Engagement through Choice: Using Independent Research Projects to Improve Student Interest

Alexander Kerr and Rachel Grasby

As classroom teachers, we have, at one time or another, worked with students who are just not intrinsically motivated to engage in classroom activities. The explanations for this curricular disinterest could be cognitive, social, and emotional. Two possible explanations became the focus of this research: a lack of interest in a curriculum that does not necessarily relate to students’ lives and a lack choice in both the content students study and the means by which they communicate their learning. In both instances students are expected to “adjust to the learning” rather than the “learning being adjusted to them” (Chapman & Gregory, 2002, p.5). This “teacher-centered, whole-class instruction, single curriculum” dynamic is one in which students become highly reliant on their teacher, rarely hone the skills to be great leaders, do little of their own initiative, and “strive to keep up (or back) with the rest of the class” (George, 2005, p.190).

Classrooms where students are heavily reliant on external factors for choice making and stimulus leave little room for independence and perhaps for intrinsic motivation. We wanted to gauge whether increased choice through differentiated learning experiences could promote interest and engagement in our students.

Inspired by the work of Beane (2005) on differentiated instruction and democratic classrooms, we hoped to better “democratize” our classrooms by involving students in the creation of their own curriculum and empowering them with the freedom to choose the topics they investigate (Beane, 1997). We attempted to give students a voice. They shared decision-making powers with teachers regarding their topics of study, how they investigated these topics and how they were evaluated.

We were also influenced by Glasser’s (1998) “choice theory,” with the belief that student success greatly increases when basic human needs are accommodated. Students who perceive their needs for power and freedom as being fulfilled in the classroom are usually more likely to engage in learning. Finally, Kohn (1993) and Deci (1995) influenced our research. They caution against the use of extrinsic motivators to encourage student engagement and cognitive development. Kohn rails against the utility of consequences and rewards, and proposes that these motivators are actually counterproductive to student learning and interest. Deci argues that people are only motivated to engage in activities they deem to be relevant and which they enter into autonomously.

We reasoned that students needed to be intrinsically motivated in order to be truly engaged. And so, through differentiated - or adjusted - instruction we set out to maximize student capabilities through providing meaningful choice by way of curricular content and demonstration of knowledge (Anderson, 2007; Tomlinson, 1999).

We designed a comparative action research study to determine how student choice within the research process might impact the affective engagement of students. Our students would be involved in two research projects over the course of the school year. The first, a science project on the human body, would involve limited choice. The second, The Independent Research Project (or IRP), would involve greater choice, and higher levels of adjusted learning and instruction.
The 72 eighth-grade students involved in the study came from a culturally diverse school in southern Ontario. The student sample included both ESL and Special Education (Gifted and In-School Support Program) learners. Three classroom teachers and a resource teacher collaborated to design and implement both research projects, to compare and assess completed work, and to collect the data used in this research study. The research projects were part of the regular grade 8 program in Science and Language Arts. They were aligned with school success plans, the Ontario Ministry of Education curriculum expectations for Language (2006), and the Peel Board Reading (1998) and Writing (1998) scales and exemplars.

**Phase I: Limited Choice in Students’ Science Projects**

The research project format was chosen because we felt it offered the greatest flexibility with regards to programming for student choice. From the outset, though, we knew we had to teach how to do research and provide a framework for inquiry. A survey, prior to the beginning of Phase 1, confirmed our suspicions that the students in the study group had very little exposure to formal research methods. They had done research in previous years, but few had ever followed a research process or researched a specific question. Students revealed that they were, in fact, most familiar with what we call the “all about the…” approach to researching. Our students had researched topics to retell information, not to analyze or synthesize text. In response to this shared lack of exposure and for the sake of consistency and good sense, we decided to adopt, implement and instruct the Ontario School Library Association’s (OSLA) four stage research process (2002). We followed this model closely in both phases of the students’ research projects.

Phase 1 of our study began with a student science project on the systems of the human body. Previously used in Grade 8 science classrooms in our school, the project involved the creation of an information brochure to report findings from research on the human body. This project was judged by us to be one where students had limited choices; the students were assigned a topic and they all had to write about their findings using a brochure format.

