center;">What did you like about the Smart Board?</p>	<p style="text-align: center;"><b>Traditional Group</b></p> <p style="text-align: center;">What did you like about today's lesson?</p>
<ul style="list-style-type: none"> <li>○ I like the fact how it is very interactive and allows us (the students) to understand better rather than just looking at the textbook</li> <li>○ I like that I can be involved in the lesson and be able to communicate using the smart board! And it is fun!</li> <li>○ I like how you can use it instead of an overhead and you can pull up pictures and stuff from computers on it. I also like how you can write on it.</li> </ul>	<ul style="list-style-type: none"> <li>○ I liked how we were engaged into the lesson and we got asked a lot of questions. Also I liked how we inferred because now I am not as confused about inferencing as I was before.</li> <li>○ I liked reading the selection, and being able to write inferences down on the sticky notes.</li> <li>○ I like it because it teaches me how to infer and make connections</li> </ul>

Figure 6:

<p style="text-align: center;"><b>Tech Group</b></p> <p style="text-align: center;">What did you not like about the Smart Board?</p>	<p style="text-align: center;"><b>Traditional Group</b></p> <p style="text-align: center;">What did you not like about today's lesson?</p>
<ul style="list-style-type: none"> <li>○ I don't like how the smart board doesn't always do what you want it to, instead it will freeze up or open something completely unrelated</li> <li>○ The smart board can be hard to write on.</li> <li>○ Some things I do not like about the smart board would be that we don't always get to use it. For example if we are doing a reading assignment we don't get to go up to the smart board and interact with it.</li> </ul>	<ul style="list-style-type: none"> <li>○ It was not engaging and the story was boring</li> <li>○ I didn't like that we had to read it in our heads. Also that we only had a little amount of time to talk about it.</li> <li>○ I didn't like how we had to answer all three questions in the "Answer Sandwich" model</li> </ul>



Figures 3, 4, 5 and 6 display data from the student engagement measure. Students were asked to complete an on-line survey to rate their overall satisfaction and experience with each of the four Nelson lessons. The survey chart shows an overall averaging: Figures 3 and 4 display the total level of engagement over all four lessons. Only 7.4% of students in the Smart Board Technology group indicated that they either did not enjoy the lesson or enjoyed the lesson a little whereas nearly 1/3 (30.3%) of the Traditional Group indicated the same two choices. When grouping together “enjoyed it quite a bit” and “enjoyed it a lot,” Figure 3 shows that 65.7% of Smart Board Technology students indicated these choices as their responses. When looking at Figure 4, the data shows that 43.4% of Traditional students chose the same two categories of response. It appears that student engagement was higher in the Smart Board Technology class and this engagement can be attributed to the use of technology in the classroom.

In Figure 5, select comments are presented from the open-ended response question which asked students what they liked about their lessons. Students in the Smart Board Technology group indicated that they enjoyed using technology and they felt they understood the purpose of the lesson, (inferencing), because they could interact with the Smart Board. These students also indicated that it was fun and enjoyed working with the computers. Likewise, students in the traditional class indicated there were things they liked in their lesson such as learning more about inferencing and writing their learning’s on sticky notes.

Figure 6 displays what the students in both groups disliked about their lessons. Students in the Smart Board Technology group mainly indicated problems with the technology or the fact that they didn’t have an opportunity to use the Smart Board. On the other hand, students in the Traditional group indicated that they found the lesson boring and really didn’t like participating in the three written responses using Ardith Davis Cole’s “Answer Sandwich” model, (see Appendix 2).

### **Implications for Our Practice:**

We have learned that technology plays an important role in student engagement. As a result, when planning our lessons, we need to ensure there is a technology component to intrigue and subsequently attract students’ to learning. Our research findings support more widespread use of Smart Board Technology within the classroom. Subsequently, our research also supports teacher training in the use of Smart Board technology.

Interestingly, however, student engagement is not necessarily tied to student achievement because the students in the traditional group demonstrated greater gains on the achievement assessment, (Nelson rubric), than those in the Smart Board Technology group. An example is seen in Figure 6 where the students in the traditional group indicate their dislike for a reading response model, (the Ardith Davis Cole “Answer Sandwich” model), which they completed during the written response portion of the lesson. This “Answer Sandwich Model” is a framework for providing longer-answers and includes items like elaboration, inferring, making connections and providing examples when they write a response. Even though students indicated they didn’t like using this process, students’ achievement scores show substantial gain, (Figure 1).

