Assignment 3: Review of Online Self and Peer Assessment

ETEC 580

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Review of Online Self and Peer Assessment

Introduction

Online self and peer assessment have received much attention in recent years due to increased interest in student-centred approaches as well as technological advancements (Kearney, 2013; Harrison, Ohara, & McNamara, 2015). The purpose of this review is to explore the literature regarding these approaches in detail in order to identify overarching themes as well as areas for further research. Together, the articles in this review provide a comprehensive description of what self and peer assessment entail and cover topics related to formative vs. summative use, online delivery, best practices, benefits, and concerns.

Methodology

The majority of the articles in this review were found by searching the UBC library database using the key words self assessment, peer assessment, and online. Social network analysis and discussion (i.e. discussion forums) were also used as search terms in order to draw connections to these important areas in education. The results of this search were refined to articles that were scholarly and peer reviewed, available online, and published between the years 2005 and 2018. The results were even further refined to articles that focused on adult learners in higher education (at various levels of study in different programs). Samples ranged in size from fewer than 100 to over 1000. In total, 19 articles were included in this review.

Discussion

Self and Peer Assessment

There is currently a need in higher education for student-centred assessment approaches that are formative and teach students important 21st century skills (Kearney, 2013; Wanner & Palmer, 2018). Self and peer assessment have been gaining increasing attention in response to

these needs and the shortcomings of traditional assessment approaches (Adachi, Tai, & Dawson, 2018; Kearney, 2013; Wanner & Palmer, 2018). Unlike traditional approaches, self and peer assessment give students more control in the assessment and learning process (Wanner & Palmer, 2018) and can can lead to students learning a number of different 21st century skills.

Self and peer assessment require students to actively create assessment criteria, assess themselves and their peers, and construct feedback. Self assessment entails reflecting upon and evaluating the quality of one's own work and learning against particular criteria (Adachi et al., 2018; Wanner & Palmer, 2018). This process helps students determine whether or not they've met learning goals. It also helps them identify strengths and weaknesses in their work and make improvements as necessary (Wanner & Palmer, 2018). Peer assessment entails students evaluating the quality of each others' work against particular criteria and providing feedback (Adachi et al., 2018). Peer assessment can be used for individual assignments (assessing the product of each others' work) as well as group projects (assessing the product and/or process of each others' work) (Adachi et al., 2018; Wanner & Palmer, 2018).

Formative vs Summative Assessment

Self and peer assessment appear to be used mostly for formative purposes. This is partly because they are effective tools for helping students reflect upon and improve their work over time (Wanner & Palmer, 2018). Using a formative approach is also in line with current trends towards assessment for learning and providing learners additional opportunities for learning (Cukusic, Garaca, & Jadric, 2014; Wanner & Palmer, 2018).

There is some disagreement in the literature over whether self and peer assessment should be used for summative purposes. Wanner and Palmer (2018) state that summative self and peer assessment is neither effective nor valued by students. They claim that these approaches

should only be used as formative tools with the focus being on developing important skills (assessment for learning) rather than grades (assessment of learning). Admiraal, Huisman, and Ven (2014) state that the quality of self and peer assessment models need to be improved if they are ever to be used for summative purposes. Kearney, on the other hand, incorporates both formative as well as summative self and peer assessment into his assessment model and says both are useful (Kearney, 2013).

Online Delivery

Self and peer assessment were first administered in paper-based formats; however, as the trend towards online and flexible delivery formats has grown, so has the popularity of online tools (Adachi et al., 2018; Wanner & Palmer, 2018). These tools are not a new phenomenon and many have already been evaluated in the literature (Anne Delaney, Fletcher, Cameron, & Bodle, 2013). Adachi et al. (2018) highlight this fact by stating that any issues with online platforms have more to do with the complexities and capabilities of these platforms rather than there being a lack of options.

Online self and peer assessment are preferable to paper-based methods for numerous reasons. Wu, Chanda, and Willison (2014) found that the latter resulted in the same mark being awarded to each student without any feedback in group projects. This discredits and de-values the individual contributions of each student (Wu et al., 2014). Online tools are much more efficient; especially when dealing with large class sizes (Anne Delaney et al., 2013; Thompson & McGregor, 2009). They are able to handle larger amounts of data and perform complex calculations quicker. They also make student anonymity possible, which is beneficial in the peer assessment process. Additional benefits such as sending automatic updates and reminders to students in order to improve participation were also noted (Cheng et al., 2014).

