

The Use of Peers in Assessment for Learning: A Case Study of Trainee Teachers at Bindura University of Science Education (BUSE), Zimbabwe

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Abstract

The study was an exploration of trainee teachers' understanding, perceptions of, and confidence in the use of peers in assessment for learning (AfL) at Bindura University of Science Education, Zimbabwe. Trainee teachers were enrolled in a programme that used a blended model of teaching and learning between February and June 2021. Trainees participated in online seminars and peer assessment in a course on curriculum development and completed questionnaire eliciting their attitudes toward peer assessment. A mixed-methods approach using both quantitative and qualitative methodologies was adopted. Quantitative data were analysed using descriptive statistics, mean item scores and the summated scores for the three constructs of confidence, benefits of and threats to peer assessment. Open-ended items were analysed qualitatively and emerging themes were reported. Summated scores of 4, meant trainees had positive attitudes toward peer assessment and believed in numerous benefits of using peer assessment. A summated mean score of 3 for threats to peer assessment meant trainee teachers had neutral views to the construct. Conflicting messages were evident. The same trainees who believed that peer assessment was useful still doubted sincerity of peers and preferred teacher assessment. Further research, using a larger population and sample and interviews to probe doubts in peer assessment, is recommended..

Keywords: attitude, confidence, peer assessment, trainee teacher

Introduction

Universities the world over use formative assessment and evaluation to improve teaching and learning. Summative evaluation is used to assist decision-making about course improvement, individual learners and administrative regulations. Feedback provided in formative assessment

is important in helping students to attain educational goals. Lecturer and peer assessment are two forms of assessment among many, that can provide useful feedback to trainee teachers and the BUSE university system. It is widely recognised that feedback is a core component of the learning process the world over. Research has, however, shown that trainee teachers are not satisfied with feedback from their lecturers. Attempts to increase trainee teachers' satisfaction through enhancing the quality of the feedback information provided by lecturers are problematic (Nicol, Thomson & Breslin, 2014). The provision of detailed feedback increases the workload of lecturers, more so in contexts where resources are inadequate. Besides, lecturers' feedback to trainee teachers is often seen as one-way transmission process. There is need to continuously re-examine feedback and how it is conceptualised at institutions of higher learning, for example, Bindura University of Science Education (BUSE) in Zimbabwe.

Peer, together with self-assessment, are aimed at making trainee teachers take responsibility for their learning (Harlen, 2007). They learn to identify their own learning needs and develop their own next steps. Peer-assessment is an essential component of assessment for learning because it can help trainee teachers to direct their activities towards their learning goals. Trainee teachers' understanding of what 'good work' looks like relates to the need to develop appropriate success criteria. According to Harrison and Harlen (2006) the four aspects of self-assessment are self-monitoring and checking progress, diagnosis and recognition of learning needs, promoting good learning practices, and linking learning practices. Before examining the concept of peer assessment in detail, it is essential to define AfL.

Assessment for Learning (AfL) has been defined as the process of seeking and interpreting evidence for use by learners and their teachers to decide where learners are in their learning, where they need to go and how best to get there (Assessment Reform Group, 2002). Lecturers use AfL to establish what trainee teachers know, don't know and partly know (misconceptions). They can carry out AfL through talk, questioning, feedback, self- and peer-assessment. All these modes of AfL are dependent on the classroom environment, and teaching and learning culture.

AfL can be defined from a socio-cultural perspective. For example, a second generation thinking defines AfL as "part of everyday practice by students, teachers and peers that seeks, reflects upon and responds to information from dialogue, demonstration and observation in ways that enhance ongoing learning" (Klenowski 2009, p.264). Embedded in the second generation thinking, AfL aims to produce self-regulated learners. From a socio-cultural

perspective learning is viewed as a socially situated practice seeking development of identity (Lave & Wenger, 1991).

Peer assessment

Peer assessment is an arrangement for learners to consider and specify the level, value or quality of a product or performance of other equal-status learners (Topping, 2009; Tillema, 2010). Equal status implies trainee teacher assessing another trainee teacher, and peer constellation can vary in directionality (one way or reciprocal), group size (pairs or small groups), goals (cognition or time saving), and modes used (Topping, 2009).

Participating in peer assessment introduces students to each other's experiences as learning resources (William, 2011). Some examples are negotiated marking rubrics co-constructed between lecturer and students, using the rubrics in discursive ways, and peer and group assessment practices (Charteris, Quinn, Parkes, Fletcher, & Reyes, 2016). AfL is complex in that it requires engagement and symbiosis among many factors (e.g., lecturers, trainee teachers, and institution), and each of these factors may impede successful implementation (Xu & Harfitt, 2019).

Peer assessment builds on the notion of learning as a co-constructivist activity; whereby learning occurs as a result of social interaction (Harrison & Harlen, 2006; Tillema, 2010), multiple acts of evaluative judgment about the work of peers, and through a reflective process of their own work. (Nicol, Thomson & Breslin, 2014). Peer assessment is a reciprocal process (Nicol, Thomson & Breslin, 2014). The benefits of PA are both diverse and inclusive (Falchikov, 2005). We, however, explore whether the benefits of learning as a co-constructivist activity, multiplicity of evaluative judgments, reflective process and reciprocity are evident to the trainee teachers?

There are many different forms of self- and peer assessment. The methods listed by Lindsay & Clarke (2001) are peer-marking, paired-marking, plenary peer-evaluation, and self-assessment journals. Through peer-marking trainee teachers can identify three areas where they believe their peers achieved the learning intention and one area they believe needed addressing. In paired marking, a partner is encouraged to mark the work and offer suggestions for closing the gap and help one another to make an improvement. Paired marking offers trainee teachers' opportunity to demonstrate their understanding through the assessment comments (Lindsay & Clarke, 2001). Self-assessment journals demonstrate trainee teachers' ability to reflect on their work and to suggest what they need to do next time in order to take account of what they have

learnt from a particular experience (Lindsay & Clarke, 2001). Lecturers, on the other hand, learn more about their trainee teachers through self- and peer-assessment and are therefore able to help the trainee teachers more effectively. What are the commonly used forms of peer assessment? What is the preference of trainee teachers?

