

Introduction

As a Teacher Librarian, I am particularly interested in the area of information literacy or research skills. The traditional mode of demonstrating the results of student research has been the research essay. I was curious to know if the act of Making increases depth of understanding in students. Does a process where the product or evidence of knowledge creation is physically or digitally *made* allow the students to develop a more complete understanding of academic curriculum than the process of writing?

The Research Question

How can a student-directed Maker approach to inquiry foster depth of understanding in a Grade 11 Social Studies research unit?

Research Context

St. George's School is situated in Vancouver, BC, and is a community of 1150 boys from Grades 1-12. Our Senior School is Grades 8-12 and houses about 625 day boys and 125 boarders from more than 18 countries around the world. Our academic focus helps prepare 99% of our graduates for post-secondary careers at some of the most well-respected universities in the world.



Participants

The participants in this research were:

- volunteers from the Social Studies 11 course.
- from two sections of one teacher's class.
- nine participants across these two classes.

The Research Action

Prior to this year, each Grade 11 Social Studies student was required to write one research essay per term. This amounted to a lot of essay reading for the teachers and, more importantly, seemed to result in a lack of connection to the content and excitement within the classes. The idea of Project-Based Learning had begun to be explored within the department and it was decided that the research assignments would change in format. Students would be required to spend one of their three terms completing a research essay as in past years, but they would spend the other two terms involved in a project or Maker outcome as a mode of demonstrating their knowledge and telling the story of their research topic. All students select their specific research topic from within a broader Prescribed Learning Outcome.

Data Collection

Qualitative data were collected from the following:

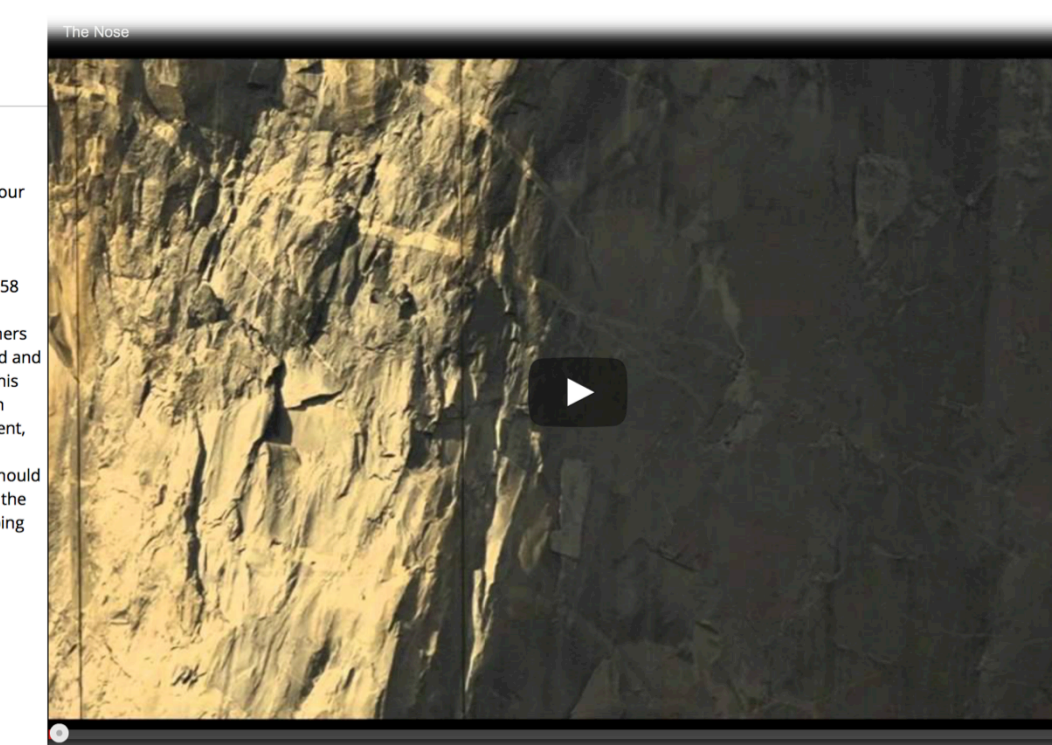
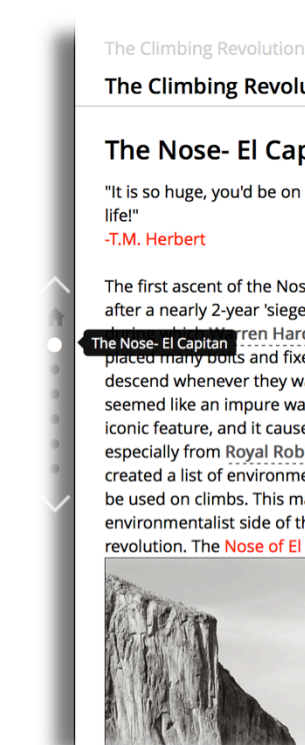
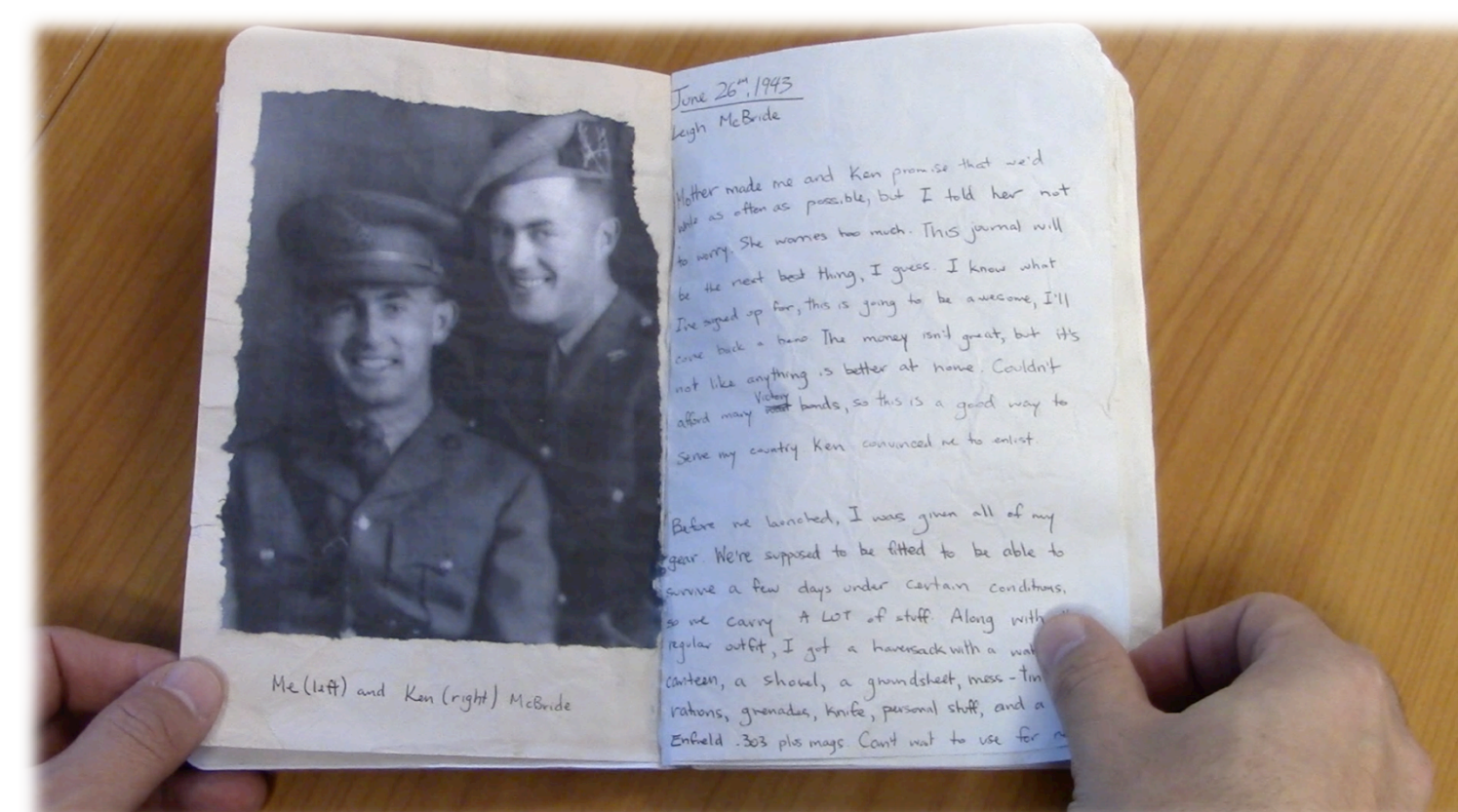
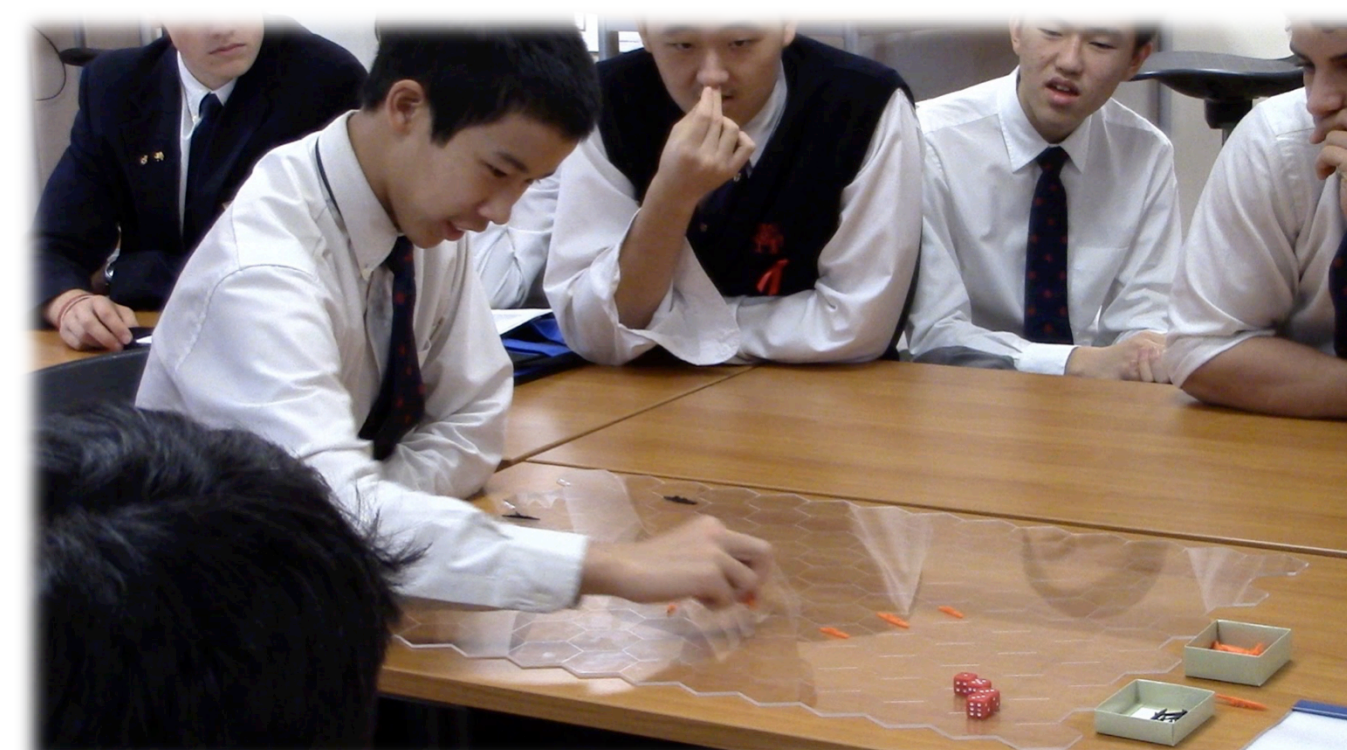
- Learning Logs
- Final Assignment Products
- Project Proposals
- Interviews
- Surveys
- Informal Discussions
- Group Reflections
- Student Presentations