In terms of a conclusion for the Smart Board Technology group, it may be important to note that the gains made in the Application category might be an important one because Application is a higher order thinking skill. Since this is the only area in which students’ make gains, this data may show that technology and engagement have a positive impact and help students extend their understanding to other areas.

Some limitations we experienced revolve around the dual nature of this study: there were two separate classes with two different teachers. Resources for both classes were also different because two different grade levels were used. Student absenteeism was also a factor because it gave some incomplete information in our data set.

Overall, our main learning is that student engagement or student “liking” is not necessarily tied to student achievement. We also learned that the role that a teacher plays and the discourse each teacher brings into the classroom may be more important than the medium used to deliver the lesson.

### **Reflections on our Classroom Inquiry Experience:**

This being our first year involved with Action Research, we spent a considerable amount of time planning this project to align with our school’s Effectiveness Framework, (SEF). Data collection was the most challenging facet of the project because it was difficult to track each student’s completion of the lessons and on-line surveys. Data dissemination was challenging because we had many student absences. As well, numerous “At Risk” students did not give their assent to participate in the study, so the project data may have contributed to greater depth in its results.

This action research project enables teachers to further develop classroom lessons that focus on all learners. Teachers note considerable difference in the overall engagement of students after explicit instruction, using inferring as a reading strategy, along with the Smart Board. Teachers also saw written response achievement scores rise in the “Traditional” group. Ultimately, our next step is to continue to investigate various instructional approaches that will support all learners. This Action Research project has taught the staff involved how to use assessment tools and measuring devices to discern student progress; teachers will continue to use these tools and strategies in the future for the benefit of Bellmoore’s diverse learners.

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## Teacher Attitude Survey toward Technology

### Part 1: Thoughts about Technology

**Instructions:** Select one level of agreement for each statement to indicate how you feel.

**SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree**

	SD	D	U	A	SA
1. I think that working with technology is enjoyable and stimulating.	1	2	3	4	5
2. I want to learn a lot about technology.	1	2	3	4	5
3. The challenge of learning about technology is exciting.	1	2	3	4	5
4. Learning about technology is boring to me.	1	2	3	4	5
5. I like learning on a computer.	1	2	3	4	5
6. I enjoy lessons on the Smart Board.	1	2	3	4	5
7. I can learn many things when I use a computer and a Smart Board.	1	2	3	4	5
8. I believe that it is very important for me to learn how to use a computer and a Smart Board.	1	2	3	4	5
9. I concentrate on a computer when I use one.	1	2	3	4	5
10. I believe that I am a better teacher with technology.	1	2	3	4	5

### Part 2: Comfort Level with Technology

**Instructions:** Select one level of agreement for each statement to indicate how you feel.

	SD	D	U	A	SA
1. I get a sinking feeling when I think of trying to use technology.	1	2	3	4	5
2. Working with technology makes me feel tense and uncomfortable.	1	2	3	4	5
3. Working with technology makes me nervous.	1	2	3	4	5
4. Computers intimidate me.	1	2	3	4	5
5. Using technology is very frustrating.	1	2	3	4	5
6. I feel comfortable working with technology.	1	2	3	4	5
7. Technological equipment is difficult to use.	1	2	3	4	5
8. I think that technological equipment is very easy to use.	1	2	3	4	5
9. I have a lot of self confidence when it comes to working with technology.	1	2	3	4	5
10. Technological equipment is hard to figure out how to use.	1	2	3	4	5

### Part 3: Technology & Teaching

**Instructions:** Select one level of agreement for each statement to indicate how you feel.

	SD	D	U	A	SA
1. Technological equipment could increase my productivity.	1	2	3	4	5
2. Technological equipment can help me learn.	1	2	3	4	5
3. Technological equipment is necessary in educational work settings.	1	2	3	4	5
4. Technological equipment can be useful instructional aids in almost all subject areas.	1	2	3	4	5
5. If there was technological equipment in my classroom it would	1	2	3	4	5

help me to be a better teacher.					
6. Technological equipment could enhance remedial instruction.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
7. Technological equipment will improve education.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

