

## Peer / Self Assessment and Student Learning

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Effective and durable learning achievements can result from students' engagement in their own learning. This study explored students' perceptions of the mechanisms and processes through which peer and self-assessment can contribute to their learning. More specifically, the study investigated students' perceived ways in which peer and self-assessment can help engage them in their own learning, make them take responsibility for it, and develop their collaborative learning skills by promoting a positive and supportive learning environment. Students in a graduate class participated in this study. Results indicate that, according to students' perceptions, peer and self-assessment contribute to their learning through effective feedback, a supportive learning environment, and collaboration among learners. A higher level of awareness of course expectations and requirements, combined with abilities to identify learning gaps and develop strategies to fill those gaps, are the mechanisms through which students perceived that peer and self-assessment promote their sense of responsibility towards their own learning. Students' dispositions to work in groups can impact the benefits of peer and self-assessment.

Research has shown the importance of involving students in their own learning through self and peer assessment. Logan (2009) explored how peer and self-assessment can enhance teaching and learning effectiveness. According to the author, self and peer assessment can positively affect student learning by helping them develop their reflective and critical thinking skills, as well as their self-confidence as learners. Therefore self and peer assessment teach students how to learn, which "should be a key element of higher education courses" (p. 30). Reinholz (2015) defined peer assessment as "a set of activities through which individuals make judgments about the work of others" (p. 1). Self-assessment is defined as a process where "students are directed to assess their performance against pre-determined standard criteria...[and] involves the students in goal setting and more informal, dynamic self-regulation and self-reflection" (Bourke & Mentis, 2011, p. 859). From these definitions, it seems that self and peer assessment can help promote learning by establishing an environment that could engage students and help them develop a sense of internal responsibility for their own learning (Yorke & Longden, 2004). Such a sense of responsibility can promote a belief and motivation to control and direct their own learning, as well as a desire to invest the required and necessary efforts for higher learning achievements.

Prior research has investigated the central role that assessment in general, as well as self and peer assessment, can play in driving student learning (Cheng & Warren, 2005; De Grez, Valcke, & Roozen, 2012; Kearney, 2013; Rust, Price, & O'Donovan, 2003; Winne, 2003). According to these studies self and peer assessments reinforce a self-regulated learning atmosphere that positively impacts student learning, especially because they allow learners to match and amend their work with predetermined standards. Similar benefits of peer assessment were reported by

Logan (2009) who indicated that peer assessment ... gives students a better understanding of assessment criteria and leads to deeper learning" (p. 30). In Logan's study, in which he investigated students' feeling and attitudes about peer and self-assessment, participants reported that peer assessment made them become more critical and reflective about their work.

In another study that addressed students' perceptions of peer and self-assessment De Grez and colleagues (2012) reported that students indicated having observed significant learning gains as a result of being engaged in peer assessment. Cheng and Warren (2005) reported that peer assessment affected students' performance and attitudes. In their study that aimed at assessing students' perceptions of peer assessment, Planas Lladó and colleagues (2013) reported a higher level of motivation, sense of confidence in personal abilities, and engagement as the result of students' attitude changes due to peer assessment. Similarly, in a literature review of peer assessment studies, Topping (1998) also reported positive effects of peer assessment, not only on achievement, but also on students' attitudes towards learning.

Similar reviews have been conducted about self-assessment (Boud & Falchikov, 1989; Falchikov & Boud, 1989). In their review of self-assessment studies Boud and Falchikov (1989) focused on quantitative studies. Though they reiterated teachers' desire to help learners take more responsibility for their learning, the review focused more on comparing students' marks to teachers' marks.

Dochy, Segers, and Sluijsmans (1999) reviewed 63 studies and reported positive findings, including students obtaining a higher percentage of correct scores or engaging in independent learning, as a result of self-assessment, among other findings. According to Dochy et al., overall, self- assessment promoted

self-reflection, problem-solving and more responsibility for one's learning.

Bourke and Mentis (2011) took a different perspective and investigated the benefits of self-assessment with respect to inclusion. The authors reported that self-assessment can not only foster students' involvement in their learning, but it can also provide appropriate learning opportunities to all students through "inclusion in choices about their own learning" (p. 854). This is consistent with what Topping (2003) reported when he indicated that "in self-assessment, the intention is to engage the learners as active participants in their own learning....In the longer term, it might impact self-management of learning... and tuning of learning by the learner rather than waiting for others to intervene" (p. 58).