For our research study we revised this science project in several ways. The most significant change was that the students would have to follow the OSLA research process in order to complete the project and meet grade level expectations. For the first time, students had to design a research question and use it to more narrowly focus their information gathering. Another important change was that the research project had to be completed at school; this way we could monitor student progress, be sure all work was authentic, and guide students through the process. Students were also taught how to take jot notes with appropriate citations. A new assessment rubric was developed to incorporate marks for process tasks. Finally, students completed journal entries following each stage in the OSLA process. We prompted them to reflect upon both research content and processes.

By the end of February, all three classes had completed the science research project. Phase 1 of the research study officially ended with the students completing a survey. The survey was designed by us to collect quantitative data around student interest and effort (See Appendix A). We felt that it was the most efficient and timely method for capturing student perceptions.

**Phase 2: The Independent Research Project**

Phase 2 began immediately following the March Break. The Independent Research Project (the IRP) was introduced and implemented during language arts classes for the duration of the third term (see Appendix B - a student handout with the “Big Picture” overview of the
project). Approximately one third of the language arts periods that term were dedicated to the completion of the IRP, including time set aside to review key research processes and teach more complex research strategies.

Drawing on our experiences in Phase 1, we made several important changes regarding student choice and engagement for Phase 2. The first and most significant variation during Phase 2 was that students were able to investigate any topic of their choosing. Students still received guidance with regards to process challenges, like developing “rewarding” research questions, but this time, the topics of inquiry were ones they found personally interesting or relevant. We worked very hard to make sure that this message was consistent – it was their research. Second, students were given considerably greater choice when communicating their final results. They were not restricted to designing a brochure, as in the Phase 1 science project. Instead, in mid-June, students were asked to present their research questions and key findings to their peers and teachers at a showcase entitled, “IRPFest”. The students prepared a brief oral summary of their learning and then could choose one of five “artifacts” to visually display their work (see Appendix C – a student handout outlining the IRPFest expectations and assessment). Students could create a display board, a poster, a brochure, a “textbook page” or a written report to summarize their findings (see Appendix D for artifact options). A sixth option - to propose their own idea - was offered to those students who still felt limited by the choices.

A change that was initially not planned for Phase 2 was to alter the tools used to assess and evaluate student performance. After Phase 1, several students expressed anxiety around the design of a huge, singular end product. Some complained about time constraints. Others felt pressured because the brochure was perceived to be a “major” mark on their report card. Also, we noticed that the quality of their end products did not mirror the quality of their process work. Thus, the decision was made to assess the IRP after each stage in the research process. We hoped this would recognize the efforts made by students throughout the entire research process, alleviate anxieties around the final product (since it was now only worth 25% of their IRP grade), allow students to benefit from teacher feedback, and permit us to better use assessment to guide instruction (see Appendix E for a sample handout from Stage 2).

Overall, Phase 2 of our study proved more successful for both students doing the research and teachers delivering program. The three classes in the study group stuck to relatively similar timelines and therefore teachers were able to collaborate on a weekly basis to solve problems and celebrate successes. Most students used the instructional time appropriately to complete each research stage and seemed adequately prepared for the final showcase. IRPFest took place in mid-June and was attended by most students. Final IRP grades were recorded and communicated to students shortly thereafter. Phase 2 of the study ended with final journal entries recorded by students and the completion of a second interest and engagement survey. We compared the pre- and post-research project survey results.

Data Collection and Analysis

The following are the key data sources we used to assess whether choice in the research process impacted the affective engagement of students in our classes:

1. Interest and effort surveys to evaluate Phases 1 and 2
2. Comparative jot note totals from OSLA Stage 3 of Phases 1 and 2
3. Student reflections from journal entries recorded throughout Phases 1 and 2
1. **Surveys**

The purpose of these post-project surveys was to determine student interest and effort in both their topics of inquiry and, more generally, the research process. We wanted to track their interest in both phases and identify the reasons for that interest. The survey also required students to reflect on their perceived effort throughout the stages of both research phases. We view effort as an indication of engagement. Interest and effort data was calculated for the total number of students completing the surveys in all three study group classes, which changed slightly from Phase 1 to Phase 2.

2. **Jot Notes**

In Stage 3 of the OSLA research process, students were expected to take jot notes from a variety of sources in order to answer their research questions. Students were taught a method for taking these jot notes and were provided with the organizers to better process the information they were researching (Stanley, 2000). For instance, each jot note would contain five to seven key words that specifically answered their research question, a resource reference, and a sequence number to be used during sorting.