#### Part 4: Students & Technology

**Instructions: Select one level of agreement for each statement to indicate how you feel.**

	<b>SD</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>SA</b>
1. It is important for students to learn about technology in order to be informed citizens.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
2. Students should understand the role technology plays in society.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
3. All students should have some understanding about technological equipment.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
4. All students should have an opportunity to learn about technology at school.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
5. Technological equipment stimulates creativity in students.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
6. Computers could help students improve their writing.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
7. Computers can help accommodate different learning styles.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
8. Students work harder at their assignments when they use computers.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
9. Students help one another more while doing computer work.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
10. Student time on the internet is time well-spent.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

## Student Computer Attitude Questionnaire

Grade Level (7-8): \_\_\_\_\_ Teacher: \_\_\_\_\_

**This survey contains 5 parts. For each section, read the statement and click the button which best shows how you feel. (SD = Strongly Disagree, D = Disagree, U = Undecided, A = Agree, SA = Strongly Agree)**

### Part I: Technology in the Classroom

	SD	D	U	A	SA
(1) I enjoy doing things on the Smart Board or the computer.	1	2	3	4	5
(2) I am tired of using a Smart Board or a computer.	1	2	3	4	5
(3) I will be able to get a good job if I learn how to use a computer.	1	2	3	4	5
(4) I concentrate on a computer when I use one.	1	2	3	4	5
(5) I enjoy computer games very much.	1	2	3	4	5
(6) I would work harder if I could use computers more often.	1	2	3	4	5
(7) I know that technology gives me opportunities to learn many new things.	1	2	3	4	5
(8) I can learn many things when I use a computer or Smart Board.	1	2	3	4	5
(9) I enjoy lessons on the Smart Board.	1	2	3	4	5
(10) I believe that the more often teachers use technology, the more I will enjoy school.	1	2	3	4	5
(11) I believe that it is very important for me to learn how to use technology.	1	2	3	4	5
(12) I feel comfortable working with technological equipment.	1	2	3	4	5
(13) I get a sinking feeling when I think of trying to use technological equipment.	1	2	3	4	5
(14) I think that it takes a long time to finish work when I use a computer.	1	2	3	4	5
(15) Working with technology makes me nervous.	1	2	3	4	5
(16) Using technology is very frustrating.	1	2	3	4	5
(17) If I had my way, I would do as little work with technology as possible.	1	2	3	4	5
(18) Technological equipment is difficult to use.	1	2	3	4	5
(19) Technology does not scare me at all.	1	2	3	4	5
(20) I can learn more from books than from a computer.	1	2	3	4	5

### Part II: Student Initiative

	SD	D	U	A	SA
(21) I study by myself without anyone forcing me to study.	1	2	3	4	5
(22) If I do not understand something, I will not stop thinking about it.	1	2	3	4	5
(23) When I don't understand a problem, I keep working until I find the answer.	1	2	3	4	5
(24) I review my lessons every day.	1	2	3	4	5
(25) I try to finish whatever I begin.	1	2	3	4	5
(26) Sometimes, I change my way of studying.	1	2	3	4	5
(27) I enjoy working on a difficult problem.	1	2	3	4	5
(28) I think about many ways to solve a difficult problem.	1	2	3	4	5
(29) I never forget to do my homework.	1	2	3	4	5
(30) If I do not understand my teacher, I ask him/her questions.	1	2	3	4	5

(31) I listen to my teacher carefully.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
(32) If I fail, I try to find out why.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
(33) I study hard.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
(34) When I do a job, I do it well.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

### Part III: You and your learning

(35) Which would you rather do? (Circle one):

- (1) read a book      or      (2) write  
 (1) write              or      (2) watch television  
 (1) watch television or      (2) use a computer  
 (1) use a computer   or      (2) read a book  
 (1) read a book      or      (2) watch television  
 (1) write              or      (2) use a computer

(36) Which would be more difficult for you? (Circle one):

