Bringing Assessment back into the Classroom: Can Using Peer and Self-Assessment Increase Student Motivation in Science 10?

Joni Tsui
Port Moody School District, BC

"I hate thinking that I'm studying just to get a good mark because that's not what school's supposed to be about. But it is what school is about because you're getting marks and that's what matters. It's depressing." (Eunice)[i]

Over the past twenty years, high stakes testing in North America has approached manic levels. The new graduation program in British Columbia requires that not only grade 12 students write high stakes government exams; it has expanded the testing mania to include exams in Science 10, Mathematics 10, English 10 and Social Studies 11 (British Columbia Ministry of Education, 2004).[ii] Although such tests may provide some accountability for both students and teachers, there are also many weaknesses in using standardized testing as a primary method of assessing students (Boaler, 2003; Samuelson, 2001; Vogler, 2004; Williams, 2003).

As teachers strive to create classrooms that are more socially just, assessment must be taken into account.

"Teaching for social justice is complexly intertwined with the assessment of students' learning in school; assessment can be seen as a set of institutional processes with the potential either to inhibit or nurture the development of young people as well as either to constrain or nurture their capacity for self-determination."

(Kelly & Minnes Brandes, 2005, 7)

High stakes testing has been found over and over again to decrease student motivation and put struggling students further at risk (Boaler, 2003; Clancy, 2000; Horn, 2003; Vogler). It appears present large-scale assessment practices are inhibiting and constraining students and teachers rather than nurturing development.

I believe it is time for assessment to be brought back into the classroom and for students to have a more active role in assessing their progress in school. If standardized testing is decreasing student motivation, we must find alternate methods of assessment that will counter-act the effects of high stakes exams. A new wave of educators from Britain, Australia and North America have extolled the power of peer and self-assessment in improving student learning (Black, P., Harrison, C., Lee, C., Marshall, B. & Wiliam, D., 2004; Black & Wiliams, 1999). Cooper (2000) and Dochy & Segers (1999) provide evidence that peer and self-assessment used formatively may help facilitate student learning. Orsmond Orsmond, P., Merry, S., & Reiling, K. (2000) found the majority of students believed that peer assessment made them think, learn and critique more, as well as work in a more structured manner. These same students felt the process, although time consuming, was enjoyable, challenging and beneficial to their learning.

I was interested to learn whether using peer and self-assessment in my Science 10 classes would increase student motivation to complete assignments and allow students to feel that they can play a more active role in assessing their own learning. However, in reviewing the literature, I found that much of the research on peer and self-assessment has been done with university students and there is a marked gap in the literature about its effectiveness in high schools (McDonald & Bond, 2003). I was curious to see if my 16-year-old students would
respond to peer and self-assessment in ways similar to the 19-year-old post secondary students who have been previously studied.

**A Tale of Two Classes**

This study looks at two Science 10 classes in a large, suburban, high school with over 1500 students. One was an honours class, with students who were accepted into the program based on their achievement on a number of entrance assessments, while the other was a mainstream Science 10 class. I introduced peer and self-assessment strategies in both classes and at the end of the semester asked students to fill in an anonymous questionnaire about the effectiveness of the different techniques used.

All of the students in both classes participated in the activities; however, only those students who returned a consent form were included in the data collection. I looked at surveys from 20/31 students from the honours class and 12/30 from the mainstream class. I subsequently interviewed 11 students: 8 from the honours class, 2 from the mainstream class and 1 student from my leadership class.

I was interested to see if there would be any substantive difference between the results from the honours and mainstream classes and if using self and peer-assessment would improve the motivation of the at-risk students to complete assignments. After analysing the data obtained from questionnaires and interviews with students, I realised that there was very little difference between the responses of my honours and mainstream classes. I thus combined the data from the two classes into the charts presented through the body of the paper. Data that showed interesting differences between the two classes is discussed in a separate section further on.