Given the importance of feedback and the development of the reflective skills, the benefits of self and peer assessment may be more sustained when they are implemented as formative types of assessment. Research (Struyven, Dochy, & Janssens, 2002) has indicated that students' anxiety and stress might hinder deep learning when peer and self-assessment are used as summative tasks or to assign a grade. When self and peer assessment are used in a formative manner, they provide the necessary conditions to engage students in their own learning. Students who are actively engaged in their learning through formative assessment tasks are more likely to become aware of learning gaps and the need to find and use more resources to address these gaps. In other words, "formative assessment is vital for learning and that the type of formative assessment that contributes to students' development as effective learners is that which includes elements of self and peer assessment" (Logan, 2009, p. 30). Providing students with a chance to engage in formative peer and self-assessment activities make them actively involved in their learning and may positively impact their perceptions of the integration and relevance among content taught, learning expectations and assessment (Struyven et al., 2002; Vu & Dall'Alba, 2007).

While the literature might be populated with multiple studies that investigated the benefits of self and peer assessment, few or very little of them focused on students' perceptions of how self and peer assessment help them learn. Even though few studies (i.e. Logan, 2009) reported learning gains from a student perspective, their focus was not to investigate students' perceptions of the mechanisms that facilitated those learning gains.

Most of the studies reviewed above tend to focus more on comparing students' assigned grades with those of a teacher or tutor by attempting to investigate the relationship between self and peer assessment and learning gains. For example, in his review of the literature on peer assessment, Topping (1998) reported that most of the studies reviewed involved marking or

grading peers' work and aimed at either "saving staff assessment time or costs...while other projects aimed to add value in terms of cognitive, metacognitive or other gains for participants" (p. 251). Furthermore, Topping emphasized the prevalence of anonymous peer assessment and that personal contact between assessor and assessee was not necessary. Given the crucial role of self and peer assessment on student learning gains as evidenced in the literature, it is very important to understand the ways in which students think peer and self-assessment help them learn. It is to fill such a gap that the current study intends to explore students' perceptions of the ways and means through which self and peer assessment can help support and enhance their learning. More specifically this study addresses the following questions:

- Through which mechanisms, do students perceive that peer and self-assessment contribute to their learning?
- In what ways, do students perceive self and peer assessment as practices that can promote their sense of responsibility towards their own learning?

## Methods

This explorative study was exempted by the Institutional Review Board and took place in a graduate class. The study utilized qualitative methods to analyze students' perceptions of the benefits of self and peer assessment as well as the factors through which those benefits occur. An online survey was used to collect data.

## Participants

Participants were 31 students enrolled in a graduate course in a Social Science based area studies program in both Fall 2013 and 2014 semesters. Instruction in this course landed itself to peer and self-assessment activities as it involves some lecturing and seminar type work such as hands-on activities and group work. In Fall 2013 there were 12 students with 9 of them being female students. In the Fall 2014 semester, there were 19 students, and 15 of them were female students. This predominance of female students is consistent with the general trend in the university. Sixteen (51.6%) of them responded to the survey, for Fall 2013 (9 out of 12 students) and Fall 2014 (7 out of 19 students). This was a required course. Half of the respondents (8) had never used peer and self-assessment before, while five of them reported having experience with both peer and self-assessment, one student with peer assessment only and two students with just self-assessment.

The same instructor taught both Fall 2013 and Fall 2014 courses. Students were informed of the intent of

the peer and self-assessment activities through oral communications during class time. They were told that this was part of a research project but was also aimed to help improve the course and their learning.

### **Procedure**

For each semester students were briefed about self and peer assessment processes. This briefing highlighted the benefits of self and peer assessment in learning, what makes peer and self-assessment effective and beneficial for improved learning, and the aims of the initiative. The different steps that they need to go through to implement both peer and self-assessment were explained in class.

