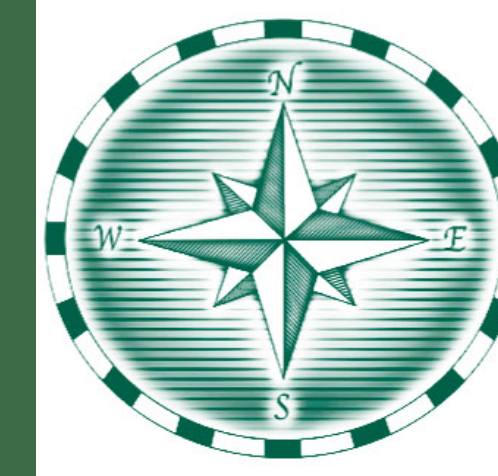# Assessment of Maker Learning
Peer Learning and Iterative Design

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Introduction

Our motivation for this project stemmed from communal concerns that boys are focusing on the grade of the final product rather than the construction stages and the learning process.

Our research explored how an open-ended project with opportunity for multiple peer- and self-evaluations would deepen the learning outcomes for our students. We hoped that by emphasizing the process and taking time to construct multiple iterations of a single idea, the boys would learn to value the learning process and not simply the grade attached to the final product.

Research Question

How might a deliberate focus on reflection during a Maker project deepen the learning of Grade 9 boys?

Research Context

With a student body of 700 boys from Grades 3-12 and a faculty of 95 members, Crescent School strives to develop *men of character* from *boys of promise*. Using the four pillars of Respect, Responsibility, Honesty and Compassion, Crescent works to foster relationships within its community and create a learning atmosphere that extends beyond the walls of the classroom.

Participants

All of the Grade 9s in our integrated broad-based technology course participated in this research project. The course is separated into three main sub-courses: Design and Technology, Media Arts and Application Software. For our school it is unique in its scope and has provided many opportunities for collaborative, project-based learning.

The Research Action

Our action involved implementing Maker Projects with an Iterative Design Cycle in all three areas of the Exploring Technology course. All three instructors moved from a project model that had a single final entry and a teacher-based assessment, to an iterative project cycle with multiple stages of peer- and self-assessment prior to a teacher-based assessment.

Data Collection

Surveys
The multiple-choice and multiple-select questions provided quantitative data, and boys' comments on "Why" or "Why Not" provided qualitative data.

Reflection Videos
Boys were tasked with shooting their own reflection videos with a number of prompts that allowed them to talk honestly about the peer- and self-evaluation process.

Interviews
Boys were asked questions in a controlled environment and tasked with reflecting on their participation in peer- and self-evaluations and asked to describe their thoughts on the process.
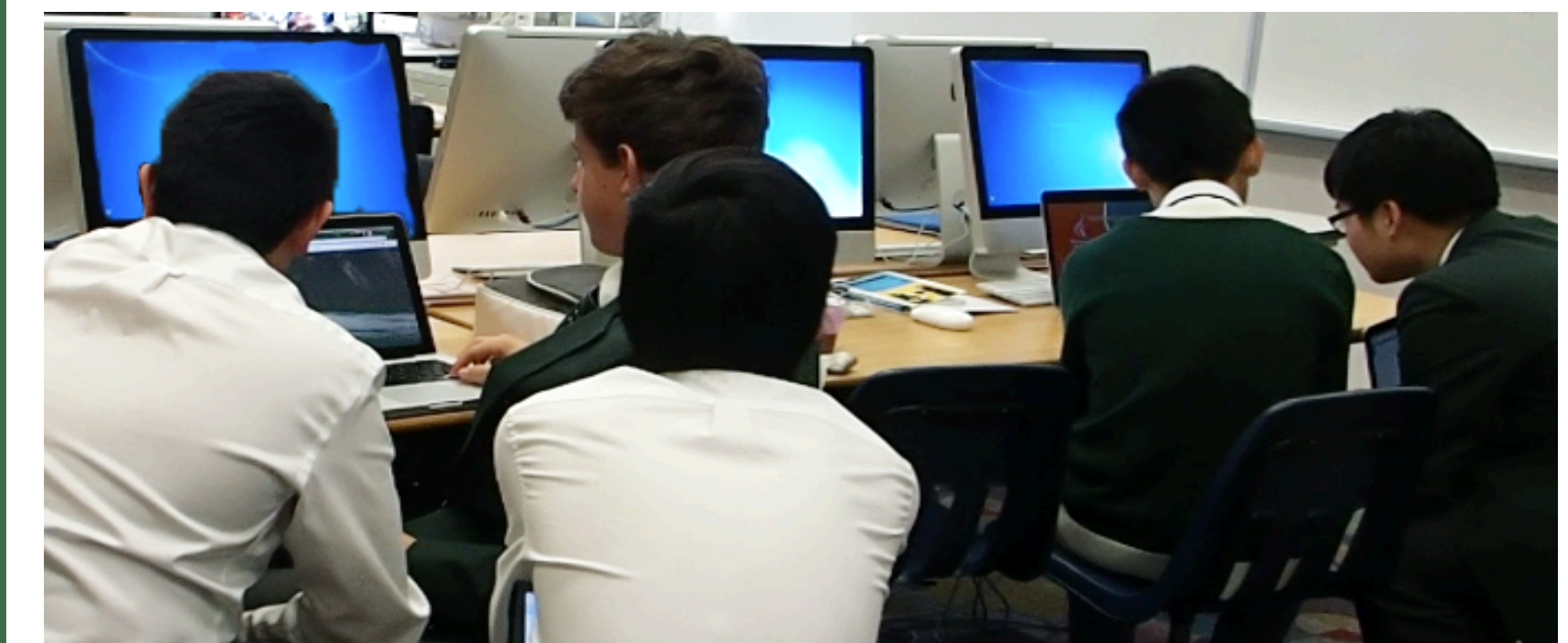
Data Analysis