**Before we could begin...**

"Making a rubric in a group was a good idea because it gave us more than one person's perspective on what the assignment should look like." (Sofia)

During the unit, students completed many projects, which were peer or self-assessed using rubrics. Hafner and Hafner (2003) found rubrics are essential for peer and self-assessment, as they create the framework for evaluating assignments and help ensure that the marking is accurate and consistent. Goodrich Andrade (2005) believes rubrics can improve student performance, help students become more thoughtful judges of the quality of their own and others’ work and reduce the amount of time teachers spend evaluating student work. In order for students to self and peer-assess themselves accurately, I first needed to teach them how to use and create their own rubrics.

For the first few projects, I provided the rubrics for the class and we used them to self and peer-assess work. Later in the semester, I had the class create their own rubrics for assessing assignments. In general, they felt rubrics are helpful tools when creating projects and assessing learning.
"When we made up the rubric, we knew what we had to put in our project and what was expected of us". (Nina)

"It was telling you exactly what's expected. You can tell before you hand it in, what you're going to get. You control what you're going to get." (Mario)

Georgia preferred when the class made up the rubric because those made by teachers, "often confuse me. The wording and explanations are unclear."

Eunice, Rachel and Marcus were concerned that rubrics are often very general and vague. They preferred getting "criteria" for a project, including a list of the content elements that were to be presented.

"I don't like rubrics that are general, that just say, put in lots of effort and be neat. It's better if it's specific to the task, like goes through all of the steps in mitosis." (Marcus)

While most students appreciated getting a rubric during the introduction to an assignment, they reminded me that the rubrics need to be written in language devoid of teacher jargon. Time must be spent going through the rubric to ensure its clarity and specific descriptions need to be included.

**Self-Assessment**

"Self-assessment made me look at my work more clearly." (Nina)

Once we had developed rubrics as a clear way to assess an assignment, I was ready to create opportunities for students to take a more active role in the assessment of their work. We began with self-assessment strategies.

In order to improve the quality of student learning, Trigwell, Prosser, and Waterhouse (1999) encourage teachers to shift towards a student-focused approach. Orsmond et al. (2000) suggest that self-assessment provides the opportunity to clearly define the learning outcomes, have meaningful dialogue, and to reflect on the process of learning. They also note that these tools assist the development of skills such as self-reflection and objective judgment.

Throughout the unit, students engaged in a number of self-assessment activities. Before each reporting period, students were asked to use the school rubric to self-assess their work habits in class.[iv] This was included on the progress report to their parents. Students also created a rubric to mark a review activity and then they self-assessed their assignment. Finally, during the 6-week physics unit, students were asked to mark their own quizzes in class and reflect on areas that they were still struggling with. Reflections were done in two ways. Sometimes students were asked to summarize on the back of their quiz the concepts they felt confident about and the areas they wanted to review for the upcoming chapter test. Other times, before the quiz was marked, they were asked to draw a happy face next to answers they were confident about and a sad face beside the ones they were unsure of.
Afterwards, they were asked to reflect on any discrepancies between what they felt they knew well and what they had actually answered correctly.

<table>
<thead>
<tr>
<th>Do you feel that you were able to accurately assess your own work?</th>
<th>Yes</th>
<th>No</th>
<th>Somewhat</th>
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<td>20</td>
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<tr>
<th>Did assessing your own work help you to pinpoint areas for revision?</th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
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<td></td>
<td>16</td>
<td>5</td>
<td>11</td>
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<tr>
<th>Which of the following activities do you think were useful and you would like to do again in another class?</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>a) Self assessment of work habits mark for report cards</td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td>b) Marking your own quizzes</td>
<td>26</td>
<td>7</td>
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<tr>
<td>c) Putting happy faces on quiz questions to indicate how well you knew the answer</td>
<td>21</td>
<td>12</td>
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<th>Did you prefer these methods of assessment to more traditional teacher driven assessment?</th>
<th>Always</th>
<th>Usually</th>
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<td>20</td>
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<th>Did you feel that these methods of assessment were a fair way to generate a mark for you?</th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
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<td>25</td>
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<td>3</td>
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Student response to self-assessment was very encouraging. 90% of students preferred using a variety of assessment practices in class and recommended that I continue using them.