Assignments used for this exercise varied and included a literature review and an article critique. In the literature review assignment, students were asked to select a topic of interest and to write a brief literature review using at least 5 peer-reviewed journal articles. In the article critique, students were asked to select a research article from a list provided by the instructor or to find one of their own and write a critique about that article. For each these assignments, guidelines and rubrics detailing expectations and explaining grading criteria were also provided and explained to students.

Students were then asked to use the provided guidelines and rubrics to self-assess their work. For the peer assessment, there were two different scenarios. In one scenario students were asked to choose their own partner. In another scenario, the instructor assigned a partner to each student.

After completing the self-assessment students were asked to go back and revise the work based on their findings from using the rubric and guidelines. The revised work was then shared with a partner who reviewed it using the same guidelines and rubrics. Each student brought their feedback to class and shared it with their partner. During this time students explained their feedback, and this was also an opportunity for them to ask questions or clarifications regarding the expectations. The role of the teacher was to address questions raised by the students about the process of self and peer- assessment or other general questions. Additionally, the role of teacher consisted of frequently articulating and explaining the aims of the self and peer activities to students in order to help them better integrate these activities in the overall learning process.

### **Data Collection**

Data about students' perceptions of how self and peer assessment could contribute to learning and promote a sense of responsibility for their work were collected through an anonymous online survey that was sent to students (See appendix). This survey was sent

out to all students using Google Forms and via student university emails. The survey included questions about self and peer assessments' contribution to students' learning and students' responsibility for their own learning. In Fall 2013 semester, 9 out of 12 students responded to the survey. The survey was sent out again in Fall 2014 to increase the number of respondents, and 7 out of 19 students responded.

### **Data analysis**

Students' responses on the survey were analyzed and classified into themes based on their relationships. Emerging axial coding was used in this study. As responses were being collected, emerging themes were presented and discussed with students in class for validation purposes. Additionally, thick description was also used in attempts to ensure validity.

### **Results**

Sixteen students responded to the survey. While the small number of respondents is acknowledged as a limitation of this study, results presented below can still provide a deeper understanding of students' perceived benefits of self and peer assessment. Further, the results can provide guidance on specific mechanisms that teachers need to keep in mind when implementing peer and self-assessment in their classrooms. Results will be discussed in the context of the two research questions that guided the present study.

#### **Mechanisms through Which Students Perceive Peer and Self-Assessment Contribute to their Learning**

When asked about the mechanisms through which they think self and peer assessment contributed to their learning, students identified a number of elements that can be classified under mechanisms such as feedback, clarification of expectations, collaboration, and a positive learning environment. Those mechanisms are presented in themes below

**Peer / self-assessment and feedback.** Students indicated that feedback was one of the main mechanisms that helped them benefit from self and peer assessment processes. As some respondents indicated, "Feedback was very valuable and helpful." More comments about the value of feedback and how it helped students to learn include, "It was live feedback and not only written one, and usually simultaneous to the work so it was more useful," or, "Since the discussions were based on the materials that we learned together during class, the feedback received was practical and filled the gap of what I would have missed." These statements from respondents indicate that students appreciate the promptness and practicality

of the feedback. In other words, students seem to prefer feedback they can act on immediately while on the task.

In addition to the reported benefits of feedback on learning, some students (7 out of the 16) indicated that the peer assessment affected their attitude towards feedback. As one student noted, “Before I used to never accept any critique given on my work. However, after I found how beneficial it is, I started to ask from other colleagues for feedback on my work.” The impact of self/peer assessment on students’ attitudes towards feedback is also reported as helping them in “accepting criticisms and welcom[ing] them within the reasonable limits.”

**Self / peer assessment and collaboration.** The majority of students (10 out of the 16 respondents) agreed that peer and self-assessment contributed to the development of a more supportive learning environment. Some of the ways students reported that peer assessment helped promote collaboration is that it allows a better understanding of the content through interaction with other classmates. As reported by students, “it helped [to] go through the content and compare one’s understanding with other students.” This shows that having other people in the class as support for learning the content can be very beneficial in peer and self-assessment.