All free response comments from the boys were collected, examined and categorized simply as "Pro" or "Con" (in favour of the process in question, or not in favour of the process in question). This process was applied to the responses to the free answer questions ("Why" or "Why Not") from the survey, transcribed video responses, transcribed interview responses and comments that the boys made in class time.

Initial Project Design → Peer Evaluation 1 → Iteration 2 Integrating feedback from peers → Peer Evaluation 2 → Final Iteration handed in to teacher → Self Evaluation

Key Findings and Discussion

"I enjoy helping my peers, and I find the peer evaluation important but I did not use any energy on self evaluation"

"I think the PE made me work a lot harder on all of my assignments because I knew my peers would be looking at it."
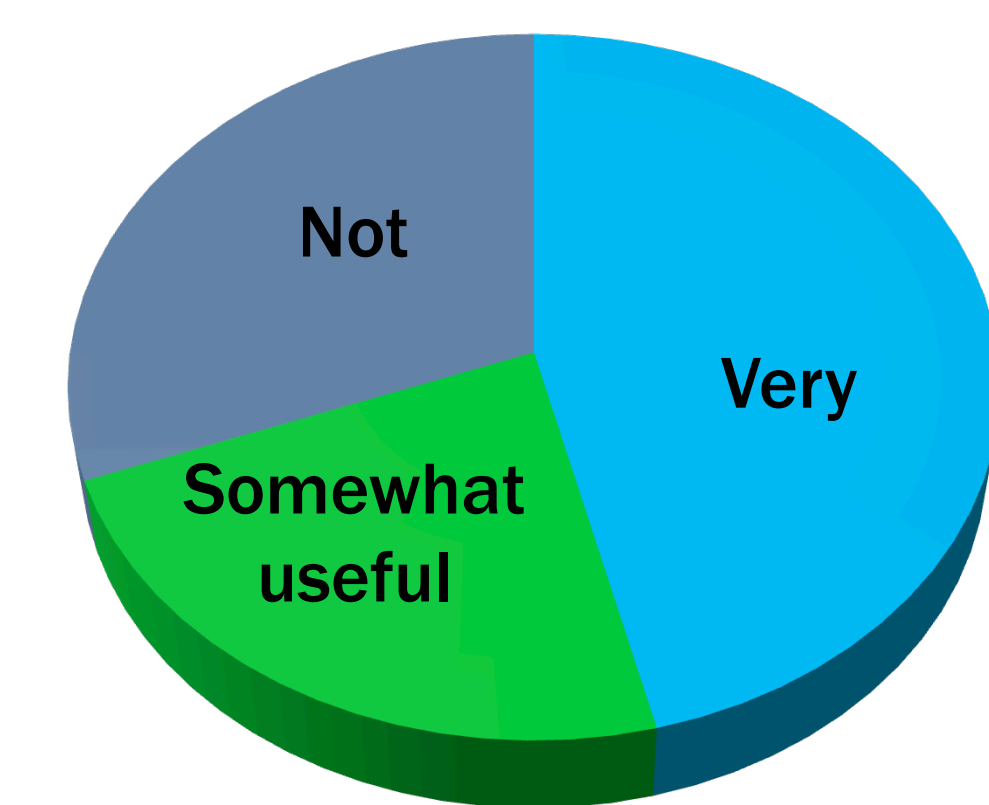
"The PE process didn't necessarily give me that much value it was mixed between empty criticism and just fooling around."