**Why are girls so hard on themselves?**

While students in both classes responded positively to questions about self-assessment strategies on the questionnaire, new and interesting information surfaced when I spoke with students during the interview process. The boys who I spoke with felt they mark themselves more leniently than a teacher does. Girls on the other hand, felt they marked themselves harder.

"When you mark yourself, you do better than what the teacher would say. If you write something down that's confusing, the teacher wouldn't understand and she'll say that it's wrong." (Marcus)

When you explained that we would be doing self assessment strategies in class my first thought was: Excellent, now I'll get an A." (Richard)

"I don't think self-assessment works too well because you're too critical on yourself."(Edwina)

"I'm pretty harsh on myself already, so I tend to be harsher on myself than other people." (Sally)

Clearly, gender differences must be taken into account when using self-assessment in the classroom. If girls are universally more critical of themselves than boys are (as seen in my classes) having students generate a mark for their assignments may be unfair. Self-assessment must be used in a manner that does not focus on putting a mark on the page.

**Is this for marks or to help us learn?**
My students had concerns about generating marks for their assignments. They wanted to be "fair" and "accurate", but they are also keenly aware of how important grades are in our marks driven society. They felt much more comfortable writing comments and valued the reflective piece of our self-assessment activities over the mark generating aspects. The aim of having students mark their own quizzes was not to have them determine a mark for a grade-book. I wanted them to stop and reflect on their learning.

Students were given pencil crayons to mark with and asked to add comments and corrections on their page as we went through the answers. They liked marking their own quizzes because they could immediately see differences between their response and the keyed answer. Corrections could be made on their own paper and explanations could be added, which were helpful when reviewing. Removing the need to put a grade on the paper, decreased the tension students felt during marking and allowed them to focus on writing down a complete answer and reflecting on whether or not they knew the answer, rather than trying to "find marks" on the page. Taking the time to reflect and write down areas for revision also increased student motivation to study for the test.

"The most valuable activity that we did this year was writing on the back of the quiz. It showed me what I needed to study more." (Nina)

"Writing on the back of quizzes helped identify where our weaknesses were and then you, as the teacher, could also notice where our weaknesses are and focus more clearly on that." (Sofia)

**Introducing Peer-Assessment**

"When I get a project back that's been marked by one of my peers, I feel like it hasn't been marked at all because they don't want to offend me by saying, you did this wrong. They just give you full marks because they want to be your friend." (Edwina)

"If one teacher marked everything, using the same rubric, then it's easier to be marked all the same." (Rachel)

With self-assessment strategies well underway, I began introducing peer assessment techniques as well. During the chemistry unit, I asked students to peer-assess a comic strip they had designed to illustrate the four types of chemical equations. As a class, we first created a rubric to assess the assignment. The students then assembled into groups of 4 and using the rubric, took turns assessing each other's work.

In contrast to self-assessment, which was well received, having peers use rubrics to assess each other's assignments was not popular.

<table>
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<tr>
<th>When your peers marked your assignment, did you read the comment that they had written?</th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
<th>Not at All</th>
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<td></td>
<td>15</td>
<td>9</td>
<td>3</td>
<td>1</td>
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| When your peers marked your assignment, did you find their comments helpful? | 3 | 5 | 13 | 10 |

| Did you feel comfortable having your peers mark your assignments? | 14 | 8 | 10 |

Many students raised concerns about the accuracy of a mark generated by a peer.
"Sometimes peers can be really lenient on you, but sometimes they can be really harsh." (Sally)

"Some kids just say that's my friend, so I'm going to give him a good mark … or I don't know this guy, I can't give him a bad mark because he won't like me". (Marcus)

"Or I hate that person and I'm going to give him two marks off." (Richard)

**Why Don't Students like Peer-Assessment?**

If so many researchers have found peer-assessment to be a valuable learning tool (Black & Wiliams, 1999; Cooper, 2000; Dochy and Segers, 1999; Orsmond et al., 2000), why do students in my classes dislike the process? There has been much research done on the reliability of peer assessment. Gopinath (1999) found, "Peer assessment, though closer to that of the instructor, suffered from low reliability" (13). Sherrard and Raafat (1994) found resistance on the part of students to being evaluated by their peers. In their study they found most students believed that their peers were not qualified to assess their work. Interestingly, students subsequently agreed with the mark their peers had assigned to them. It appears whether peer-assessment is accurate or not, students perceive it as being unreliable.