Students also reported that the peer and self-assessment activities in this course helped them clarify expectations and requirements for their assignment. In other words, this process contributed to the development of a more open and collaborative learning environment as reflected in this student’s comments: “Yes, sometimes, even though you do not completely understand what is being discussed, I missed the chance to ask about it. However, during the peer and self-assessment I could make use of others explanation and feedback.” Additionally, students reported that “peer assessment gives students opportunities to be more engaged, and help each other on the assignment.” Comments like this one could be an indication that students might view the collaboration generated through self and peer assessment as a two-way street. Collaboration is not only about benefitting from others, but also about supporting others in their learning. Additional comments about collaboration refer to collaborative learning: “Learning could be easy from others; it helps you understand the material from a different angle/approach.” Another advantage of collaboration included the opportunities to practice. According to respondents, collaboration provided them with “a chance to apply theory” and other learned concepts before submitting their assignment. Opportunities to practice also helped clarify expectations and requirements.

It is noteworthy to indicate that while 10 out of 16 agreed that peer and self-assessment contributed to the development of a more supportive learning

environment, the remaining 6 did not disagree but were neutral. Some of the reasons given were related to challenges inherent to working in a group, e.g., “[I]t takes time and because some of the students have to work, so they are busy to meet for the assignment.”

**Self / peer assessment and learning environment.** When asked whether engaging in self and peer assessment affected the class learning environment, most students (10 out of 16) agreed that peer and self-assessment contributed to a more open and supportive learning environment. The 6 remaining did not disagree either but were neutral and indicated reasons such “wasting time to wait for others,” or “other classmates not paying enough attention.”

Other students indicated that the supportive learning environment is promoted since “peer assessment allows to discuss different article topics with different students... and learn each other’s points of view,” or, “[I]t added to the class more energy and closer relations between students.” Self and peer assessment seemed to stimulate the class environment and promote mutual learning. Students seem to indicate that they benefited from engaging in informal discussions with their peers and that such discussions seem to positively affect the learning environment. Further students reported that self and peer assessment “create a friendly environment in terms of letting us cooperate with each other.”

### **Ways in Which Students Perceive Self and Peer Assessment as Practices That Can Promote Their Sense of Responsibility towards Their Own Learning**

The majority of students (12 out of 16) agreed that self and peer assessment allowed them to take more responsibility for their own learning. According to respondents, peer and self-assessment promote their sense of responsibility towards their own learning through a higher level of awareness of requirements and expectations, development of their evaluative skills, and helping them in identifying and locating necessary resources to fill identified learning gaps.

**Self / peer assessment and awareness of course requirements and expectations.** According to students, self and peer assessment also helped develop their sense of responsibility by making them aware of course and assignments expectations as reflected in the following student’s comments: “[C]ourse requirements and expectations were clearly explained in the rubrics for each assignment, [and] through self-assessment I understood those requirements better.” More students made similar comments about peer and self-assessment promoting students’ awareness of requirements and expectations: “[S]ome of the requirements in the course I did not understand until a peer review with other

students”, and, “Lots of things I did not hear or get from the instructor (and embarrassed to keep asking) ...I got it from peers.” Students’ awareness of expectations as a result of engaging in the process of self and peer assessment is also reflected in the following comment: “It clarifies things for me that I was not sure about.” Self and peer assessment are, therefore, activities that generate more learning resources and support in terms of helping students understand what is expected of them. These comments indicate the benefits of having a chance to discuss the course expectations with a peer when engaging in self and peer assessment and how that might help support student learning.

**Self / peer assessment and students’ evaluative skills.** Participants indicated that peer/self-assessment allowed them to take responsibility by helping them develop their evaluative skills: “Self-assessment helped me better learn the content of this course; I was able to evaluate my own assignment to the rubrics provided in the course.” The development of their evaluative skills helped students become more proactive in taking necessary actions in a sense that it allowed them “.... to understand in what aspect I have to strengthen my studies.” Students commented further that peer and self-assessment allowed them to know their weaknesses, as the following respondent’s comment illustrates: “I know where I am weak...”