Data Analysis

While analysis and reflection on the data collected started as soon as data started coming in, the primary mode of analysis was to transcribe key quotes and ideas onto index cards, and note larger observations and reflections in a journal. The index cards were then re-sorted in a number of ways to identify similarities and contradictions in concepts emerging from the data. The most productive categories identified thinking around: curricular content, the research process, the making of the final product, time management, and other miscellaneous ideas.

Key Findings and Discussion

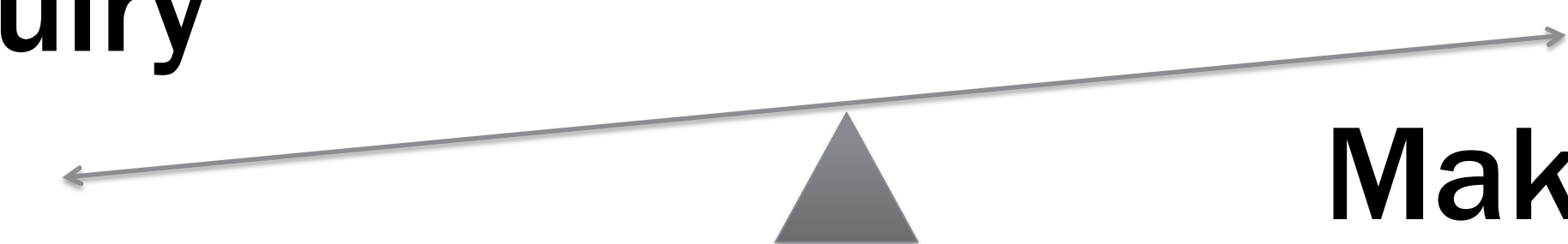
- There has to be a connection to the specific topic at the centre of the inquiry
"...I play guitar and I'm a big fan of classic rock music. So I decided...that I would try and incorporate that into my project this term on protest movements."
- Students either have few skills outside of what they have been explicitly taught in school, or they don't see what skills that they do have as being applicable or of a high enough quality to be useful in their particular situation.
- The implications for the need to scaffold the learning of Maker skills are key
- The placement of the decision regarding what form the final product will take is also important, but depends on many factors
"...struggling to find a way to make a 3D model and display my information on it in an attractive way."
- Not only is the scaffolding of the Making essential, but the inquiry needs to be structured in such a way that the thinking is visible and that there are opportunities to assess (not always evaluate) the process
- Making provides an opportunity for students to be able to think through their topics and tell their stories in different ways
"...settled on making a text-based, choose-your-own adventure style game. I feel this is a good way of keeping the audience interested, lets them explore the decisions that a draft dodger may have had to make, and is still able to give historically accurate information."



Conclusions / Implications for Practice

Making and Inquiry exist on a continuum. Emphasis may be put on either end of the continuum but they continue to support each other and are necessary for the success of each other.