"The self evaluation wasn't good enough, You thought you were already perfect and it wouldn't help you"

"It changes the way you're thinking... It helps you with your work and changes your point of view of your work"

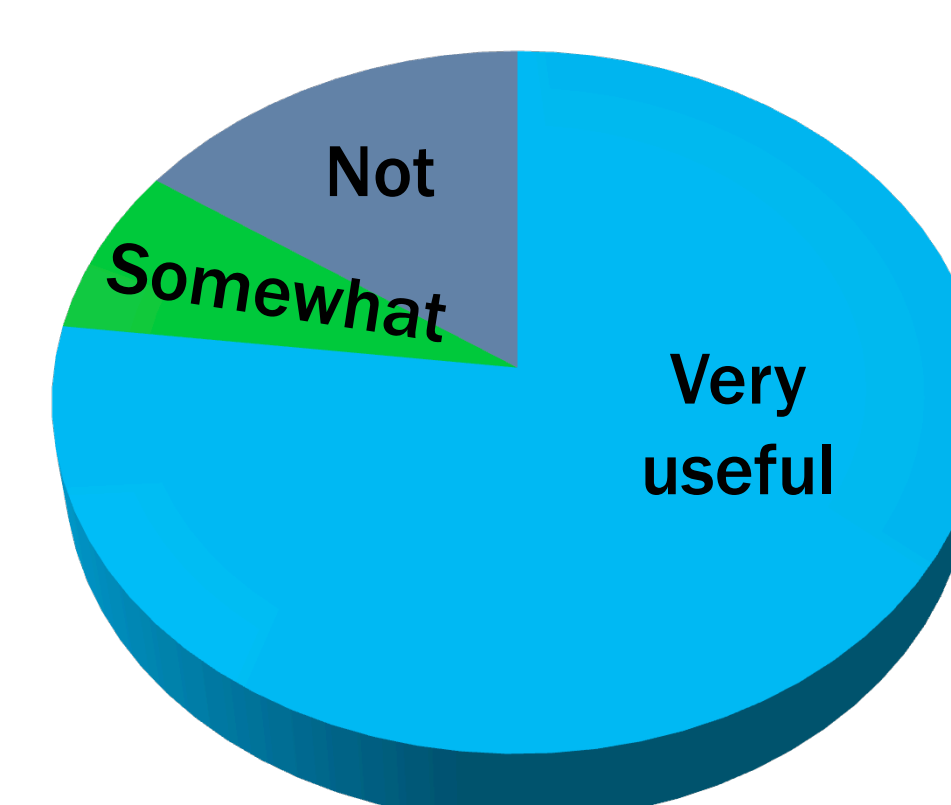### Usefulness of Performing Self-Evaluation
- Very
- Somewhat
- Not useful

Usefulness of Performing Peer-Evaluations
- Not
- Very
- Somewhat useful

Usefulness of Receiving Peer-Evaluations
- Not
- Somewhat
- Very useful

Conclusions

We feel confident in stating that the boys, almost without exception, put a high value on the peer-evaluation process and put a low value on self-evaluations. We leveraged this value set to help bring deeper learning via the peer-evaluation process. We were able to change our practice and the peer-evaluation process to move our boys from a superficial use of peer-evaluation, purely for marks, to one that asked them to look more deeply at their own work as they examined the work of their peers.

This is not at all how we thought the deeper learning would occur, but we are more than satisfied with the results. The boys have gained an appreciation for the process of going back to their work and reviewing and revising it with the benefit of a different perspective. They now place a real value on looking at the work of others and then thinking differently about their own; to us this provides deeper learning than they would have otherwise experienced without adding the element of peer evaluation to the course work.

Key Readings

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Gerstein, J. (2013). "Where Is Reflection in the Learning Process?" *User Generated Education*.

Hafeli, M. (2009). What Happened to Authenticity? "Assessing Students' Progress and Achievements in Art" Revisited. In R. Sabol & M. Manifold (Eds.), *Through the Prism: Looking Into the Spectrum of Writing by Enid Zimmerman*. Reston, VA: National Art Education Association

Lucas, B., Claxton, G. and Spencer, E. (2013). *Progress in Student Creativity in School. OECD EDU/WKP* 2013.1.

Wray, E. (2013). *RISE Model for Meaningful Feedback*. www.risemodel.com

Further Information

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

Project Blog: http://crescentmar.edublogs.org/

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