A second factor that should be addressed when using peer-assessment is the powerful role peers play in adolescents' lives. It is important to remember that much of the research on peer-assessment has been done with older, university students (McDonald & Bond, 2003). They have a very different self-image, degree of maturity and measure of self-confidence than high school adolescents (Gibson & Mitchell, 2003). Neufeld and Mate (2004) have witnessed an increase in peer orientation in North America. Increasingly, adolescents are looking to their peers for moral and social support. The link adolescents have with their peers is incredibly powerful and much of their self-worth and esteem comes from interactions with their peer group. "The more peers matter to our children, the more devastated they are by the insensitive relating of their peers, by failing to fit in, by perceived rejection or ostracization." (Neufeld & Mate, 2004, 10)

As I spoke with my students about peer assessment, I asked myself if we are putting our students in a difficult situation asking them to assess and generate a mark for their peers. In this era of hypersensitivity to marks, is it fair to ask an adolescent student to put his relationship with a friend on the line to generate an accurate mark? The comments from the students I interviewed indicate that students believe the need to maintain a relationship with peers is more important than the need to mark accurately.

A final concern raised during my interviews with students, was that students do not like having peers assess their work if they did not do well on the assignment. Students do not ever want to look bad in front of their peers (Neufeld & Mate, 2004; Pope, 2005). They don't want to be asked a question that they can't answer and they certainly don't want to show another student a less than satisfactory project they have completed.

"I don't like peer assessment because if you didn't do well, other people know your mark." (Nina)

"If it's a project that I'm really not happy with, I don't want other people to see it. I'd rather that the teacher just mark it." (Sally)
Clearly, peer-assessment strategies must be implemented with care in a high school classroom. The goal should be in editing and giving suggestions for improvement, rather than in generating a mark for a fellow student.

**Strengthening the power of Peer-Assessment**

Peer-assessment in my class could be made more powerful with just a few modifications. Given that students don't perceive peer-assessment to be accurate and due to their peer attachments, they are intensely driven to give their peers a "good mark" to protect their relationships, it makes sense to not ask high school students to give a mark for another student's work. However, students do value the comments their peers give them and do see peer evaluation as a useful activity (Sherrard & Raafat, 1994).

Butler (1993) agrees students are better motivated by comments and feedback then they are by marks. Peers should thus be used to review projects and provide feedback on strengths and areas for improvement on the assignment.

"It would be better if it was anonymous." (Marcus)

Davies (2006) agrees with Marcus. Anonymous peer-assessment should be used as a tool to review and improve on projects and labs before they are handed in. Students should be asked to self-assess their projects after they have been peer-assessed and revised. Taras (2003) found it more effective to ask university students to self-assess after a tutor or peer had commented on their work. I am interested to try this procedure with high school students.

*Differences between the Mainstream and Honours Classes*

When I began studying peer and self-assessment, I expected these strategies to benefit both my honours and mainstream classes in different ways. Traditionally, the honours students at my school are perceived as being better students. They hand in all assignments, complete them at an above average level, excel on tests and receive an "A" in all of their courses. The honours students will do fine on government exams because they have excellent support systems and confidence in their academic abilities. I was curious to know if they would enjoy using peer and self-assessment strategies, or if they would prefer the traditional methods that they had used successfully in the past.

The mainstream students in my school are not expected to match the achievement of students in the honours program. According to Clancy (2000) and Vogler (2004) at-risk students, who would more likely to be found in our mainstream program, are more adversely affected by standardized testing. I believed they would benefit the most from alternative assessment strategies. Many of these students have not found success in school; in fact a few were taking Science 10 for the second time. I hoped that adding peer and self-assessment strategies would increase their motivation to complete assignments and study for tests.