Social learning analytics. Another reason that online platforms are preferable to paper-based methods is because of their ability to produce learning analytics data. Social learning analytics, a subset of learning analytics, can be particularly useful for peer assessment. It can produce individual as well as group metrics that can explain how students interact and learn through social interactions (Chen et al., 2018; Stewart & Abidi, 2012). Visualizations like sociograms, in which students are represented as nodes and interactions as lines connecting the nodes, can also be used to analyze communication patterns (Stewart & Abidi, 2012). This can help instructors see relationships between students and how they influence the overall network (Stewart & Abidi, 2012).

One specific way that social learning analytics can be applied is through peer assessment activities in discussion forums. Discussion forums allow students to post their work and receive feedback and can be particularly useful tools for peer assessment (Hou, Chang, & Sung, 2007; Lin, Hong, Wang, & Lee, 2011). Applying social learning analytics to discussion forums can help instructors identify the average number of feedback posts by each student and whether or not students are selectively only replying to certain students. It can help identify students who are providing the most feedback and those who are not providing enough (Chen et al., 2018; Stewart & Abidi, 2012). Both the numerical and visual information provided by social learning analytics can help instructors determine if students are engaging with their peers enough (i.e. supplying an appropriate amount of feedback) and intervene if necessary.

SPARK. One online tool that appears repeatedly throughout the literature and is widely used is SPARK (Self and Peer Assessment Resource Kit) and its more recent version, SPARK[PLUS] (Anne Delaney et al., 2013). SPARK was developed in response to the limitations of paper-based methods (Thompson & McGregor, 2009; Wu et al., 2014) and allows instructors to

set specific criteria that students can anonymously rate themselves and/or their peers against (Willey & Gardner, 2010). It can be used for both group as well as individual projects (Willey & Gardner, 2010; Wu et al., 2014). SPARK offers graphical feedback and can help students identify their strengths and weaknesses (Wu et al., 2014). It can also help analyze subtle group dynamics and issues (Thompson & McGregor, 2009; Willey & Gardner, 2010).

SPARK calculates three assessment factors when used to assess group work. The first is an adjustment factor called the Self and Peer Assessment (SPA) factor. This is multiplied by the overall group mark in order to produce an individual mark for each student (Thompson & McGregor, 2009). The second is the self assessment to peer assessment (SAPA) factor. This compares students' self assessment of their efforts to their peers' assessment of their efforts. A SAPA value of greater than 1 means that a student has rated themselves higher than their peers did on average. A SAPA value of lower than 1 indicates that they rated themselves lower. The third factor is a percentage mark (Willey & Gardner, 2010).

SPARK and SPARK[PLUS] were generally well received by researchers and instructors. Thompson and McGregor's (2009) study confirmed that the use of SPARK was preferable to paper-based methods as students exercised a more careful and reflective evaluation of group work. Thompson and McGregor (2009) also believed that SPARK could be used in any faculty where group assignments needed to be assessed in large classes.The study conducted by Willey and Gardner (2010) confirmed that the frequent and effective use of SPARK for self and peer assessment helped students achieve learning outcomes. Anne Delaney et al. (2013) also stated that SPARK facilitated the collection of important data and helped the grading process.

Student impressions of SPARK and SPARK[PLUS] were mixed. The majority of students in the study conducted by Willey and Gardner (2010) had positive impressions of SPARK and felt

that it improved group work as well as enabled constructive feedback and fairer assessment; however, the study conducted by Wu et al. (2014) revealed that half of the students felt that SPARK did not facilitate greater fairness compared to their previous group work experiences. Students in the study conducted by Anne Delaney et al. (2013) also rated their enjoyment of using the program low and did not believe that SPARK supported group work activities.

Implementation of Self and Peer Assessment

Wanner and Palmer (2018) state that self and peer assessment need to be carefully designed and implemented in order to be effective. An instructor-student approach must be taken as the instructor is key to self and peer assessments' successful implantation (Harrison et al., 2015; Wanner & Palmer, 2018). The instructor should facilitate the assessment process throughout by addressing student questions and concerns (Adachi et al., 2018; Wanner & Palmer, 2018). They should also help students develop key assessment skills (Wanner & Palmer, 2018).

Marks should be attached to both self and peer assessment as students will not engage with these processes or take them seriously otherwise (Kearney, 2013; Wanner & Palmer, 2018). The literature stresses the need to include instructor grading as well to moderate the process since the instructor ultimately possesses more assessment skill and course content knowledge (Kearney, 2013).