**Self / peer assessment and abilities to develop strategies to fill identified learning gaps.** Another way that students’ perceived peer and self-assessment helped them take more responsibility for their learning was by helping them develop strategies to fill identified learning gaps. The heightened awareness of expectations and requirements combined with the development of their evaluative skills made it easier for students to not only identify learning gaps, but also to develop strategies to fill those gaps. Respondents indicated that peer/self-assessment helped them know exactly what was missing and what to do about it. As students commented, peer and self-assessment “help[ed] me to know what I can do and what I should do” or “made me more critical about my own work” and become more active learners: “[T]hey allowed me to develop a more interactive role rather than simply being a passive receiver of information.” Being able to evaluate their assignments prepared students to identify gaps and develop strategies to meet requirements: “If I missed something in my assignment, I would go back to the readings and try to fix it.”

As reflected in the comments above, peer and self-assessment helped students identify learning gaps and locate necessary resources to fill such gaps. As commented by some respondents, “It lets the student go back to their work revise it again,” or “After peer review, I understood the necessity of more knowledge about the topic,” Taking responsibility is also exercised

by students as a means to support their peers” “[By] receiving feedback from others, I felt the need to make myself more prepared to assist others in much the same way.” From the comments above, it appears that peer and self-assessment allow students to reflect critically, not only on what to do, but also how to do it.

While none of the students disagreed that self and peer assessment allowed them to take more responsibility for their own learning, four of them were neutral. Comments from some of the students who were neutral revealed that the teammate’s disposition to work in a group is very important: “It also depends on the member and classmates, but at this time I got tired to work with people from my class.” Other students reported being neutral because they don’t see assessment as their responsibility “I think assessment is not related with my responsibility in this case.”

## Discussion

Though the relatively small number of respondents warrants for caution in interpreting the results, discussion of these results could provide guidelines for a better understanding of students’ perceptions and opinions regarding the benefits of peer and self-assessment. Such understanding is important if educators want to place peer and self-assessment activities in the hands of their students. The findings of this study provide a basis for an expanded understanding of the ways students perceive the contributions of peer and self-assessment in their learning.

Findings from this study revealed that feedback, collaboration, and a supportive learning environment are mechanisms through which peer and self-assessment contribute to student learning. Findings also indicated that students perceive that peer and self-assessment activities promote their sense of responsibility towards their learning through a heightened awareness of course requirements and expectations, as well as the development of, their evaluative skills and strategies to fill identified learning gaps. This is in conformity with previous research that reported the positive impact of peer assessment (Dochy et al., 1999; Kearney & Perkins, 2014; Li, 2011; Planas Lladó et al., 2013) and self-assessment (Dochy et al., 1999; Kearney & Perkins, 2014; Lew, Alwis, & Schmidt, 2010) on student learning.

While findings from these previous studies indicated the benefits of peer and self-assessment on student learning, the current study adds to the literature by highlighting the mechanisms of feedback, collaboration, and a supportive environment, on student learning, through which peer and self-assessment contribute to learning according to students’ perceptions. Further, this study contributes to the

literature by providing specific examples of how students perceive and might experience the benefits of these mechanisms through the processes of self and peer assessment. Feedback, collaboration, and a supportive environment are mechanisms that can be implemented and materialized in different ways. For example, while students seem to value feedback, oral and instant feedback seems to be perceived as very helpful since it is live as they indicated. Findings from this study contribute further to the literature by revealing that providing students with opportunities to discuss feedback with their peers plays an important role in reinforcing the effectiveness of such feedback on their learning as reported by respondents. In contrast to findings from Topping (1998) that indicated that personal contact was not necessary with the prevalence of anonymous feedback, results of this study reveal that facilitating personal contact among reviewers in the self and peer assessment process can increase the positive effects that feedback can have on student learning. As respondents indicated, it is this process of discussing feedback that allowed them to clarify expectations and requirements.

The findings of this current study also contribute to the identification and understanding of obstacles that might negatively affect the benefits of peer and self-assessment in the classroom. For example, as reflected in the results, students' dispositions to work in a group could impact their willingness to engage in peer assessment, as well as their desire to collaborate with other classmates. In addition to this finding about students' willingness to work in groups, prior research (Struyven et al., 2002; Vu & Dall'Alba, 2007) has identified other challenges related to stress, anxiety, time constraints to fully discuss feedback, students' lack of confidence to accurately assess themselves and their peer's work, etc., as potential barriers to the successful implementation of peer and self-assessment. Other scholars (Papinczak, Young, & Groves, 2007) went further to raise difficulties and challenges of applying peer and self-assessment in more complex skills such as problem-solving, and they reported students' concerns about the negative impact that peer assessment might have in the learning environment.