Stow (1997) suggested tools and techniques that can be used for peer assessment. These are concept mapping, colouring squares to indicate confidence in achieving a particular goal, jig sawing and traffic lighting, question setting, and comments-only marking. In peer assessment green can be used if presentation was better than they could have given themselves, amber if presentation was as good as they could have given themselves, and red if presentation was not well explained (Stow, 1997). Peer assessment both engages trainee teachers in being reflective about the task in hand and the way they learn, and therefore encourage a deep approach to learning (Harrison & Harlen, 2006). Peer assessment has been found to develop skills e.g., metacognition, communication, self-evaluation, observation and self-criticism through assessing own peers (Harmer & McDowell, 2007). The benefits reported in literature may not be so obvious to trainee teachers who for years have relied on lecturer assessment.

Towards a theory of AfL and peer assessment

William (2007) attends to the *why*, the *what*, and *how* of using assessment to improve learning and proposes five strategies that encompass the terrain of AfL. These five strategies should be seen as a range from which lecturers can pick what works for them (William, 2007; William & Thompson, 2007). Thus, lecturers need to view teaching as a matter *phronesis* not *episteme* (William, 2007) – knowing the conditions under which a particular technique is likely to work. First, clarifying and understanding learning intentions and criteria for success. Second, eliciting evidence of achievement e.g., through questioning. Third, providing feedback on how to improve or move student forward. Fourth, activating students as instructional resources for each other, that is, as people involved in helping each other learn. Fifth, activating students as owners of their own learning. The five strategies embody pedagogy of engagement (active participation) and pedagogy of contingency (William, 2011). The idea being to use evidence of student learning to adapt teaching and learning to meet student needs.

A complete theory informing assessment for learning must attend to four key issues. AfL is based on making understanding knowledge visible (Hattie, 2008). Further, feedback has a positive effect on achievement. Third, according to the attribution theory, people explain their

own successes or failures to themselves in different ways. Lastly, AfL is informed by metacognition (Black, 2015) where all learners need to reflect on their own learning.

A number of AfL benefits have been reported in literature. These include improving student outcomes, self-efficacy, self-regulatory learning (Harrison & Harlen, 2006; Harlen, 2007; Nicol, Thomson & Breslin, 2014; Pandero & Brown, 2017; Pandero, Andrade & Brookhart, 2018) and changing the culture of the classroom (Klenowski, 2009; William, 2011). Despite the obvious benefits there are numerous misconceptions. Five of these are the belief that lecturers who use AfL will lose control of their class, that peer chatting is a distraction, that only examinations matter in assessment, that assessment is one-way process where lecturer gives student feedback about their work, and that student work should always be given a grade or mark. The misconceptions listed in this paragraph are often coupled with challenges faced when using AfL. Misunderstandings among lecturers and students. Second, need for training and time for lecturers and students to develop a good understanding of AfL. Third, fear for change threatens implementation of AfL. Besides getting it right can be a challenge. Lastly, the classroom culture may be incompatible with AfL.

Social constructivist perspective of peer assessment

A social constructivist paradigm that views feedback as a dialogue (Nicol *et al*, 2014) provides trainee teachers with opportunities to analyse, ask questions, discuss and connect new messages received with prior knowledge (Nicol *et al*, 2014; Nicol, 2010). As a component of assessment for learning (AfL), peer assessment, has potential to actively engage trainee teachers with feedback processes. In fact, AfL is widely recognised as a critical driver of student learning when implemented well (Xu & Harfitt, 2019).

Research is required to establish preparedness of trainee teachers and their attitudes toward peer assessment. Trainee teachers' experiences, beliefs, and attitudes towards PA are important determinants whether it is effectively used (Panadero & Brown, 2017). Beliefs are a precursor (Ajzen, 1991) or guide to attitudes, perceptions and behaviour (Pajares, 1992). Trainee teachers acquire most of their beliefs and attitudes about teaching, assessment and evaluation before they begin their professional study (Gilbert, 1997), and these *a priori* beliefs and attitudes may need to be reshaped (Gilbert, 1997) so that trainee teachers perceive peer assessment as an effective tool in learning to become teachers.

Statement of the problem

Some studies have reported that trainee teachers finding their lecturers' assessment and feedback unsatisfactory (e.g., Nicol, Thomson & Breslin, 2014). Likewise, other studies have found that overworked and under-resourced lecturers were ill-prepared to provide effective assessment and feedback (e.g., Topping, 2009). Peer assessment promises to be an effective alternative or complement to lecturer assessment. However, unless trainee teachers value peer assessment as a co-constructivist activity, they may not take feedback from peers who they consider to be ordinary equals with themselves seriously (Topping, 2009). The uptake of AfL in teacher education in Zimbabwe being rather inadequately researched, this study seeks to explore the trainee teachers' understanding, confidence in and perceptions of, and preparedness for the use of peers in assessment for learning within the context of Higher Education Institutions in the country.

Research questions

In order to guide the study, the following research questions were asked:

1. What are trainee teachers' understanding of peer assessment?
2. How confident are trainee teachers in the use of peer assessment in their learning?
3. What are the benefits of peer assessment as perceived by trainee teachers?
4. What are the trainee teachers' views of factors that threaten the use of peer assessment?