- (1) read a book      or      (2) write  
 (1) write              or      (2) watch television  
 (1) watch television or      (2) use a computer  
 (1) use a computer   or      (2) read a book  
 (1) read a book      or      (2) watch television  
 (1) write              or      (2) use a computer

(37) Which would you learn more from? (Circle one):

- (1) read a book      or      (2) write  
 (1) write              or      (2) watch television  
 (1) watch television or      (2) use a computer  
 (1) use a computer   or      (2) read a book  
 (1) read a book      or      (2) watch television  
 (1) write              or      (2) use a computer

### Part IV: About School

	<b>SD</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>SA</b>
(38) I really like school.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
(39) School is boring.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
(40) I would like to work in a school when I grow up.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
(41) When I grow up I would not like to work in a school.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
(42) I am learning a lot in school.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
(43) My friends from other schools would like to go to this school.	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

### Part V: Computers at Home

(44) Do you use a computer at home?

1 = yes      2 = no

(45) Do you have World Wide Web (WWW) access at home?

1 = yes      2 = no

(46) How many hours per week do you use computers (including WWW access) at home? \_\_\_\_ hours

**Student Engagement Survey****What do you think About the SMART Board and Today's Lesson?**

Today we used the SMART Board during class. We want to find out what you think about using the SMART Board. Please tell us what you think!

On a scale from 1 to 5 how much did you enjoy learning with the SMART Board today?

1	2	3	4	5
Did not enjoy it	Enjoyed it a little	Somewhat enjoyed it	Quite enjoyed it	Enjoyed it a lot

Did you have an opportunity to use the SMART Board?  Yes  No

What do you like about the SMART Board?	What do you not like about the SMART Board?
-----------------------------------------	---------------------------------------------

How interested were you in this lesson?

1	2	3	4	5
Not at all interested	A little interested	Somewhat interested	Quite interested	Very interested

	Yes	No
Did using the SMART Board help you to focus more on your school work?	<input type="checkbox"/>	<input type="checkbox"/>
Did the SMART Board increase your motivation to do your school work?	<input type="checkbox"/>	<input type="checkbox"/>
Did you complete all of the assigned work?	<input type="checkbox"/>	<input type="checkbox"/>
Did you get distracted from doing your work?	<input type="checkbox"/>	<input type="checkbox"/>
Did using the SMART Board encourage you to come up with or try new ideas?	<input type="checkbox"/>	<input type="checkbox"/>
Would you like us to use the SMART Board again?	<input type="checkbox"/>	<input type="checkbox"/>

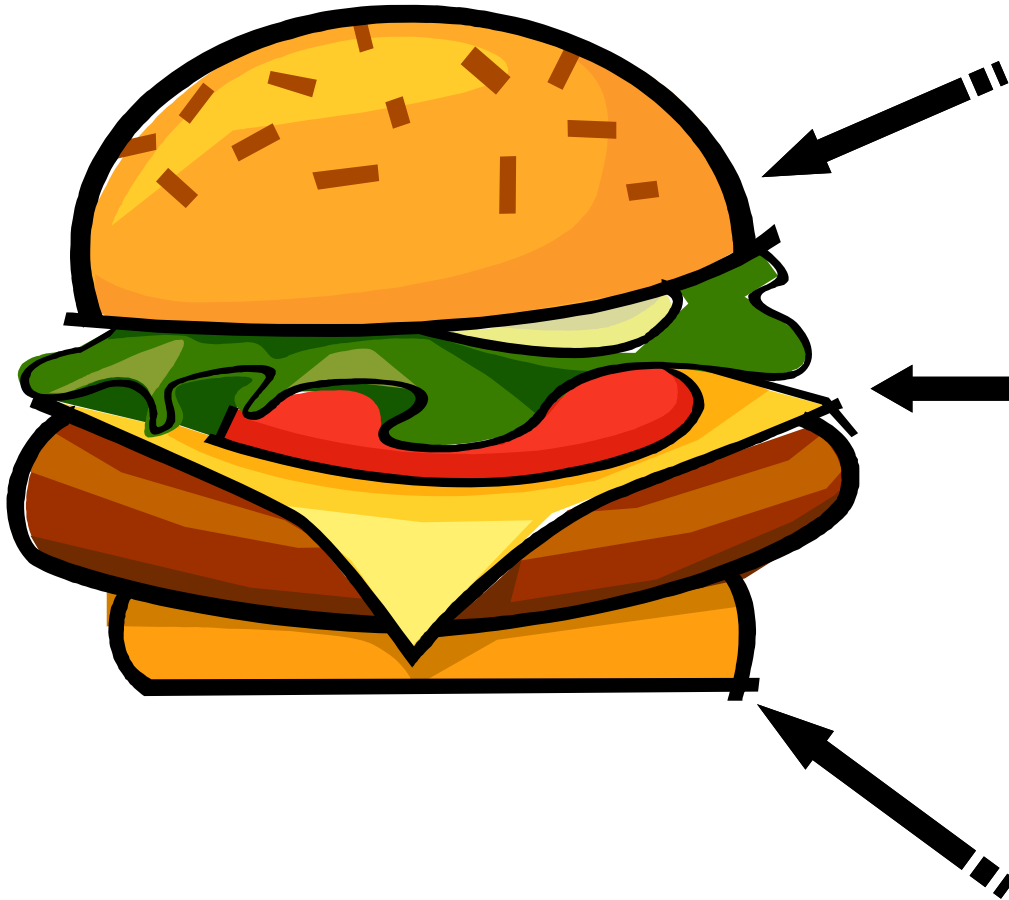
Please share with us any other comments that you have about today's lesson or using the SMART Board in class?