Interestingly, I found more similarities than differences between the two classes. Both felt rubrics helped them to clarify the teacher's expectations and making rubrics was a useful process. Students in both classes felt peer-assessment was not very accurate, as peers tend to give their friends good marks, whether the product is good or not. Finally, in both cases, they wanted to include self-assessment in their classes and felt that it helped generate a fairer mark for the course.
While most of the data showed similarities, there were some differences between the two groups. When asked if they felt they could accurately assess their own work, 20% of the honours students said they could not, versus 8% of the mainstream students. During interviews, I asked a number of the honours students why they felt their assessments weren't always accurate. The girls felt they assess themselves too harshly; therefore, they get better marks when the teacher assesses their work. Whereas, the students from the mainstream class felt confident in following the rubrics and generating an accurate mark for their work.

A second difference in the data arose when I asked students if they read the comments written by their peers. 80% of the honours students reported usually reading the comments, compared to only 62% of the mainstream students. I believe the make-up of my samples affected these numbers. The honours class is filled with students who have traditionally done well in school. Their peers perceive them as being smart, thus their suggestions would be valued. The sampling in the mainstream class was not heterogeneous. Only 12 out of 30 students brought back their consent letters and they were among the highest achieving students in the class. They are very bright and capable and see themselves as more academic than their peers. Thus the students included in the survey may not value the comments of their peers because they see their peers as not taking school as seriously as they do.

After talking with some of the students in my honours class, I found that they perceived self and peer-assessment strategies as being less valid than teacher generated marks.

"It's been ingrained in our minds that the teacher's mark is accurate." (Sofia)

"Yah, the teacher is always right." (Eunice)

These students have always done well in school and while they enjoyed using peer and self-assessment strategies, (80% of the honours students felt these alternate assessment strategies should be continued in the future) they were confident that they would still do well in a more traditional classroom. Added to that, these students are very competitive and raised the concern that other students may mark themselves too easy, which wouldn't be fair.

"If one teacher marked everything, using the same rubric then it's easier to be all the same. More consistent." (Rachel)

Additionally, only 50% of the honours class thought they should be required to self-assess their work habits marks. When I asked them to fill in the work habits form, they often grumbled. They saw the activity as a waste of time. These are students who always get "G"s on their report cards. While they were surprised to see that the school had a rubric for work habits (most thought that teachers just assigned a mark based on how quiet a student was in class), they already knew they would be getting a "G" and didn't need to fill out the form to confirm it.

I think that the reflective piece of self-assessment is critical for my honours students. These children plan to go on to post secondary institutions and will need to be able to reflect on their learning and employ metacognitive strategies in the future. Their undervaluing of these strategies could be due to their unfamiliarity with the process and concern that it will "lower their mark." However, I think that they do understand that researchers value these strategies because they help children learn. Which explains that while they did not always feel that the
strategies helped them to do better in class as an individual, they recommended that I keep using the techniques in the future, because they might benefit other students.

Mainstream students on the other hand, preferred self and peer-assessment to traditional practices. 92% agreed that the new assessment techniques helped, and 77% felt they would be a good strategy to be used in the future. The students in the mainstream class also found it useful to assess their own work habits, and 75% would like to see it done in future courses. These students are often surprised by their work habits mark. Many come after report cards have been handed out to ask why they received an "S" or "N." I think they liked assessing their own work habits because it clarified the mark and they felt that they had a better understanding of what the mark meant.

**Self-Evaluation and Motivation**

"Knowing an assignment was going to be self-assessed motivated me because having to mark it myself, put a lot of pressure on me to get it done and to do it to the best of my ability." (Georgia)

"When I found out that it wasn't going to be marked by you, I wasn't going to do it anymore" (Richard)

Research on self-assessment and motivation has found having students assess their work increases their motivation (Oppenheimer, 2001). However, in the surveys and interviews that I did with students, I did not find the same results.