Jot notes were one way for us to gauge time on task. We assumed that a greater number of jot notes indicated a greater commitment to the task on the part of our students. On the whole, if students were more engaged they would commit more class time to researching, and this commitment could be reflected in the overall average of jot notes recorded. For both phases, for each class, the total number of jot notes taken per research period was recorded, then averaged and compared.

3. **Journals**

Each student kept a research journal for both projects and used it to reflect on learning, interest levels, perceived effort, successes, challenges and a range of other topics as they moved through the stages of the OSLA research process. Any writing prompts given were general, and a great deal of time was put into making sure that we did not ask leading questions that reflected our assumptions regarding possible outcomes. The bulk of our qualitative data can be found in the journals, which we analyzed by highlighting overall trends and the most frequently occurring comments, comparisons and critiques that students made about both projects.

**Findings**

**Surveys**

Student interest did increase during Phase 2 of the study (see Figure 1). Students preferred researching topics they were able to choose, as opposed to researching the science topics chosen for them in Phase 1. Overall, 36.7% more students were “very interested” or showed “some interest” in their IRP topics as compared to the interest demonstrated in their science topics. Interestingly, this increased engagement had a positive impact on their opinions of the research process in general. Survey results showed that 20.4% more students demonstrated at least “some interest” in doing research, and 17.2% more students were interested in “learning how to do research.”
Student effort also increased during Phase 2 of the study (see Figure 2). Students reported that they applied the greatest effort during Stage 4 of the OSLA research process, transferring their findings into a finished product. To prepare for IRPFest, 88.1% of the students admitted that they put forth a “good effort” or their “best effort.” This was a 30.8% improvement from the effort demonstrated during the completion of the Phase 1 brochures. Also, during the IRP, the effort put forth during Stage 3, processing the information by taking jot notes, increased by 20%. Finally, there was a smaller increase in effort (14.6%), during IRP Stages 1 and 2 (preparing the topic question and accessing good resources). Our findings suggest that our students were far more engaged in doing research the second time around. It could have been that, with experience, they were better at doing research. But more so, we think that their interest in self-selected topics had a significant impact on the amount of effort they demonstrated.
**Jot Notes**

While researching the science project, students took, on average, 1.29 jot notes per in-class period. While researching the IRP, students took, on average, 3.98 jot notes per period. That is an increase of 2.69 jot notes; more than triple the number taken each period during the Phase 1 science project. If we are to assume that a greater number of jot notes means more time on task, and that task commitment indicates interest, then this is further evidence to suggest students were more engaged in the IRP.

We understand that students may have known better how to take jot notes during Phase 2—it was their second time learning the process that year. However, content appropriate library books and a list of online resources were provided for students to assist them during the science project. This type of assistance was difficult to provide for the IRP, due to the wide range of topics being investigated. During the IRP, students would have had to work harder to access quality resources for the purpose of taking jot notes. In spite of this, more jot notes were collected. We believe that more jot notes were taken because students were more engaged in research that they, themselves, were able to design.

**Journals**

When asked to compare the two projects (in terms of interest level, academic achievement, and effort), the message communicated by the students in their journals was very clear. The majority of student respondents (91%) preferred working on the IRP rather than on the science project. The main reasons stated for this preference were that the IRP offered more choice and was, on the whole, more interesting.

Half of the students wrote that the freedom to choose their own topics increased their engagement during Phase 2. They directly stated that they were more motivated and more interested. One student commented, “…interest levels determine everything. I personally did way better on this [IRP] project than the science project.” Another student explained, “Everyone was more interested because they got to choose their own topic and question.” Topic choice was critical to a third student: “…this time, we got to choose our own questions and so everyone’s interest level went up. When interest level goes up, it leads to better marks, more information, more jot notes, more interest…”

An increase in effort was also commented upon frequently in the journals. The students knew they were working harder and better. For instance, one student explained her improved time on task, saying, “I think everyone feels they have something to look forward to. I think having your own choice makes you ignore the distractions and lets you focus on the answer you’re looking forward to.” Another student remarked that his classmates wanted to work harder: “Because everyone had a research project they were interested in and got anything they want[ed] to research, it keeps the grade 8’s on top [of] their work and it makes them want to come to class.”