There are a variety of grading schemes and models mentioned in the literature. A mixed-incentive model in which students' final mark is a combination of a group and individual mark appears to be a popular approach for group assignments. This means that the final product of a project is assessed by the instructor while the process (i.e. teamwork process) is self and peer assessed (Anne Delaney et al., 2013; Harrison et al., 2015). The split of grades between the

instructor and students is not necessarily 50/50 (Anne Delaney et al., 2013). For example, the Authentic Assessment for Sustainable Learning (AASL) model attributes 40% of the total mark to instructor assessment, 30% to peer assessment, and 30% to self assessment (Kearney, 2013).

Students need to be introduced to both self and peer assessment early on before graded assessment even begins (Wanner & Palmer, 2018). They should be taught why the assessment process is important and why they are being asked to assess themselves as well as their peers (Adachi et al., 2018). This will ensure that students are actively engaged in the assessment process. Students should also be familiarized with how to use the online assessment system and what grade distributions will look like (Anne Delaney et al., 2013).

Students should be taught how to develop assessment criteria that are directly related to the work being assessed (Anne Delaney et al., 2013). It is important that the criteria are specific rather than focused on vague generalizations (Thompson & McGregor, 2009). The criteria should also relate to important 21st century skills that students are expected to demonstrate (Kearney, 2013). Assessment criteria for group work should reflect individual tasks to ensure accountability and an even distribution of work (Anne Delaney et al., 2013).

Students should also be taught how to give fair and constructive feedback that is both critical as well as positive (Adachi et al., 2018; Wanner & Palmer, 2018; Willey & Gardner, 2010). Students must be taught to highlight areas of improvement and not simply say something is good or bad (Adachi et al., 2018). They must also be taught how to use the feedback they've received to improve their own work (Wanner & Palmer, 2018). This will require students to develop trust in each others' assessment skills and exhibit modesty. Students need to learn to be empathetic and understanding of each others' feelings during the feedback process (Adachi et al., 2018).

The literature highlights the need for student practice before engaging in graded self and peer assessments (Kearney, 2013). Students should be given multiple opportunities to create assessment criteria as well as assess work and provide feedback (Kearney, 2013; Wanner & Palmer, 2018). Kearney (2013) proposes the idea of a pilot marking exercise in which students assess a sample assignment (similar to what they would see in future assignments); students first do this collaboratively and then individually.

Pilot marking has lead to more positive student attitudes towards self and peer assessment and improved confidence (Kearney, 2013; Wanner & Palmer, 2018). It helps students take ownership of the assessment process and feel more competent in giving and receiving feedback (Kearney, 2013; Wanner & Palmer, 2018). Wanner and Palmer (2018) state that this process will help students understand what high quality feedback looks like and how to go about making judgements about each other's work. It also ensures that students understand what type of work is considered exemplary and inadequate (Kearney, 2013).

After students have been adequately prepared for the assessment process, graded self and peer assessment can begin. Ideally, self and peer assessment should occur right after a student has submitted their work (e.g. within one week after submission) as students get the most value from timely feedback. It should occur well before students have to submit their final work as this ensures that students have enough time to revise and improve their work as necessary (Kearney, 2013; Thompson & McGregor, 2009; Wanner & Palmer, 2018). Self and peer assessment should also be implemented repeatedly as this has been shown to produce more reliable results (Tucker, 2014).

Students should remain anonymous throughout the peer assessment process as anonymity has been described as "essential" and more "fair" (Kearney, 2013; Wanner & Palmer, 2018).

This can help prevent bias during the marking process (i.e. students giving each other higher or lower marks based on knowing who they are). The majority of student feedback also indicates that students prefer to be anonymous when giving and receiving feedback (Kearney, 2013; Wanner & Palmer, 2018).

Benefits of Self and Peer Assessment

The most obvious benefit of using self and peer assessment is its ability to help students reflect upon and improve their work and learning (Ibabe & Jauregizar, 2010; Thompson & McGregor, 2009; Wanner & Palmer, 2018). Self assessment in particular really forces students to review their own work and identify its strengths and weaknesses. Students can also receive feedback on their work process, which can help them improve their performance. This is something instructors typically cannot evaluate as they can only see the product of students' final work (Adachi et al., 2018).