<table>
<thead>
<tr>
<th>Did knowing that an assignment was going to be self-assessed in class motivate you to complete it on time?</th>
<th>Yes</th>
<th>No</th>
<th>I would have completed it on time anyway.</th>
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<td>8</td>
<td>8</td>
<td>16</td>
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During the unit, I asked students to create a rubric for a review assignment and then self-assess their work. The girls interviewed were already motivated to do well. They discussed working on projects and going beyond the criteria or rubric to explore topics they were interested in. Many talked about the time and effort they put into projects. They felt that effort should be evaluated because they had worked hard on the presentation of the material, along with the content. The girls wanted to be given clear criteria for evaluation so they could be sure to meet the expectations of the teacher. They wanted the teacher to be involved in the evaluation process so they could demonstrate the effort and learning that had gone into the project.

"Self-assessment didn't increase my motivation because I was going to do the project anyway." (Nina)

The boys had a different perspective. They found knowing the project would be self-evaluated actually decreased their motivation to do it.

"I think that knowing that a teacher's going to mark it puts more stress and motivation on us to do it, because you know that they're going to see it. When we self-evaluate a project, there's always the chance that the teacher won't see it at all." (Mario)
"Then I'd only be disappointing myself." (Marcus)

<table>
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<tr>
<th>***Data from mainstream students only</th>
<th>Yes</th>
<th>No</th>
<th>I would have completed it on time anyway.</th>
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<tbody>
<tr>
<td>Did knowing that an assignment was going to be self-assessed in class motivate you to complete it on time?</td>
<td>4</td>
<td>3</td>
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One of my key questions when beginning this research was whether or not self and peer-assessment strategies would increase the motivation of my mainstream students to complete their assignments and study for tests. Unfortunately, most of the at-risk students in my classes did not return their consent forms, so I was unable to conclude whether or not the new strategies used in class increased their motivation. However, 6/7 students who I would classify as at-risk successfully completed Science 10. They did participate in all of the self and peer-assessment strategies and attendance in my class was excellent. Very few students had unexcused absences.

While I cannot conclude that the alternate assessment strategies were the determining factor in the students' success in the course, I feel that it played a role in keeping them engaged in the class. Of the students who did return their forms, 57% reported that self-assessment strategies increased their motivation to hand assignments in on time. This success inspires me to continue using self-assessment strategies. While no strategy is a perfect fit for every student, if self-assessment can reach some of my students, it's worth adding to my assessment repertoire.

**Implications for Further Practice**

"Sometimes in a course, you don't just learn science, you learn other life skills, like teamwork skills, but your mark doesn't reflect that. But the teamwork skills are probably more important because that will help you in the long run." (Mario)

I agree with Williams (2003) that the move towards standardized testing actually decreases students' learning of usable skills and knowledge. As she puts it, "Show me a high-end career that requires good bubbling skills" (p. 83). Unfortunately, it is unlikely that standardized testing will be removed anytime soon. My concern is that students have been trained to value the mark above the learning. High stakes testing reinforces this. Students ask, "Is this going to be on the test?" and those I interviewed were upset when the concepts they knew were not included on tests. They felt time spent learning untested material was wasted.

"Sometimes they ask a lot of questions that were not covered and a lot of stuff that you did learn isn't mentioned at all." (Sally)

It is critical in a socially just classroom for teachers to be thoughtful of the assessment practices that they are using. Assessment should be one method of helping students learn, not a tool used to punish or control. When teachers take marks off assignments that are handed in late, or use testing as a threat to motivate students to study, they are reducing assessment to a discipline technique rather than using it to help students evaluate what they have learned and what they need to spend more time on.

I believe moving away from traditional assessment practices (test, quiz, homework assessed..."
by a teacher) will reinforce the idea that it is the learning that is important, not the mark. By asking students to write reflections on their learning and suggestions for their peers, we are increasing the value of the learning process itself.

Despite being driven to receive good marks, most students feel detached from the marking process. They are rarely asked to self-assess their own work. In fact, most said Science 10 was the only class in which they had engaged in any self-assessment strategies. The assessment process is an external one in which students are powerless. Shifting to include reflection and self-assessment in the classroom moves evaluation from an external source to an internal one and gives some of the power and control over assessment back to the students themselves.