Methodology

A mixed methods approach, using both quantitative and qualitative methodologies, was adopted in an exploratory case study. Trainee teachers enrolled in a degree programme in mathematics and science education at Bindura University of Science Education, were taught through a blended model of online and face-to-face teaching and learning. BUSE is a state university located in Mashonaland Central, Zimbabwe whose mandate is to train secondary mathematics and science teachers. First, during the semester running from February to June 2021, trainees learning to become secondary teachers through a block release programme were asked to form small groups, prepare and make online seminar presentations on curriculum development topics. The groups exchanged their work and used online peer assessment to award a mark and give feedback to another group. The groups forwarded marks to the lecturer and these were compared with lecturer assessment marks, which had been awarded separately. The groups used assessment rubrics or criteria that had been provided by the lecturer.

Second, as a follow up to peer assessment task, trainee teachers were asked to complete an online questionnaire divided into four sections: biodata, confidence in peer assessment, benefits of PA, and threats to PA. This part of the study was quantitative in nature. The questionnaire was made up of close-ended items, 5-point Likert scale, and open-ended items. We adopted the items measuring the two constructs of confidence in PA and benefits of PA from three sources Chan (2010); Huisma, Saab, va Driel & van Den Broek (2020); and Karaca (2009). Data collected was analysed using frequency counts to determine the views of the majority. The 5-point Likert scale was used to measure trainee teachers' sentiments towards confidence in peer assessment, benefits and threats to peer assessment. The statements defining confidence in peer assessment, benefits of and threats to peer assessment were listed, and we recorded the percentage of respondents choosing each response option as suggested in Warmbrod (2014). We determined mean item scores and the summated total score for confidence, benefits of and threats to peer assessment we calculated total number of responses for each item and multiplied the numerical value of each sentiment level by the amount of response. We added the totals and divided by the sample size (number of respondents) to get the mean item score. In order to get the sentiment score for each construct, we added the mean item scores and divided the total by number of items for the construct (Warmbrod, 2014). Third, responses to open-ended items of the questionnaire were analysed qualitatively and emerging themes are reported here in.

Findings

The findings of the study are presented under four headings: biodata of trainee teachers, emerging issues from peer assessment task, confidence in peer assessment, advantages of peer assessment as perceived by trainee teachers, and threats to peer assessment.

Biodata of trainee teachers

The gender distribution of trainee teachers who participated in the study was 44% male and 56% female. A proportionality large number of females were studying STEM related disciplines at Bindura University of Science Education, the university studied. In terms of age 3% of the trainee teachers were less than 21 years old, a majority of 61% were aged 21-30 years, and 36% were over 30 years old.

The study sought distribution of trainee teachers by area of study. In terms of specialism 17% were doing Biological Sciences, 22% Chemistry, 56% Mathematics, and 5% Physics. Another area of specialism offered at the university studied was Geography. However, in the

completed questionnaire none reported Geography as area of specialism because at that time there were no takers of the subject. All the trainee teachers (100%) were enrolled as undergraduate trainee teachers in Part 2:1. Further, the trainee teachers were asked to report their work experience. All had work experience, and this ranged from less than 3 years (28%), between 3 and 5 years (36%) to more than 5 years' work experience (36%).

Peer assessment task

Trainee teachers worked in four small groups in different formats: face-to-face, and on WhatsApp group they had created. They presented discussions, marks and reasons why they had awarded the mark.

Group 1 awarded 65% to the presentation made by Group 2. When one reads comments and looks at the reasons put forward for the mark awarded, a number conflicting issues emerge. One reason given was failure by Group 2 to provide a PowerPoint presentation. While this could have been helpful in making an aural or visual presentation, instruction given to trainee teachers did not spell out this to be a requirement. Format of presentation was flexible. Group 1 focussed on the peripherals.

We have created a group on WhatsApp ... we awarded them 65 out of 100 ... because it was an audio done, the group did not have a PowerPoint (Group1).

Further, Group 1 acknowledges that the Group 2 managed to correctly identify factors that enhance curriculum implementation. They were correct in stating that Group 2 did not clearly explain how the same factors that enhance curriculum implementation, become factors that hinder curriculum implementation, that is, in the negative form, for example, lack of human and material resources impedes successful curriculum implementation.

On examining the factors that hinder curriculum implementation... We highlighted some of the points that needed correction for example the group we assessed highlighted human, physical, material and financial as factors that hinder curriculum implementation but later on failed to highlight points they have explained as to which category it falls under (Group 1).

Group 2 comments on what Group 1's work is clear and informative about what they found to be good in the presentation. They used expression like 'informative', using citations to define key terms, 'well articulated', and demonstration of understanding through use of 'examples' cited.

Quite an informative presentation. The introduction managed to give highlights on what the presentation was to delve into. Important / key terms were defined and several scholars were consulted. We had a lot to learn. The points were well articulated and easier to follow and they were also well expanded. We liked the examples for examples, the issue of Better Schools Programme and computer curricula. (Group 2).

Furthermore, Group 2 are clear on two other factors that Group 1 could have included to make their work even better, that is, including ‘leadership and culture’ as factors that hinder curriculum implementation. Despite that criticism, Group 2 still awarded 90%, a mark that looks too high.

However, we wish to add that they could have also argued the point of "leadership and culture" which they placed on the factors that enhance curriculum implementation. That point we would also want to think can also hinder curriculum implementation, given that some leaders/ cultures view the implementation of a particular curricula as a threat to their culture. We suggest a 90% for the job well done (Group 2).

The excerpt below is Group 3 commenting on presentation by Group 4: This was a discussion on WhatsApp and pseudonyms were used for confidentiality and anonymity of the trainee teachers.

Dmazue: I think if we award then 60% is not bad

Topaz: seconded.

Mkushwa: There was need to link the explanations with the needs of the question. Generally, no introduction, conclusion and reference. Psychological consideration not examined but copied and pasted under philosophical orientation.

Kerol: no examples given hence not directly referring to Zimbabwe curriculum or any.

The conversation above by Group 3 members provides an insight into thought processes as the trainee teachers were going through presentation by Group 4. Their struggles are evident when they finally agree on a mark less than 60%. The struggle can be described as *building the criteria* for decision making (assessment decision).