Findings from this study also seem to be similar to those of previous studies that concluded peer and self-assessment's impacts on student learning depend on how they were introduced to students and implemented (Sandvoll, 2014). In this study self and peer assessment activities were prepared and implemented as means to help students develop higher learning but not to assign them a grade. In other words, self and peer assessment in this study were primarily used as formative assessments or assessment for learning. Therefore, respondents viewed them as opportunities to improve their learning. For that purpose, self and peer

assessment allowed students to use all the possible mechanisms and strategies available to them. Such mechanisms include collaboration with peers, feedback, a supportive learning environment, etc. This suggests that self and peer assessment can help create a learning community (Nulty, 2011) where learning is a socially developed endeavor and requires the active involvement of other peers with similar interests.

Findings from this study can also be interpreted through the lens of self-regulated learning. According to Zimmerman (1989), self-regulated students "personally initiate and direct their own efforts to acquire knowledge and skill rather than relying on teachers, parents or other agents of instruction" (p. 329). By taking responsibility for their learning through a heightened awareness of course requirements and expectations, a development of their evaluative skills, and their abilities to develop strategies to fill identified learning gaps, students seem to develop self-directed learning attitudes that allow them to diagnose their learning needs and take corrective measures on their own if necessary. Banarjee and Kumar (2014) reported a positive correlation between self-regulation attitudes and student academic achievement. According to the authors, self-regulated learning refers to a process where a learner "monitors and regulates his/her cognition, motivation, and behavior during the learning process and then reflects on his/her learning process and outcomes" (p. 330). Through the practice of peer and self-assessment, respondents from this study were able to reflect on their learning needs and direct their efforts to locate and identify necessary resources to fulfill those learning needs.

By providing respondents of this study with opportunities to fully engage in their own learning through identification of gaps and development of strategies to fill those gaps, as well as collaboration with peers, self and peer-assessment seem to have the potential to help them to take responsibility and control of their own learning. This is similar to what respondents in this study reported when they indicated that self and peer assessment allowed them to analyze and evaluate their own work to identify gaps. Further, they identified needed resources and information to fill missing information on their own. Students, in this case, are clearly exhibiting an example of taking control and responsibility for their learning since they actively engage in their learning and work with others to fulfill learning needs rather than waiting for someone else to tell them. Other research (Burkill, 1997; Huff & Johnson, 1998) has also demonstrated how taking responsibility improves not only learning, but makes students more enthusiastic about their own learning. According to findings from this study, students take responsibility not only for their own learning, but also for the learning of peers. This is reflected in students'

attitudes when they report feeling the need to be prepared so they can help each other in the same way. Therefore, self and peer assessment can help promote a learning community which can give students a sense of confidence and shared responsibility that can positively impact learning. Prior research (Dochy et al., 1999; Nicol & Macfarlane-Dick, 2006; Reinholz, 2015a) indicated the positive impact that formative assessment might have on students' self-regulated learning capabilities and sense of responsibility in their own learning.