Kelly and Minnes Brandes (2005) point out that if one goal of the education system is to create citizens who question authority and oppose oppression, we need to teach students these skills and give them opportunities to practice them. We begin by asking students to critique their own learning and use that as a spring board to have them examine the actions and attitudes of the world around them. Self-assessment then not only becomes a tool to improve student learning, it becomes a strategy to improve social justice in the classroom and encourages students to become more thoughtful, active citizens after they leave high school.

Looking Back a Year Later

The process of teacher inquiry has been a wonderful opportunity for me to examine my own practice. In examining self and peer-assessment strategies for my students, I have taken a step back and reflected on my own teaching practice. Just as I've asked my students to examine their learning, I have taken the time to explore the assessment techniques that I have used in the past. Tests and quizzes may be the traditional method of assessing student learning, but do they foster the type of learner that I want to nurture in my classes? I want the young men and women in my classes to reflect on the decisions that they make in life, to learn from their mistakes and make better decisions in the future. I want to give them a place to practice reflection skills and take pride in their learning. Unfortunately, self and peer-assessment strategies are a lot more complicated to design than a multiple-choice test. Luckily, the enthusiasm of my students in using these strategies has encouraged me to keep researching and exploring alternative assessment practices. In challenging my students to move outside the box of traditional assessment, I have challenged myself to continue to improve as an educator.

References


**Endnotes**

[i] Student names have been changed to protect their anonymity.

[ii] [http://www.bced.gov.bc.ca/graduation/](http://www.bced.gov.bc.ca/graduation/)

[iii] 1. Which of the following activities did you participate in? (Put an X in the box)
2. Looking at the above list of activities that you participate in, do you feel that any helped them do better on course work? If so, which ones and why?

**Mainstream**
- Creating a rubric helped us to understand what the markers is looking for and what we need to improve on
- Marking own quizzes – helps me see what I need to review
- Got to communicate with classmates and get ideas
- Then I knew what I needed to improve on
- Put pressure on myself to do the best that I could

**Honours**
- Prefer to be marked by a teacher because I work harder when others mark my work
- Being able to create both rubric and marking key helped me do better because I was able to know exactly what I had to do.
- Rubrics allowed us to know what we needed to do to get full marks
- Creating a rubric helped us to understand what markers is looking for and what we need to improve on
- Helped me memorize
- Marking own quizzes
- Writing what we needed to review on back of the quiz helped for the test
- Marking own quizzes shows us our mistakes
- Self assessment for work habits helped me improve throughout the year
- Helped me recognise what I needed to work on
- None of them

3. Thinking back to the rubric that you made for the reactions rates comic, did you feel that going over the answer key with your group helped you to better understand the difference between the types of reactions? (Circle the best answer)

4. Did knowing that an assignment was going to be self-assessed in class motivate you
to complete it on time?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>I would have completed it on time anyway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstream</td>
<td>4</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Honours</td>
<td>4</td>
<td>5</td>
<td>11</td>
</tr>
</tbody>
</table>

5. Do you feel that you were able to accurately assess your own work?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Somewhat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstream</td>
<td>9</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Honours</td>
<td>10</td>
<td>4</td>
<td>6</td>
</tr>
</tbody>
</table>

6. Were you able to understand the marking rubric when asked to self assess an assignment?

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstream</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Honours</td>
<td>6</td>
<td>11</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

7. When your peers marked your assignment, did you read the comment that they had written?

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstream</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Honours</td>
<td>12</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

8. When your peers marked your assignment, did you find their comments helpful?

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstream</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Honours</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

9. Did you feel comfortable marking your peers assignments?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Sometimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstream</td>
<td>7</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Honours</td>
<td>10</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

10. Did you feel comfortable having your peers mark your assignments?
11. Did assessing your own work help you to pinpoint areas for revision?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Sometimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstream</td>
<td>6</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Honours</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

12. Thinking about the quizzes that we did in class, did putting happy faces next to the questions

<table>
<thead>
<tr>
<th></th>
<th>Mainstream</th>
<th>Honours</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) help you figure out which topics you needed to review?</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>b) motivate you to review for the test?</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>c) Increase your confidence for the test?</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>d) decrease your confidence for the test?</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