In all the peer assessments above it was evident that trainee teachers had a good understanding of the assessment criteria. They were looking for an introduction, clearly spelling out the focus of the presentation; definition of key terms used in work presented. They expected presenters to raise a point, explain, and use examples from their areas of specialism

to illustrate understanding. They looked for evidence of wide reading. Lastly, they expected presenters to summarise their presentation.

Trainee teachers' understanding of peer assessment

Trainee teachers were asked "What is peer assessment?" and answers to the question revealed four ways of conceptualising peer assessment. First a large number of trainee teachers ($f = 25$ or 69%) defined peer assessment as marking or grading trainee teachers' work by trainee teachers. We label this 'simple assessment'. Second, trainee teachers who gave a more complex view of peer assessment made reference to assessment criteria. Trainee teachers defined peer assessment as understanding grading criteria. Such a definition implies that trainee teachers would like to be involved in the development of the assessment criteria, and that if they understand the assessment criteria then they will be able to carry out peer assessment with confidence. Third, trainee teachers understood peer assessment as something directed at learning. They defined peer assessment as self-regulated learning, structured learning, and as a useful process for purposes of learning. Peer assessment is directed towards learning, where trainee teachers take a leading role. Altogether 18 responses (50%) mentioned learning. Fourth, trainee teachers defined peer assessment as critique and feedback. This was considered to be the most complex answer. The description implies that peer assessment involves criticism of other trainee teachers' work and sharing feedback. In the process both the assessor and examined trainee teacher stand to benefit. This response came from a minority of trainee teachers ($f = 5$ or 14%).

Confidence in peer assessment.

Trainee teachers were asked to express their sentiments on statements describing confidence in peer assessment. The distribution of respondents is displayed in Table 1 below.

Table 1: Confidence in the quality of feedback given to and received from other trainee teachers (n = 36)

Confidence in the quality of feedback	5	4	3	2	1
	f	f	f	f	f
	(%)	(%)	(%)	(%)	(%)
7. The peer feedback I provide to other trainee teachers is useful.	21 (58)	15 (42)	0 (0)	0 (0)	0 (0)
8. The peer feedback I give to other trainee teachers helps them to improve their work.	18 (50)	14 (39)	4 (11)	0 (0)	0 (0)
9. The peer feedback I receive from other trainee teachers is of good quality.	14 (38)	18 (50)	3 (9)	0 (0)	1 (3)
10. The peer feedback I receive from other trainee teachers helps me to improve my work.	15 (42)	18 (50)	3 (8)	0 (0)	0 (0)
11. The ability to give constructive feedback is important	19 (53)	12 (33)	4 (11)	0 (0)	1 (3)
12. The ability to deal with critical feedback is important.	11 (31)	17 (47)	8 (22)	0 (0)	0 (0)
13. The ability to improve one's work based on received feedback is important.	17 (47)	19 (53)	0 (0)	0 (0)	0 (0)
14. The ability to improve one's work based on received feedback is important.	16 (44)	15 (42)	4 (11)	1 (3)	0 (0)

KEY: Strongly Agree (SA) = 5 Agree (A) = 4 Not Sure (NS) = 3

Dis-Agree (DA) = 2 Strongly Dis-Agree (SDA) = 1

The study sought trainee teachers' confidence in the quality of feedback given to and received from peers. The general trend of the responses is that the trainee teachers have confidence in the quality of feedback. The level of agreement to statements describing confidence in the quality of feedback ranged from 78% for knowing the importance of ability to deal with critical feedback to a maximum of 100% for providing others with useful feedback, and importance of ability to improve one's work based on feedback received. While the majority of trainee teachers agreed that 'peer feedback given to others helps them to improve their work', that

‘ability to give constructive feedback is important’, that ‘ability to deal with critical feedback is important’ and that ‘ability to improve one’s work based on received feedback is important’, a sizeable number 11% to 22 % were not sure. This would seem to suggest that some trainee teachers doubted place of constructive and critical feedback in improving one’s work. We calculated mean item scores for ‘*confidence in the quality of feedback*’ construct, and determined summated total score using a composite of responses to the 8 items as shown in Table 2 below.

Table 2: Mean item scores for confidence in the quality of feedback (n = 36)

Confidence in the quality of feedback	Mean Item Score
7. The peer feedback I provide to other trainee teachers is useful.	5
8. The peer feedback I give to other trainee teachers helps them to improve their work.	4
9. The peer feedback I receive from other trainee teachers is of good quality.	4
10. The peer feedback I receive from other trainee teachers helps me to improve my work.	4
11. The ability to give constructive feedback is important	4
12. The ability to deal with critical feedback is important.	4
13. The ability to improve one’s work based on received feedback is important.	4
14. The ability to improve one’s work based on received feedback is important.	4
Summated total score value	4

For the construct ‘confidence in the quality of feedback’, the summated score value of 4 suggests that trainee teachers agreed that they had confidence in the quality of peer assessment.

Perceived benefits of peer assessment

Trainee teachers were asked to express their sentiments on statements describing benefits of peer assessment. The distribution of respondents is displayed in Table 3 below.