Self and peer assessment can also lead to increased engagement and motivation (Divjak & Maretić, 2017; Ibabe & Jauregizar, 2010). Willey and Gardner (2010) found that receiving multiple instances of peer feedback increased students' engagement and desire to learn. 74% of students in their study stated that self and peer assessment encouraged them to put more effort into their work. Self and peer assessment have been shown to help students better understand course content and become more productive (Harrison et al., 2015; Wanner & Palmer, 2018). They have also led to increased discourse regarding course outcomes and higher engagement with rubrics and standards (Adachi et al., 2018; Kearney, 2013).

Creating assessment criteria helps put students in the assessor mindset and reinforces the importance of following criteria (Wanner & Palmer, 2018). It can help students understand standard and quality requirements and better identify what constitutes good work. This will help

students make better judgements when assessing work and produce better work as well (Adachi et al., 2018; Wanner & Palmer, 2018).

Repeated use of peer assessment encourages peer learning, which can lead to numerous benefits. Peer assessment allows students to get feedback from multiple sources (not just their instructor) (Adachi et al., 2018; Harrison et al., 2015). This means that students can learn from a wider variety of perspectives (Adachi et al., 2018). Students also value being able to see their peers' work because they can learn from how others interpreted an assignment and make improvements to their own work as appropriate (Wanner & Palmer, 2018).

Using self and peer assessment can also lead to more timely feedback, which helps students to take better advantage of the feedback they receive and improve their work (Wanner & Palmer, 2018). Instructors often have huge workloads and need additional time to return feedback (Bouzidi & Jaillet, 2009). Since students are only assessing a small number of their peers, feedback can be returned in a much quicker fashion (Adachi et al., 2018; Willey & Gardner, 2010).

21st century skills. Self and peer assessment help students develop a number of 21st century skills. In addition to being able to effectively assess themselves and their peers (Wanner & Palmer, 2018) (Divjak & Maretić, 2017), there is strong evidence that self and peer assessment increases students' critical reflection skills (Kearney, 2013; Wanner & Palmer, 2018). Critical thinking is encouraged by having students objectively analyze and make decisions regarding the quality of the work being reviewed (Adachi et al., 2018; Harrison et al., 2015; Kearney, 2013; Willey & Gardner, 2010).

Taking responsibility in the assessment process also encourages students to become autonomous and self-directed learners (Cukusic et al., 2014; Harrison et al., 2015; Ibabe &

Jauregizar, 2010; Wanner & Palmer, 2018). Setting criteria, evaluating work, and providing and receiving feedback all require independent learning and decision making skills. Teaching students how to assess themselves and judge their own progress is also a necessary skill for lifelong learning (Harrison et al., 2015; Ibabe & Jauregizar, 2010; Kearney, 2013).

Peer assessment can teach students how to collaborate and work together to achieve learning outcomes (Adachi et al., 2018). It can also improve communication skills through the provision of feedback (Adachi et al., 2018). Self and peer assessment of individual performance in group projects can encourage students to participate and work together by rewarding good performance (Harrison et al., 2015; Kearney, 2013).

There is strong evidence in the literature that self and peer assessment can improve students' self awareness, self reflection, and metacognitive skills (Admiraal et al., 2014; Harrison et al., 2015; Wanner & Palmer, 2018; Willey & Gardner, 2010). Self and peer assessment encourage learners to reflect on their own work in relation to the assessment criteria and their peers' work (Adachi et al., 2018). This helps students determine the quality and value of their own work (i.e. identifying strengths and weaknesses) and learning (Harrison et al., 2015; Kearney, 2013; Wanner & Palmer, 2018).

Concerns with Self and Peer Assessment

There are multiple concerns related to the use of self and peer assessment such as low reliability and validity. These concerns have arisen partly because students worry that they lack the appropriate skills to perform assessment (Harrison et al., 2015); however, past research suggests that peer assessment is no more or less reliable than instructor assessment (Anne Delaney et al., 2013). Harrison et al. (2015) also state that self and peer assessment appear to be as valid as traditional assessment formats. Bouzidi and Jaillet (2009) found peer assessment to be

equivalent to instructor assessment (when there are at least four peers marking the work) and that using self and peer assessment together increases validity. Admiraal et al. (2014) also found the quality of self and peer assessment to be moderate; however, self assessment might not be a valid form of assessment due to student bias. Gender bias is mentioned as a concern (Anne Delaney et al., 2013); however, Tucker's (2014) study confirms that there is little evidence that gender bias affects the peer assessment process in any substantial way.