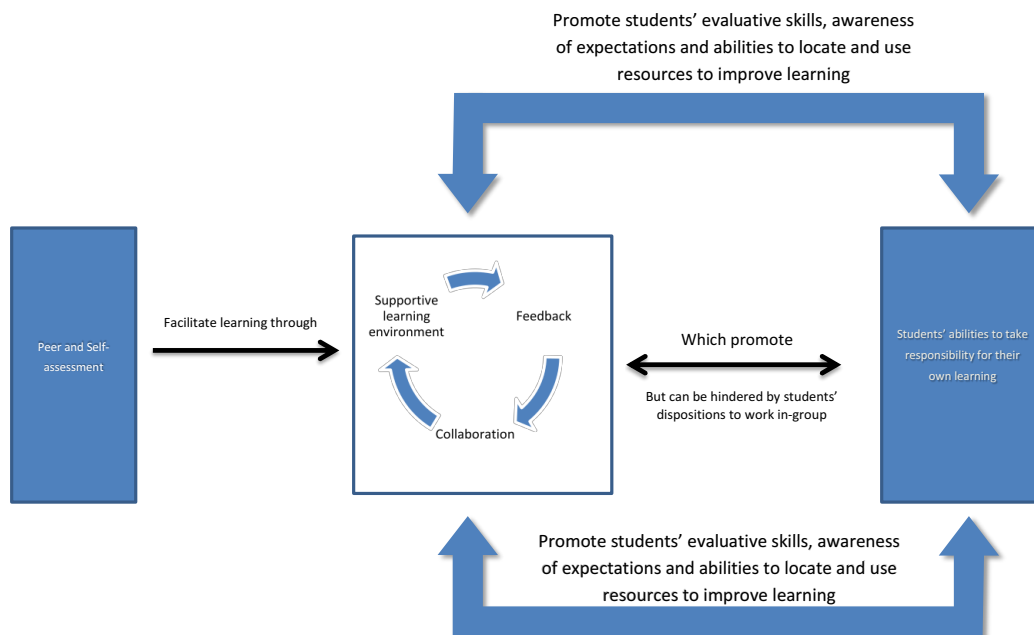
Results of this study could also be discussed through the lenses of lifelong learning. Taking responsibility and control of their learning not only allows students to become active learners but can also prepare them to become lifelong learners. By identifying gaps and thinking of ways to fill them, students are developing reflective and evaluative skills necessary for lifelong learning. In other words, they are learning to identify problems, search for relevant information, evaluate that information, make an informed judgment, and apply it to address the identified problems, as well as future situations they may encounter in real life (Boud & Falchikov, 2006; Boud & Molloy, 2012; Dochy et al., 1999). Using assessment to develop lifelong learning skills is similar to what Boud (2000) refers to as sustainable assessment which he defines as "assessment that meets the needs of the present without compromising the ability of students to meet their future learning needs" (p. 151). Benefits from self and peer assessment—such as thinking, learning more, being critical, making informed judgments,

and providing more structure—reported by respondents to this study have been identified by prior research (Boud & Falchikov, 2006; Hanrahan & Isaacs, 2001) as supportive of lifelong learning.

The effects of the mechanisms through which students perceive peer and self-assessment contribute to their learning (feedback, collaboration, and a supportive learning environment) should not be viewed as separated and independent from one another, nor should they be viewed as separate from the processes through which students seem to develop their sense of responsibility towards toward their own learning. Rather, they all should be viewed as interrelated and interdependent. In other words, the willingness and desire to seek feedback will depend on a supportive learning environment where each member values collaboration and perceives him or herself as a learning resource for their peers. Similarly, a learning environment is perceived as supportive based on the availability of feedback and the ability of the members of a community to collaborate and support each other. Willingness to collaborate is also dependent on the belief and perception that other community members are willing to contribute and help one's quest for learning.

The successful interaction of these mechanisms could also lead to the development of students' sense of responsibility for their own learning. In return, this sense of responsibility about one's learning will affect their attitudes towards using the so-called resources. All these interactions are depicted in Figure 1.

Figure 1  
Visualization of How Self and Peer Assessment Contribute to Students' Learning and Responsibility



### Implications

A major implication of this study's findings is the necessity for educators to further pursue the engagement of students in sustainable assessment through peer and self-assessment activities in order to develop lifelong learning skills. To achieve that goal, teachers need to pay special attention to mechanisms that help develop an environment that is conducive to learning where mutual support and willingness to work in groups are valued by each learner. To help students benefit fully from peer and self-assessment activities, teachers need to take into account activities and processes that promote collaboration and a cooperative learning environment as reflected in the results of this study.

More attention is also needed for the type of feedback generated through peer and self-assessment. Specific criteria to promote quality feedback need to be developed so that collaboration can be more successful and beneficial to each learner and therefore promote students' opportunities to take responsibility for their learning. Oral and instant feedback need to be emphasized and promoted based on the results of this study.

Benefits from self and peer assessment can be maximized also if activities are designed in a way that allows students to apply their evaluative skills. These evaluative skills will help students assess their work and that of others with respect to expected performance criteria in order to become active learners and better prepared to engage in lifelong learning.

While this study shows benefits of peer and self-assessment, it appears that not all students saw their interconnection and how they should build on each other. Prior research (Reinholz, 2015b) has indicated the necessity not only to establish the link between peer and self-assessment, but to make obvious and explain the mechanisms through which this linkage happens.