**INTERMEDIATE RUBRIC**  
**TERM 2 “INFERENCE AND EXTENDING UNDERSTANDING”**  
**NELSON LITERACY- T1-Task 1, T2- Task 2, T3- Task 3, T4- Task 4**

Category	Level 1	Level 2	Level 3	Level 4
<p><b>Knowledge and Understanding:</b></p> <p>Knowledge of content, (<i>i.e. understanding of content such as concepts, ideas, opinions, relationships among facts</i>)</p>	<p>Demonstrates limited understanding of content</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Demonstrates some knowledge of content</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Demonstrates considerable knowledge of content</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Demonstrates thorough knowledge of content</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>
<p><b>Communication:</b></p> <p><i>Expression and organization of ideas and information, (e.g. clear organization and logical organization) in written form</i></p> <p><b>Ardith Davis Cole’s “Answer Sandwich” model</b></p>	<p>Expresses and organizes ideas and information with limited effectiveness</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Expresses and organizes ideas and information with some effectiveness</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Expresses and organizes ideas and information with considerable effectiveness</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Expresses and organizes ideas and information with a high degree of effectiveness</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>
<p><b>Thinking:</b></p> <p><i>Use of processing skills, (e.g. making inferences, interpreting, analyzing, evaluating, forming conclusions)</i></p>	<p>Uses processing skills with limited effectiveness when developing and explaining interpretations of increasingly complex or difficult texts using stated and implied ideas from the texts to support their interpretations</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Uses processing skills with some effectiveness when developing and explaining interpretations of increasingly complex or difficult texts using stated and implied ideas from the texts to support their interpretations</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Uses processing skills with considerable effectiveness when developing and explaining interpretations of increasingly complex or difficult texts using stated and implied ideas from the texts to support their interpretations</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Uses processing skills with a high degree of effectiveness when developing and explaining interpretations of increasingly complex or difficult texts using stated and implied ideas from the texts to support their interpretations</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>
<p><b>Application:</b></p> <p><i>Making connections within and between various contexts, (e.g. between the text and personal knowledge or experience, other texts and the world outside the school; between disciplines)</i></p>	<p>Transfers knowledge to new contexts with limited effectiveness</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Transfers knowledge to new contexts with some effectiveness</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Transfers knowledge to new contexts with considerable effectiveness</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>	<p>Transfers knowledge to new contexts with a high degree of effectiveness</p> <p>T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/></p>

Ardith Davis Cole's "Answer Sandwich" Model



**Restate the question  
and give a gist  
answer**

**2. Give evidence and  
make connections**

For example  
For instance  
Then  
Next

**Refer to the question  
for concluding  
statement**

That is how  
That is why  
In conclusion