Although the majority of the students responded that their increased interest and effort related to topic choice, other reasons for increased engagement were suggested (see Figure 3). Many students explained that working on the IRP was fun, especially sharing their findings with their peers at IRPFest: “We presented our projects in a good environment … it was fun.” They also admitted that although fun, the research was not easy: “the IRP project takes a lot of hard work but is worth it.” Enjoyment or “fun” was a byproduct of an adjusted learning experience that encouraged student choice and supported student interests. If the project was “fun” it’s because the project was so very personal to the students.
Another trend that emerged from the journals was that students felt more pride in their accomplishments during Phase 2. Ten percent of students responded that presenting their research findings made them feel successful, like experts in their chosen avenue of research. This improved confidence was also reflected in the journal entries of a dozen students who claimed that their successes with the IRP resulted from knowing better how to do research, having gained valuable experience twice during the academic year. Finally, a few students commented that they became personally connected to their research topics during the IRP. They chose topics relevant to their lives and wanted to use their findings to answer questions that were of critical importance to them. One highly reflective student best articulated this sentiment: “In the end, everything worked out and for the first time I felt as a student [that] I was receiving not only responsibility, but [the] respect to do what I wish and [to] follow my own curiosity and interest. I can explore without a leash.”

Impact and Implications

Our study demonstrates that student choice within the research process does improve interest and engagement, and that adjusted learning experiences foster feelings of independence, ownership, and enjoyment.

As Beane (2005) asserts, students need to feel that they have a more active role in the design of their own learning experiences. By offering choice, teachers invite many more students to feel interested and engaged. Many of our students articulated that they appreciated the freedom they were given during the IRP and put forth their best effort as a result. The students were personally connected to their research and thus, seemed to take more ownership over their projects. Some were even observed talking about their topics and findings outside scheduled research classes. Research conversations took place in the halls and lunchrooms of our school. Our students became invested and connected to their learning.
Students took risks, asking challenging questions about the world around them. They were committed to their chosen inquiries, solved research problems and began to identify new questions for future research. Students began to see themselves as experts, actively constructing new knowledge and transferring that learning to their peers. Their presentations were informative and very sincere.

Interestingly, when grading student work, we observed an academic improvement that we had not fully anticipated. On the whole, the student average for the Knowledge and Understanding of content during Phase 1 was 69%, just below Ministry standards, as compared to the 76% average for the IRP, which was well within Ministry of Education standards. This is a strong indicator of student success, and although we did not set out to test cognitive engagement, we believe student choice did positively impact academic achievement. We also acknowledge the possibility that student success could have resulted, in part, from repeated exposure to the OSLA research framework. Practice makes perfect, after all. Having the students complete another limited choice research project after the IRP would be one way to test the possibility. Nevertheless, satisfaction in topic choice, as articulated by the students themselves, greatly superseded all other explanations for student success.

The middle school curriculum is more flexible than one may realize. It can easily be adapted to accommodate projects which incorporate student selected topics of inquiry. In fact, independent research is a very effective way to address the “Thinking” category in the Ontario Achievement Charts (2006) for most subject areas. The research projects these students completed were embedded within and crafted from the curriculum expectations at their grade level. They were not some frivolous exercises that got in the way of more important content learning. In essence, it is not impossible to somewhat democratize the curriculum of Ontario classrooms.

The important thing is that we, as educators, continue to investigate how we can better offer choices in curricular content, learning processes and assessment. The more students feel empowered in the classroom, and the more differentiated the instruction, the more motivated they will be to learn.
References


Authors

Alexander Kerr is a teacher with the Peel District School Board. He has been working with middle school children for 10 years, in a variety of learning and leading roles. He received his B.Ed. from OISE/UT and his M.M.St. from the University of Toronto.

Rachel Grasby is an English graduate and a third year middle school teacher with the Peel District School Board.

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Appendix A

Grade 8 Science Research Survey

1. Use the following scale to rate how interested you were while completing the following Science Research Project activities:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>don’t know / didn’t complete it</td>
<td>no interest</td>
<td>little interest</td>
<td>some interest</td>
<td>very interested</td>
</tr>
</tbody>
</table>

a) Doing research.  

b) Researching the human body.  

c) Researching the topic assigned to you. (i.e., the respiratory system).  

d) Creating your own research question within the topic area assigned.  

e) Learning how to do research.  

f) Gathering your information and taking jot notes.  

g) Transferring that information into a finished product.  

h) Transferring that information into a brochure.  