Table 3: Benefits of peer assessment (n = 36, f%)

Benefits of peer assessment	5	4	3	2	1
	f	f	f	f	f
	(%)	(%)	(%)	(%)	(%)
15. Peer assessment gives trainee teachers a sense of ownership of the assessment process.	20 (56)	13 (36)	3 (8)	0 (0)	0 (0)
16. Peer assessment helps trainee teachers to be committed to the learning outcomes.	17 (47)	17 (47)	2 (6)	0 (0)	0 (0)
17. Peer assessment encourages trainee teachers to take responsibility of their own learning.	16 (44)	19 (53)	1 (3)	0 (0)	0 (0)
18. Peer assessment helps trainee teachers to become autonomous learners.	13 (36)	16 (44)	6 (17)	0 (0)	1 (3)
19. Peer assessment encourages trainee teachers to critically analyse work done by other trainee teachers.	15 (42)	15 (42)	5 (14)	0 (0)	1 (2)
20. Peer assessment helps trainee teachers to develop self-assessment abilities.	15 (42)	14 (39)	5 (14)	1 (2.5)	1 (2.5)
21. Peer assessment encourages deep learning.	13 (36)	15 (42)	7 (19)	0 (0)	1 (3)
22. Peer assessment helps to clarify assessment criteria.	17 (47)	11 (31)	8 (22)	0 (0)	0 (0)
23. Peer assessment gives trainee teachers a wider range of feedback.	15 (42)	13 (36)	8 (22)	0 (0)	0 (0)
24. Peer assessment develops a range of transferrable skills.	15 (42)	18 (50)	2 (6)	0 (0)	1 (2)
25. Peer assessment promote trainee teacher-trainee teacher interaction.	25 (69)	8 (22)	1 (3)	0 (0)	2 (6)
26. Peer assessment enhances understand for both the trainee teacher being assessed and the assessor.	18 (50)	10 (28)	6 (17)	0 (0)	2 (5)

We calculated mean item scores for ‘*benefits of peer assessment*’ construct, and used the 12 mean scores to compute summated total score as shown in Table 4 below.

Table 4: Mean item scores and summated total score for ‘*benefits of peer assessment*’ construct (n = 26)

Benefits of peer assessment	Mean Item Score
7. Peer assessment gives trainee teachers a sense of ownership of the assessment process.	4
8. Peer assessment helps trainee teachers to be committed to the learning outcomes.	4
9. Peer assessment encourages trainee teachers to take responsibility of their own learning.	4
10. Peer assessment helps trainee teachers to become autonomous learners.	4
11. Peer assessment encourages trainee teachers to critically analyse work done by other trainee teachers.	4
12. Peer assessment helps trainee teachers to develop self-assessment abilities.	4
13. Peer assessment encourages deep learning.	4
14. Peer assessment helps to clarify assessment criteria.	4
15. Peer assessment gives trainee teachers a wider range of feedback.	4
16. Peer assessment develops a range of transferrable skills.	4
17. Peer assessment promote trainee teacher-trainee teacher interaction.	4
18. Peer assessment enhances understand for both the trainee teacher being assessed and the assessor.	4
Summated total score value	4

For the construct ‘benefits of peer assessment’, the summated score value was determined and the value of 4 suggests that trainee teachers agreed that they believed that peer assessment, particularly assessment of learning, has benefits.

Trainee teachers were asked to decide their preference between peer assessment and lecturer assessment and a majority preferred PA. The responses are shown in the table 5 below.

Table 5: Preference between peer (PA) and lecturer assessment (LA) (n = 36)

Preference between PA and LA	f	f %
Peer assessment	21	58
Lecturer assessment	15	42
Total	36	100

Further, trainee teachers were asked to say why they made such a preference. A number of reasons were suggested for preferring peer assessment. These are presented without preference to their value as expressed by trainee teachers. First, trainee teachers preferred peer to teacher assessment because they felt ownership and being in control of the process. They were motivated by active involvement and autonomy of peer assessment. Peer assessment is learner centred. Second, trainee teachers said that peer assessment provides wide range of opinions and ideas and feedback. Third, they claimed that peer assessment created a conducive learning environment of sharing ideas without fear. The third benefit closely matches what was described as ‘feedback’ by Toppling (2009). Fourth, peer assessment helped trainee teachers to develop self and peer assessment skills that were transferable and useful in life. Fifth, peer assessment offered trainee teachers the opportunity to develop a range of critical thinking skills and reflective practice.

Some trainee teachers, though fewer in number, preferred to be assessed by lecturers for a number of reasons. First, they believed that teacher assessment is professional, unbiased and authentic. It seems trainee teachers felt that only lecturers can provide standard and serious assessment. Second, they believed that teacher assessment is best placed to shape learning and determines achievement. Teacher assessment was seen as diagnostic and remedial, ultimately leading to structured learning. Third, some trainee teachers believed that only lecture assessment provides structured critique and feedback, and deeper and thorough assessment.

Perceived threats to peer assessment

Trainee teachers were asked express their sentiments on statements describing confidence in peer assessment. The distribution of respondents is displayed in Table 6 below.

Table 6: Threats to peer assessment (n = 36)

Threats to peer assessment	5	4	3	2	1
	f	f	f	f	f
	(%)	(%)	(%)	(%)	(%)
28. Peer assessment reduces the marking on the lecturer.	10 (28)	7 (19)	7 (19)	6 (17)	6 (17)
29. I do not believe that peers are able to assess my work fairly.	3 (8)	13 (37)	9 (25)	8 (22)	3 (8)
30. I do not believe that peers are able to assess my work accurately.	5 (14)	14 (39)	9 (25)	4 (11)	4 (11)
31. Trainee teachers may lack the ability to assess each other.	6 (17)	13 (36)	7 (19)	5 (14)	5 (14)
32. Trainee teachers may not take peer assessment seriously.	8 (22)	18 (50)	4 (11)	2 (6)	4 (11)
33. In peer assessment, trainee teachers' marking is influenced by friendship.	9 (25)	15 (42)	4 (11)	3 (8)	5 (14)
34. In peer assessment, trainee teachers are afraid of being discriminated against.	9 (25)	19 (53)	3 (8)	1 (3)	4 (11)
35. Feedback from peer assessment is as useful as feedback from a lecturer.	12 (33)	14 (39)	4 (11)	5 (14)	1 (3)

Trainee teachers' response as shown in Table 6 above would seem to suggest a majority believe that PA reduces the burden of marking on the lecturer. A sizeable 19% were neutral. Now if PA assessment is viewed as a way to reduce lecturer marking it implies trainee teachers doubt its usefulness in their learning. They are likely to fail to realise the benefits inherent in it. Forty-five percent 45% do not believe that peers are able to assess their work fairly. The scenario is worsened by the fact that 25% neither commit themselves to agreeing nor disagreeing when answering the question; they were neutral. 53% did not believe that peers are able to assess their work accurately. 25% were neutral. Peer assessment is threatened by beliefs that peers are not able to assess fairly, accurately, and do not take peer assessment seriously. Further, trainee teachers believe that peer assessment is influenced by friendship and thus are afraid of being

discriminated against. Contradictions are evident when the same trainee teachers believe that feedback from peer assessment is as useful as feedback from a lecturer.