13. Which of the following activities do you think were useful and you would like to do again in another class?

<table>
<thead>
<tr>
<th></th>
<th>Mainstream</th>
<th>Honours</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Self assessment of work habits mark for report cards</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>b) Creating a rubric for an assignment (types of chemical reactions comic)</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>c) Marking your own quizzes</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>d) Putting happy faces on quiz questions to indicate how well you knew the answer</td>
<td>9</td>
<td>13</td>
</tr>
</tbody>
</table>

14. Did they prefer these method of assessment to more traditional teacher driven assessment?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Sometimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainstream</td>
<td>9</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Honours</td>
<td>11</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>

15. Did you feel that these methods of assessment were a fair way to generate a mark for you?
16. Do you have any other comments about the self assessment activities that we did on Science class this semester?

**Mainstream**
- Creating marking keys in groups is fun
- Helps you further understand what you're doing and what is expected in the project
- Helpful for tests and quizzes
- Honours
  - Unrealistic to expect all students to give accurate mark during self and peer assessment
  - Don't like marking own work because I think that I'm way too hard on myself
  - Great way for students to build on their weaknesses and work on strengths
  - Helpful, but should be mixed with teacher assessment evenly
  - Not sure that it's always fair. Peer assessment too relative. Teacher marking with some standards, would be better.
- I liked marking our own quizzes.
- I liked making the rubrics
- Helped me think about areas where I need to improve

**Honours**
- Unrealistic to expect all students to give accurate mark during self and peer assessment
- Don't like marking own work because I think that I'm way too hard on myself
- Great way for students to build on their weaknesses and work on strengths
- Helpful, but should be mixed with teacher assessment evenly
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- I liked marking our own quizzes.
- I liked making the rubrics
- Helped me think about areas where I need to improve

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**PMSS Work Habits Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>N</th>
<th>S</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punctuality</td>
<td>Consistently arrives late</td>
<td>Usually arrives on time</td>
<td>Arrives on time and ready to start</td>
</tr>
<tr>
<td>Works Independently</td>
<td>Distracts others; not on task; requires close supervision</td>
<td>Usually focused on task; may need some supervision</td>
<td>Remains on task without reminders; works quietly and efficiently</td>
</tr>
<tr>
<td>Initiative</td>
<td>Has difficulty starting to work; doesn't ask for help; doesn't get caught up after absence; doesn't participate</td>
<td>Participates when asked; begins to work when assignment given; works hard most of the time</td>
<td>Volunteers to ask and answer questions; will help others; knows what needs to be done and does it</td>
</tr>
<tr>
<td>Homework</td>
<td>Few assignments and homework complete; answers not checked</td>
<td>Homework and assignments usually completed; answers are usually checked and corrected</td>
<td>Homework and assignments complete; answers have been checked and corrections are made</td>
</tr>
<tr>
<td>Organization</td>
<td>Little attempt to organize notebook or bring textbook, pencils, paper...</td>
<td>Needs some organization of workbook</td>
<td>Notebook is organized and complete; keeps track of all homework, assignments and important dates</td>
</tr>
<tr>
<td>Teamwork</td>
<td>Interrupts, distracts, or disrupts others; difficult to work with</td>
<td>Usually cooperative; participates and follows the lead of others</td>
<td>Consistently demonstrates cooperation, respect, and leadership</td>
</tr>
</tbody>
</table>
see "PMSS Work Habits Criteria" in endnote iv

About the Author

With over 16 years of teaching experience, Joni Tsui has taught almost everything at the secondary level. A French Immersion graduate with a BSc in biology, Joni has taught French as a Second Language, Math, Science, Biology, Chemistry, PE, Fine Arts and Humanities to students from grades 7-12. For the past 10 years, she has worked at Port Moody Secondary School focusing on Science and Leadership. When working on her masters 8 years ago, Joni was introduced to formative assessment and the huge impact those strategies can have on improving student learning. She is now a demonstration teacher for the Professional Teacher Network in the Coquitlam School district and an avid proponent of supporting teachers in their quest to improve their practice.