(Turn over)
2. Use the following scale to rate how much effort you dedicated to the following activities during the completion of the Science Research Project:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>don’t know / no effort</td>
<td>little effort</td>
<td>some effort</td>
<td>a good effort</td>
<td>my best effort</td>
<td></td>
</tr>
<tr>
<td>didn’t complete it</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

a) Preparing for research
   (brainstorming topics, developing a question, accessing resources)
   0 1 2 3 4 5

b) Processing information
   (reading information from variety of sources, making jot notes, recording sources)
   0 1 2 3 4 5

c) Transferring information into a finished product
   (creating the brochure)
   0 1 2 3 4 5

3. Can you / would you like to tell us anything else about your experiences working on the Science Research Project?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Thank you for completing this survey.
Appendix B

The Independent Research Project (The IRP)
Term 3, Language Arts, Grade 8

The Big Picture

During the third term, as already discussed, you will be completing a major research project in your Language Arts classes. You will, again, follow the Ontario School Library Association (OSLA) research process, as you did with the Human Body Project, and you will also keep all materials in your research folders in your classroom.

For this research project, you have the freedom to determine your own research topic. You can choose any topic with which you are personally interested. You should choose a topic with which you have some knowledge, so that you can better create an interesting research question (and answer it!).

You will investigate this question by following the OSLA model, working with the advice of your classroom teacher, and completing required IRP assignments, designed to assist you through the research process. Finally, once the information has been gathered from a variety of sources, to the best of your ability, you will decide how to communicate your findings to your teacher and/or others in the class. Many ideas will be given for this final product, so don’t panic!

A difference with the IRP is that you will be assessed during each Phase of the OSLA research process. Your final grade for the IRP will be determined both by process marks and the marks given on the final product. Process and product are equally important. The IRP will comprise a portion of your Term 3 Language Arts mark in both Reading and Writing.

So you do not feel overwhelmed, we will be spreading out the IRP expectations and assessment rubrics over the next few weeks. For now, use these timelines as a loose guide towards completion.

General Timelines for Each Phase in the IRP*

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Prepare</th>
<th>March 31 – April 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 2</td>
<td>Access</td>
<td>April 15 – April 21</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Process</td>
<td>April 22 – May 9</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Transfer</td>
<td>May 12 – May 30</td>
</tr>
</tbody>
</table>

*these are estimated timelines, and depending on the demands of your independent research, you may be in different phases from other classmates from time to time.
Appendix C

The Independent Research Project (The IRP)
Expectations and Assessment of Final Products and Presentation at IRPfest

How do you know when you are finished?
A) You organized and ordered your jot notes. Either cut them up and glued or stacked them in order, or used the circles on the cards to write in the numbers for the order that you would want them to appear in your final product.

B) You have prepared a small script or summary of 3-5 findings from your research inquiry. You will use this at IRPfest. They should be written down.

C) You have created a visual ARTIFACT that will be the main showcase at IRPfest.

The following rubric will be used to assess your independent research project.
| Knowledge | LEVEL 1: demonstrates a minimal understanding of supporting details and materials required for inquiry; choice of information presented is vague and rarely highlights even the subtopic. | LEVEL 2: demonstrates a basic understanding of supporting details and materials required for inquiry; information is too broad. | LEVEL 3: demonstrates a general understanding of supporting details and materials required for inquiry; information is appropriate but offers a broad view. | LEVEL 4: demonstrates a strong understanding of supporting details and materials required for inquiry; Choice of information is specific and offers opportunities for extension. |
| Application | LEVEL 1: with limited success, ineffectively applies research findings to articulate an answer that is connected to the question/answer is not evident at all in presentation and written summary. | LEVEL 2: somewhat applies research findings to articulate an answer that is vaguely connected to the question; relationship between question and answer not consistently clear in presentation and written summary. | LEVEL 3: competently applies research findings to articulate an answer that is precise and direct; relationship between question and answer is present in presentation and written summary. | LEVEL 4: effectively applies research findings to articulate an answer that is precise and direct; relationship between question and answer is clearly evident in presentation and written summary. |
| Visual Communication | LEVEL 1: choice of artifact and presentation format rarely communicates and complements research findings; artifact shows little attention to detail and effort. | LEVEL 2: choice of artifact and presentation format inconsistently communicates and complements research findings; artifact shows some attention to detail and effort. | LEVEL 3: choice of artifact and presentation format generally communicates and complements research findings; artifact shows considerable attention to detail and effort. | LEVEL 4: choice of artifact and presentation format effectively communicates and complements research findings; artifact shows a lot of attention to detail and effort. |
| Oral Communication | LEVEL 1: voice is sometimes fair; unclear enunciation and minimal expression to engage listeners. | LEVEL 2: voice is sometimes fair; inconsistent enunciation and some expression to engage listeners. | LEVEL 3: voice is usually audible; good enunciation and expression to engage listeners. | LEVEL 4: voice is consistently audible; excellent enunciation and expression to engage listeners. |
Appendix D