Trainee teachers were asked to state what could be done to improve the effectiveness of peer assessment. They gave answers that can be grouped into 4 categories; training, trainee teacher involvement, university-wide use of PA, and adopting online peer assessment. First, six trainee teachers (17%) suggested training trainee teachers to use peer assessment. They felt that this way improvements can be realised. Second, trainee teachers wanted to be involved in the development of assessment criteria (25%). Such participation was likely to help them understand and be able to use the assessment criteria. Third, 42% of the trainee teachers suggested making peer assessment university wide, that is, adopting peer assessment in all courses offered by the university. They used expression like ‘all lecturers must use it’, ‘mandatory’ and ‘compulsory’. Fourth, 17% of trainee teachers suggested adopting online peer assessment, as well random selection of peers to assess one’s work.

We calculated mean item scores for ‘*threats to peer assessment*’ construct and used the 8 scores to compute summated total score shown in Table 7 below.

Table 7: Mean item scores of trainee teachers’ sentiments to threats of peer assessment (n = 36)

Threats to peer assessment	Mean item score
7. Peer assessment reduces the marking on the lecturer.	3
8. I do not believe that peers are able to assess my work fairly.	3
9. I do not believe that peers are able to assess my work accurately.	3
10. Trainee teachers may lack the ability to assess each other.	3
11. Trainee teachers may not take peer assessment seriously.	4
12. In peer assessment, trainee teachers’ marking is influenced by friendship.	4
13. In peer assessment, trainee teachers are afraid of being discriminated against.	4
14. Feedback from peer assessment is as useful as feedback from a lecturer.	4
Summated total score	3.5

For the construct ‘threats to peer assessment’, the summated value of 3.5, rounded down to 3, suggests that trainee teachers were neutral to the construct.

Discussion

Trainee teachers’ understanding of peer assessment

Trainee teachers at Bindura University of Science Education understood peer assessment to be simply marking or grading their own work. We considered this to be a simple definition. The definition implies that trainee teachers were more interested in the mark or grade awarded. Thus, in order to get a higher grade, here was an opportunity for ‘friendly peers’ to inflate the marks or ‘unfriendly peers’ to *discriminate* against the few others. In fact, when trainee teachers responded to items on the construct ‘threats to peer assessment’ the issues emerged because a majority believed that marking was influenced by *friendship* and fear of being *discriminated* against. In fact, it has been reported elsewhere that trainee teachers produce biased grades when they realise that their actions can penalise other trainee teachers (Sridharan, Tai & Boud, 2019).

A more complex definition, emerging from the data, was that trainee teachers viewed peer assessment to mean understanding grading criteria. Trainee teachers were most likely to gain an understanding of the assessment criteria if they are actively involved in the development of the assessment criteria. This would mean that lecturers and trainee teachers needed to work together to produce the assessment criteria. The assumption is that when the trainee teachers are actively involved in the development of the assessment criteria, they become more conscious of what is expected of them and were more likely to produce high quality work. As such they will be able to carry out peer assessment with confidence. This finding is not new. Harlen (2009) found out that reliability can be improved when there is detailed criteria and clarity of the assessment criteria.

Trainee teachers understood peer assessment as self-regulated learning, structured learning, and as a useful process for purposes of learning. At this level trainee teachers started to appreciate the autonomy inherent in peer assessment. They were aware that peer assessment helped them to take control of their learning. In fact, our findings confirm that “the ideal qualities of peer assessment are validity in relation to purpose, reliability required for its purpose, a positive impact on learning, and practicability in terms of use” (Harlen, 2009, p.253).

The most complex understanding of peer assessment was as critique and feedback. The description implies that peer assessment involves criticism of other trainee teachers' work and sharing feedback. In the process both the assessor and examined trainee teacher stand to benefit. This understanding implies *directionality* (Topping, 2009). First, *flipping* roles by replacing lecturer with peer (Stubbe, McCance, Twissi, & Ibrahim, 2017). Second peer assessment is a two-way process of interaction, a *dialogue* (Topping, 2009). Trainee teachers had opportunity to critique their peers' work, dialogue with their peers, and provide defensible feedback. In return they received similar criticism and feedback. Our study revealed the constructivist nature of peer assessment manifested in WhatsApp chats as trainee teachers were struggling with 'a building criteria' process for decision making. This confirms that knowledge is actively constructed by trainee teachers (Jonassen, 1991), that knowledge is the outcome of collaboration with others through sharing information, negotiation and discussion (Stubbe et al, 2017)

Trainee teachers' confidence to use peer assessment in their learning

The general trend of the responses is that the trainee teachers at BUSE have confidence in the quality of feedback. The level of agreement to statements describing confidence in the quality of feedback was high in the order (least to most) of knowing the importance of ability to deal with critical feedback, to providing others with useful feedback, and importance of ability to improve one's work based on feedback received.

However, despite a majority of trainee teachers agreeing that 'peer feedback given to others helps them to improve their work', that 'ability to give constructive feedback is important', that 'ability to deal with critical feedback is important' and that 'ability to improve one's work based on received feedback is important', the few who were not sure would seem to suggest that some trainee teachers doubted place of constructive and critical feedback in improving one's work. Thus, as reported by Yang & Tsui (2010) trainee teachers had opportunity for self-reflection and self-correction stimulated by the uncertainty on the accuracy of the peer feedback. Argument and discussion inherent led to better understanding (Gielen, 2007; Adediwaru, 2015).