Another concern related to peer assessment is not receiving quality feedback (Wanner & Palmer, 2018). Students worry about getting feedback that lacks detail, is inconsistent, or is incorrect (Wanner & Palmer, 2018). Not every student will deeply engage with their peers' work and some may only provide surface level observations, which are not helpful to their peers (Adachi et al., 2018). Some students may also be "too nice" and not want to give their peers critical feedback. Students intentionally providing low quality feedback (academic misconduct) is also a concern (Adachi et al., 2018). However, proper education and training as well as attributing a grade to the quality and usefulness of feedback may alleviate these concerns (Willey & Gardner, 2010).

The amount of time needed for instructors to implement self and peer assessment is also a concern due to conflicting claims in the literature. The study conducted by Harrison et al. (2015) highlights these conflicting opinions. Some articles state that when implemented effectively, self and peer assessment can free up instructor time by displacing some of the workload onto students (Cukusic, Garaca, & Jadric, 2014); however, others suggest that its design and implementation (including facilitation) are complex and time consuming (Adachi et al., 2018; Wanner & Palmer, 2018). Instructors in the study conducted by Anne Delaney et al. (2013) found self and peer assessment time consuming.

Additional concerns may also arise over whether self and peer assessment have a positive impact on students' grades. There was a positive relationship observed between the use of self assessment and improved grades in the study conducted by Ibabe and Jauregizar (2010). Cukusic et al. (2014) also found that self assessment had a positive effect on students' pass rates. However, Wanner and Palmer (2018) did not observe this relationship for both self and peer assessment. While they argue that the focus should be on assessment for learning rather than assessment of learning, these conflicting results may still lead to a reluctance to implement these approaches.

Student Opinions

Overall, the literature demonstrated that students' feelings towards self and peer assessment were mixed. Students in the studies conducted by Wanner and Palmer (2018) as well as Divjak and Maretić (2017) valued formative self and peer assessment and its benefits. Students in Kearney's (2013) study expressed that they wanted to be part of the assessment process as long as they had been trained to do so; however, they did not like relying on each other for marks and wanted marking to be moderated by an expert (Kearney, 2013). A small percentage of students in the studies conducted by Wanner and Palmer (2018) as well as Divjak and Maretić (2017) also expressed that these activities should have more instructor oversight and that their peers did not have the required assessment skills. A similar sentiment was expressed by a small percentage of students in the study conducted by Willey and Gardner (2010).

A common theme in the literature is that students appear to possess an inherent bias against peer assessment (Wu et al., 2014). Many students are hostile and suspicious of it and don't agree with its use (Wu et al., 2014; Wanner & Palmer, 2018). They worry about the fairness and quality of feedback they will receive and are concerend about bias, trust,

favouritism, and even collusion (Thompson & McGregor, 2009; Wanner & Palmer, 2018; Wu et al., 2014).

Conclusion

Current research into self and peer assessment have produced some conflicting claims regarding the effectiveness of summative assessment approaches, whether self and peer assessment save instructors' time, and whether self and peer assessment can have a positive impact on students' grades. The amount of mixed student feedback regarding these approaches is also concerning; however, general attitudes towards self and peer assessments' use remain largely positive. This can be attributed to the variety of learning benefits these approaches offer students.

As self and peer assessment continue to gain attention and be used in higher education, additional research will need to be performed to address gaps and conflicting evidence in the literature. Some additional areas for research are as follows:

- Self and Peer Assessment Platforms: SPARK was one of the only online tools that was evaluated in depth in the literature. Additional research needs to be performed in order to determine the efficacy of different self and peer assessment tools (Adachi et al., 2018).

- Design and Implementation: Wanner and Palmer (2018) highlight the need for additional research on how to optimize the design and implementation of self and peer assessment. Literature in this area clearly exists but additional research may provide insights into this important aspect of self and peer assessment.

- Student Bias: Tucker's (2014) study confirms that gender bias does not affect the peer assessment process; however, further research should be done to identify whether other types of bias do.

- Cross Course Comparisons: This review did not narrow its scope to a particular type of course (e.g. math or business courses). Further research could be done to determine if there are particular types of courses that self and peer assessment are most effective with.

- Negative Student Attitudes: Wanner and Palmer (2018) state that negative student attitudes are one of the biggest challenges to the successful implementation of self and peer assessment; therefore, further research should be done on how to change these attitudes.

- Long Term Effects: Self and peer assessment have not been in use for as long as their traditional counterparts have. More longitudinal studies are required in order to truly understand the impact and value of self and peer assessment (Harrison et al., 2015).

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