Artifact Options

<table>
<thead>
<tr>
<th>ARTIFACT OPTIONS</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRESENTATION BOARD</td>
<td>Create a 3-part display board that makes both your question and important parts of your research findings clear. Enhance it by incorporating images, diagrams, words, titles and so forth. A cool idea might be to display how you arrived at your question on one panel, your answers on the second panel and ideas for future research or application on the third panel</td>
</tr>
<tr>
<td>PRESENTATION POSTER</td>
<td>Create a poster on Bristol board or 11x17 paper that makes both your question and important parts of your research inquiry clear. Use images and texts to make it visually interesting.</td>
</tr>
<tr>
<td>BROCHURE</td>
<td>Design an informative brochure that presents your answer clearly. You can divide your brochure into as many parts as you want. An idea is to show the stages that led you to your answer. Make it colorful and interesting.</td>
</tr>
<tr>
<td>PRETEND TEXTBOOK PAGE</td>
<td>Most of you have read enough text books to know how a typical page looks like. Present your question and then clearly describe your answer in student language. If you include images (which you should), remember to add captions at the bottom, and a figure number. Oh! Don’t forget the page number at the top.</td>
</tr>
<tr>
<td>WRITTEN REPORT or ESSAY</td>
<td>You can either write a report paragraph with all your facts and findings presented in a very clear and straightforward way. Or for some of you, you may want to write a 4-part essay on your research (Intro, your question, your answer, your conclusion).</td>
</tr>
<tr>
<td>OTHER IDEAS</td>
<td>Hey! If you another cool idea on how to present your research findings, negotiate with your homeroom teacher first.</td>
</tr>
</tbody>
</table>

* More technically advanced option (i.e. PowerPoint, website, video) need to be approved by the teacher. You may need to provide your own equipment, i.e. a laptop.
Appendix E
The Independent Research Project (The IRP)
Assessing Stage 2

During Stage 2 of the research process, you should:
1. Develop a list of key words for searching purposes
2. Use Britannica Online to find a topic article and search related magazine and web site links
3. List resources, on Research Records, that may help answer your research question (3 web sites, 2 magazine or newspaper articles, 1 book)
4. Search for newspaper articles using the Toronto Star search engine
5. Conduct an IPAC Search and a search of the Mississauga Library Catalogue for relevant books on your topic.
6. Complete a website evaluation for one of your chosen websites
7. Reflect about Stage 2 in your research journal – answer prompted questions and discuss your rationale for your chosen research resources.

To show your teacher:
1. A completed resource list including:
   • 3 web sites
   • 2 magazine or newspaper articles
   • 1 book
2. A website evaluation for one of your chosen websites
3. Your journal entry for Stage 2

<table>
<thead>
<tr>
<th>Stage 2 Assessment</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical Thinking Processes</td>
<td>Uses evaluation criteria to rate the quality of a chosen research website with limited success</td>
<td>Adequately uses evaluation criteria to rate the quality of a chosen research website</td>
<td>Effectively uses evaluation criteria to rate the quality of a chosen research website</td>
<td>Very effectively uses evaluation criteria to rate the quality of a chosen research website</td>
</tr>
<tr>
<td>Knowledge and Understanding</td>
<td>Arrives at an effective list of resources with full assistance</td>
<td>Arrives at an effective list of resources with some assistance</td>
<td>Independently arrives at an effective list of resources</td>
<td>Independently arrives at a very effective list of resources</td>
</tr>
<tr>
<td>Communication</td>
<td>Provides little rationale for choice of resources; expresses simple thoughts and feelings about research process</td>
<td>Provides some rationale for choice of resources; expresses adequate thoughts / feelings about research process</td>
<td>Provides rationale for choice of resources; expresses and explains thoughts and feelings about research process</td>
<td>Provides detailed rationale for choice of resources; expresses and fully explains thoughts about research process</td>
</tr>
</tbody>
</table>