Benefits of peer assessment as perceived by trainee teachers

Trainee teachers preferred peer to teacher assessment because they felt ownership and being in control of the process, they were motivated by active involvement and autonomy of peer assessment. Second, they believed that peer assessment provides wide range of opinions and

ideas and feedback. Third, they claimed that peer assessment created a conducive learning environment of sharing ideas without fear. The third benefit closely matches what was described as ‘feedback’ by Toppling (2009). Peer assessment helped trainee teachers to develop peer assessment skills that were transferable and useful in life. Finally, peer assessment offered trainee teachers the opportunity to develop a range of critical thinking skills and reflective practice.

Trainee teachers who preferred to be assessed by lecturers believed that teacher assessment is professional, unbiased and authentic. Second, they believed that teacher assessment is best placed to shape learning and determines achievement. Third, some trainee teachers believed that only lecturer assessment provides structured critique and feedback, and deeper and thorough assessment.

Nearly three-fifths of trainee teachers preferred peer assessment to lecturer assessment. However, despite acknowledging the benefits of peer assessment, a large number of trainee teachers still preferred lecturer assessment. Why the anomaly? The reasons given were that lecturer assessment was professional, authentic and diagnostic. This would seem to contradict the perception that if trainee teachers understand the assessment criteria, they are equally competent to provide high quality assessment. The perception implies power issues, where the lecturer is perceived as the more knowledgeable other, with all the answers and whose decision matters. Lecturer assessment, thus ‘holds all other education initiatives hostage’ (Muskin, 2015), such that trainee teachers will typically learn what they expect their lecturers to test. Trainee teachers at BUSE believe that lecturers’ assessment determines their opportunity to progress and, therefore, to attain the social economic and personal rewards that come with good grades.

Trainee teachers’ views of factors that threaten the use of peer assessment

The threats to peer assessment included belief that PA reduces marking burden on the lecturer, that peers are not able to assess fairly, accurately, seriously believing that peer assessment is influenced by friendship, and thus trainee teachers are afraid of being discriminated against. Our findings resemble *social desirability* which implies that trainee teacher would seek to gain a favourable view of their peers or of others (Topping, 2009). When we consider that peer assessment is aimed at enabling learners to be in control of their own learning, to be reflective, identify strengths and weaknesses, and develop a range of skills and competencies, *social desirability* threatens adoption. The implications of inflated marks on learning and on the

qualities of an educational system's graduates must be seen as enormous (Muskin, 2015). It appears trainee teachers did not feel confident to grade. This is a known barrier to peer assessment (Hanrahan & Isaacs, 2001; Peterson & Irving, 2008; To & Pandero, 2021).

As a way forward, the study found that trainee teachers suggested making peer assessment compulsory at BUSE, a finding reported earlier by Patchan, Schunn & Clark (2018). Alternatively, making peer assessment voluntary, was likely to make trainee teachers feel more autonomous and motivated to engage in the learning process (Li, Xiong, & Zang, 2020). However, when used for summative assessment purposes, trainee teachers were likely to resist peer assessment (Zhou, Zhang & Tai, 2020).

Conclusion

First, the study concluded that trainee teachers' understanding of peer assessment ranged from a naïve view that it was simply marking, through a somehow complex view of understanding assessment criteria and self-regulated learning to a complex understanding of perception as critique and feedback in a dialogue. Second, we concluded that trainee teachers at BUSE had confidence to use peer assessment effectively. Third, while trainee teachers at BUSE were aware of the benefits of peer assessment as reported in literature, there was sizeable number of trainee teachers 'held hostage' (Muskin, 2015) by lecturer assessment as a better guide for learning. Fourth, we concluded that adoption of peer assessment at BUSE was threaten by *social desirability* (Topping, 2009) and tendency to inflate marks (Muskin, 2015). On the whole trainee teachers at BUSE demonstrated preparedness to accept peer assessment as part of their learning and we recommend higher education institutions to make it compulsory in their curricula.

References

- Adediwaru, A.A. (2015). Relationship between learning outcomes and peer assessment. *European Scientific Journal June 2015, 11(16)*. ISSN: 1857 – 7881 (Print) e - ISSN 1857- 7431
- Ajzen, I. (1991). The theory of planned behaviour. In *Organizational Behaviour and Human Decision Processes*, 50, 179–211.
- Assessment Reform Group. (2002). *Assessment for learning: 10 principles*. London: Institute of Education, University of London. <http://www.assessment-reform-group.org>
- Black, S. (2005). Teaching students to think critically. In *The Education Digest*, 70(6), 42–47.
- Charteris, J., Quinn, F., Parkes, M., Fletcher, P. & Reyes, V. (2016). E-Assessment for learning and performativity in higher education: A case for experiential learning. In *Australasian Journal of Educational Technology*, 32(3), 112-122.
- Chan, C. (2010). *Assessment: Self and Peer Assessment*. Assessment Resources@HKU, University of Hong Kong [<http://ar.cetl.hku.hk>]: Available: Accessed: 25th June 2021.
- Falchikov, N (2005). Improving Assessment through Student Involvement. London: RoutledgeFalmer.
- Gilbert, S.L. (1997). The Four Commonplaces of Teaching: Prospective Teachers' Beliefs About Teaching in Urban Schools. *The Urban Review*, 29, 81–96.
<https://doi.org/10.1023/A:1024630522780>
- Gielen, S. (2007). *Peer assessment as a tool for learning*. Doctoral Dissertation.
- Hanrahan, S. & Isaacs, G. (2001). Assessing Self- and Peer-Assessment: The Trainee teachers' Views. In *Higher Education Research & Development*, 20(1), 53–70.
doi:10.1080/07294360123776.
- Harlen, W. (2009). Improving assessment of learning and for learning. In *Education*, 37(3), 247-257, DOI: [10.1080/03004270802442334](https://doi.org/10.1080/03004270802442334)
- Harlen, W. (2007). *Assessment of learning*. London: Sage.
- Harrison, C., & Harlen, W. (2006). Children's self- and peer-assessment. In W. Harlen (Ed.),