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Appendix

Peer and Self-Assessment:

Dear students

This survey is being submitted to you to collect your feedback, views and opinions regarding the peer and self-assessment we have been doing in this class. It intends to examine whether the peer and self-assessment were beneficial to you or not? Ways in which they helped if they did? Please provide your responses to the questions below. This activity is voluntary and I appreciate your time and effort in helping me improve the course as well as my practice. Your feedback and opinions are highly valued

**\* Required**

**1. Instructions provided for completing assignments in this course were clear \***

*Mark only one oval.*

- Agree
- Neutral
- Disagree

**2. Please describe how the peer assessment was beneficial or not to you depending on your answer above. Please provide examples. \***

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**3. Please describe how the self-assessment was beneficial or not to you depending on your answer above. Please provide examples. \***

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**4. Do you agree or disagree that peer assessment in this class affected your attitudes towards feedback received from classmates? \***

*Mark only one oval.*

- Agree
- Neutral
- Disagree
- Other: .....

5. Based on your answer to the previous question, please explain how peer assessment in this course affected your attitudes towards feedback \*

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6. Please indicate whether the self and peer assessment helped you better learn the content of this course and in what ways. Provide examples \*

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7. Do you agree or disagree that the peer assessment contributed to a more open and supportive learning environment in this class? \*

Mark only one oval.

- Agree
- Neutral
- Disagree

8. Please provide an explanation for your answer to the question above \*

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9. Please select the one that describes you best from the choices below \*

Mark only one oval.

- The peer and self-assessment were both beneficial to me
- Peer assessment was more beneficial to
- Self-assessment was more beneficial to me
- None of the above. The peer and self-assessment were not beneficial to me

10. Please provide reasons and or explanation for your choice \*

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11. Peer and self-assessment allowed me take more responsibility for my own learning in this class \*

Mark only one oval.

- Agree
- Neutral
- Disagree

12. Please provide explanation for your answer to the previous question. Please provide examples if possible

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13. Peer assessment promoted interactive and collaborative learning in this class \*  
 Mark only one oval.

- Agree
- Neutral
- Disagree
- Other: \_\_\_\_\_

14. Please explain your response the previous question. Please provide examples

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15. The self and peer assessment helped me better understand course expectations and requirements \*  
 Mark only one oval.

- Agree
- Neutral
- Disagree

16. Please explain your response to the previous question. Please provide examples if possible \*

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17. The peer and self-assessment allowed to develop my reflective skills \*  
 Mark only one oval.

- Agree
- Neutral
- Disagree
- Other: \_\_\_\_\_

18. Please explain and provide examples regarding your answer to the question above \*

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19. The peer and self-assessment allowed to develop skills to evaluate my own work \*

*Mark only one oval.*

- Agree  
 Neutral  
 Disagree  
 Other:

\_\_\_\_\_

20. Please provide an explanation and examples regarding your answer to the previous question if possible \*

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21. In peer assessment I prefer \*

*Mark only one oval.*

- To select my own partner  
 That the instructor assigns partners  
 Any of the two is fine with me  
 Other: \_\_\_\_\_

22. Please explain your response to the previous question and provide examples if possible \*

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23. This course significantly increased my knowledge \*

*Mark only one oval.*

- Agree  
 Neutral  
 Disagree  
 Other

24. Please explain if you selected other above

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25. The way this course was taught accommodated my learning needs \*

Mark only one oval.

- Agree
- Neutral
- Disagree
- Other

26. Please explain your choice above

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27. What did you like about (benefits and advantages) peer assessment in this class? \*

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28. What did you not like (disadvantages or difficulties) about peer assessment in this class? \*

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29. What did you like (benefits or advantages) about self-assessment in this class?

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30. What did you not like (disadvantages or difficulties) about self-assessment in this class?

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31. **Have you ever used peer and/or self-assessment before this course? \***

*Mark only one oval.*

- Yes I have used both peer and self-assessment before this course
- I have only used peer assessment before
- I have only used self-assessment before
- No I have not used peer or self-assessment before this class

32. **Any additional comments about peer and self-assessment in this class**

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