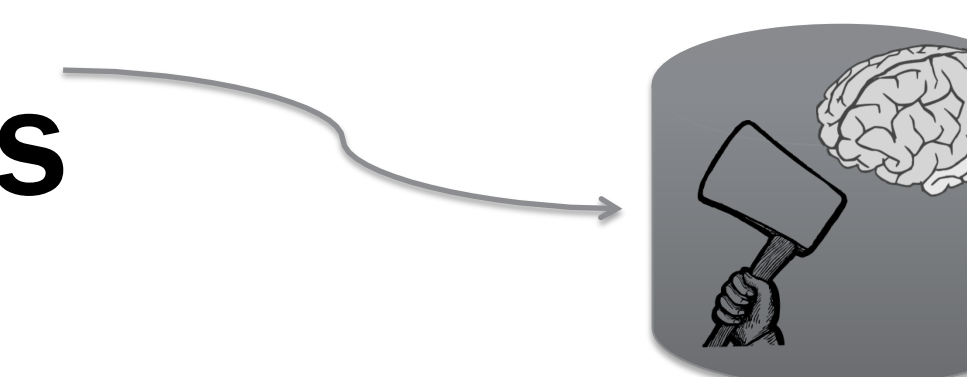
Inquiry



Making

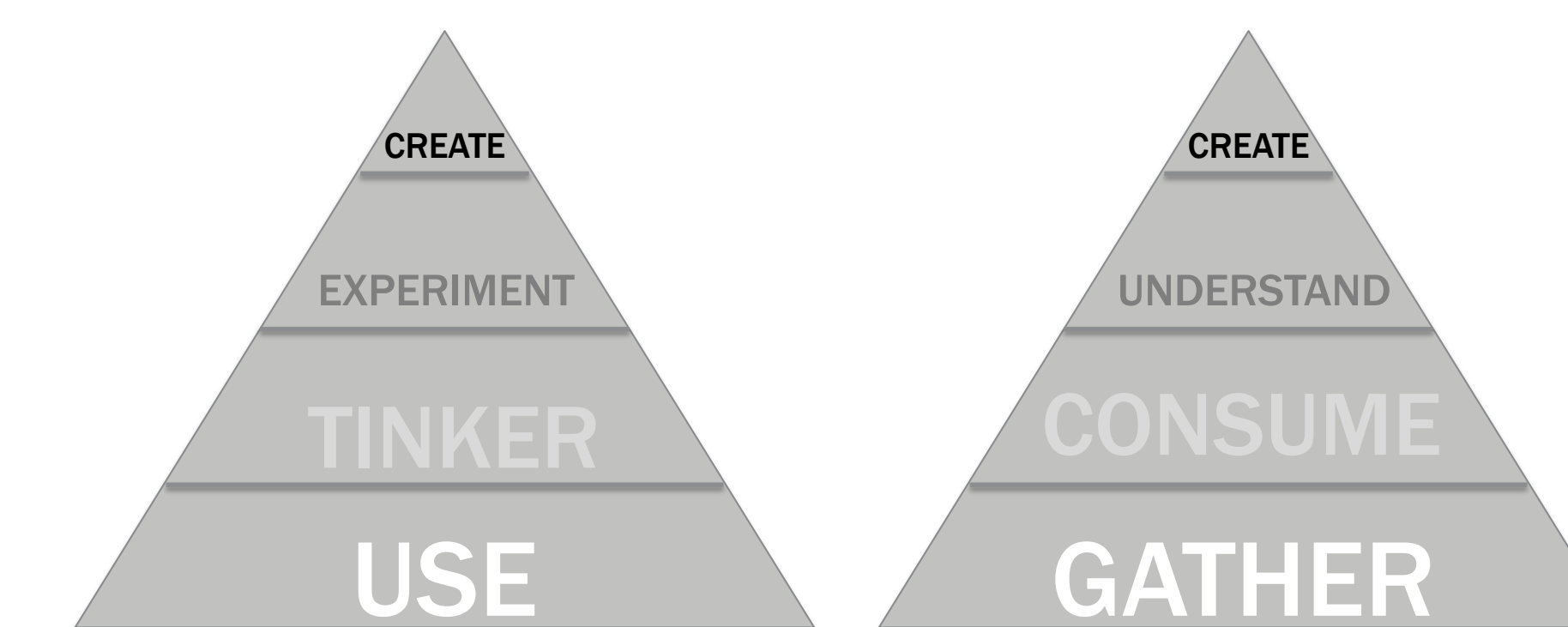
Making needs to be seen as a transformative activity that not only allows a learner to share his new knowledge in more effective ways, but significantly changes his thinking about his learning as he works through his inquiry.

Ideas



New Ideas

Ways have to be found to scaffold students' learning of Making and inquiry skills both within a unit of study and across grades and disciplines in a school.



Key Readings

- Darry, B., Loertscher, D. V., & Preddy, L. (2013). *UTEC model*. <http://makerspace.quickmooc.com/maker-spaces-an-introduction/getting-started/>
- Gerstein, J. (2013). *Is It Project-Based Learning, Maker Education or Just Projects?* <http://usergeneratededucation.wordpress.com/2013/10/22/is-it-project-based-learning-maker-education-or-just-projects/>
- Hatch, M. (2014). *The maker movement manifesto: Rules for innovation in the new world of crafters, hackers, and tinkerers*. New York, NY: McGraw-Hill.
- King, K., & Gurian, M. (2006). The brain-His and hers. *Educational Leadership*, 64(1), 59. Retrieved from ERIC.
- Kuhlthau, C. C., Maniotes, L. K., & Caspari, A. K. (2012). *Guided inquiry design: A framework for inquiry in your school*. Westport, CT: Libraries Unlimited.
- Martinez, S. L., & Stager, G. (2013). *Invent to learn: Making, tinkering, and engineering in the classroom* [Kindle]. Torrance, CA: Constructing Modern Knowledge Press.

Further Information

This poster and further information is available at <http://www.theibsc.org/>.

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