- ASE Guide to Primary Mathematics and science education (pp. 183–190)*. Hatfield, England: Association for Science Education.
- Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York: Routledge.
- Huisman, B. Saab, N. Van Driel, J. & van Den Broek. (2020). A questionnaire to assess trainee teachers' beliefs about peer-feedback, *Innovations in Education and Teaching International*, 57:3, 328-338, DOI: [10.1080/14703297.2019.1630294](https://doi.org/10.1080/14703297.2019.1630294)
- Karaca, E. (2009). An Evaluation of Teacher Trainees' Opinions of the Peer Assessment in Terms of Some Variables. In *World Applied Sciences Journal*, 6 (1): 123-128.
- Klenowski, V. (2009). Assessment for Learning revisited: An Asia-Pacific perspective. In *Assessment in Education: Principles, Policy and Practice*, 16(3), 263-286. DOI: 10.1080/09695940903319646
- Li, H., Xiong, Y., Zang, X. et al, (2020). Peer Assessment in the Digital Age: A Meta-Analysis Comparing Peer and Teacher Ratings. In *Assessment & Evaluation in Higher Education*, 41(2), 245-264. doi:10.1080/02602938.2014.999746.
- Lindsay, C., & Clarke, S. (2001). Enhancing primary science through self- and paired-assessment. In *Primary science Review*, 68, 15–18.
- Muskin, J. (2015). Trainee teacher learning assessment and the curriculum: issues and implications for policy, design and implementation. In UNESCO *Current and critical issues in the curriculum and learning*, 1. Unesco.org
- Nicol, D. (2010). From Monologue to Dialogue: Improving Written Feedback in Mass Higher Education. In *Assessment & Evaluation in Higher Education*, 35(5), 501–517.
- Nicol, D.J. & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. In *Studies in Higher Education*, 31(2), 199-218.
- Nicol, D., Thomson, A., & Breslin, C. (2014). Rethinking feedback practices in higher

- education: a peer review perspective. In *Assessment and Evaluation in Higher Education*, 39(1), 102-122. DOI: 10.1080/02602938.2013.795518
- Pajares, M. F. (1992). Teachers' beliefs and educational-research - Cleaning up a messy construct. In *Review of Educational Research*, 62, 307–332.
- Panadero, E., & Brown, G.T.L. (2017) Teachers' reasons for using peer assessment: positive experience predicts use. In *European Journal of Psychology Education*, 32, 133-156. <https://doi.org/10.1007/s10212-015-0282-5>
- Patchan, M. M., Schunn, C.D. & Clark, R.J. (2018). Accountability in Peer Assessment: Examining the Effects of Reviewing Grades on Peer Ratings and Peer Feedback. In *Studies in Higher Education*, 43(12), 2263-2278. doi:10.1080/03075079.2017.1320374.
- Peterson, E. R., & Irving, S.E. (2008). Secondary School Trainee teachers' Conceptions of Assessment and Feedback. In *Learning and Instruction*, 18(3), 238-250. doi:10.1016/j.learninstruc.2007.05.001.
- Stow, W. (1997). Concept mapping, a tool for self-assessment. In *Primary Science Review*, 49, 12-15.
- Stubbé, H.E., McCance, G., Twissi, Z., & Ibrahim, N. (2017). Flipping the teacher's role: What to teach when using game-based learning? *11th European Conference on Games Based Learning, ECGBL 2017, Graz, Austria, 5-6 October 2017*, 634-640. <https://repository.tno.nl//islandora/object/uuid:7de632f8-bb68-4545-a49d-a087b7e25cd6>
- Tillema, H. (2009). Formative assessment in Teacher Education and Professional Development. In *International Encyclopaedia of Education (3rd ed)*. Elsevier.
- To, J., & Panadero, E. (2019). Peer Assessment Effects on the Self-Assessment Process of First-Year Undergraduates. In *Assessment & Evaluation in Higher Education*, 44(6), 920-932. doi:10.1080/02602938.2018.1548559.
- Topping, K.J. (2009). Peer Assessment. In *Theory into Practice*, 48(1), 20-27.
- Warmbrod, J.R. (2014). Reporting and interpreting scores from Likert-type scales. In *Journal*

of Agricultural Education, 55(5), 30-47.

Wiliam, D. (2011). *Embedded Formative Assessment*. Solution Tree Press.

Wiliam, D., & Thompson, M. (2007). Integrating assessment with instruction: what will it take to make it work? In C. A. Dwyer (Ed.), *The future of assessment: shaping teaching and learning*, 53-82. Mahwah, NJ: Lawrence Erlbaum Associates.

Wiliam, D. (2007). Keeping learning on track: Classroom assessment and the regulation of learning. In F.K. Lester Jr. (Ed.), (2007). *Second handbook of mathematics teaching and learning*. Greenwich, CT: Information Age Publishing, 1053-1098.

Xu, Y. & Harfitt, G. (2019). Is assessment for learning feasible in large classes? Challenges and coping strategies from three case studies. In *Asia-Pacific Journal of Teacher Education*, 47(5), 472-486. <https://doi.org/10.1080/1359866X.2018.1555790>

Yang, Y.-F., & Tsai, C.-C. (2010). Conceptions of and approaches to learning through online peer assessment. In *Learning & Instruction*, 20(1), 72-83. doi: 10.1016/j.learninstruc.2009.01.003

Zhou, J., Zhang, Y., & Tai, J.H.M. (2020). Grudges and Gratitude: The Social-Affective Impacts of Peer Assessment. In *Assessment & Evaluation in Higher Education*, 45(3), 345-358. doi:10.1080/02602938.2019.1643449