Reviewer’s report

Title: Introducing a reward system in assessment in Histology: Does it engender the appropriate learning strategies?

Authors:

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Reviewer: Dr Sari Lindblom- Ylanne

Level of interest: A paper whose findings are important to those with closely related research interests

Advice on publication: Unable to decide on acceptance or rejection until I see revised version

The manuscript "Introducing a reward system in assessment in Histology: Does it engender the appropriate learning strategies?" deals with an important theme, in other words, development of assessment practices in medical education.

Please find below my detailed comments on the manuscript.

1. Page 2, Abstract, Students and data collection.
The first sentence remains unclear for me and is quite complicated. What does 'four academic groups' refer to? This is not clarified. The concept ‘the 1999 students’ may be considered misleading. 1999 students? Students who started their studies in the year 1999?

2. Page 4, 1st paragraph, last sentence.
It should be explained why developing assessment in a traditional curriculum is more challenging than developing assessment in a more innovative curriculum. In my opinion, developing assessment is always a challenge, particularly if the aim is to align assessment which teaching practices.

3. Page 3, The study, 1st paragraph.
The meaning of 'The four academic groups' should be explained.

4. Page 6, Results, Tables 3 and 4.
It is not clear for me, how the categories are formed for Table 3. Some categories mentioned in the text are not listed in the table (for example, 'helped understanding' and 'strategic value'). Furthermore, some categories seem to be very close to each other. Therefore, a question arises: why are they listed as separate categories (for example, 'reward/incentive for working harder' and 'motivates one to work harder'). The formation of the categories should be explained in the text. The categories should represent different aspects of students’ comments. I would also like to draw attention to the categories used in Tables 3 and 4. Comparison of these two tables would be much easier, if they would at least partly be the same. Furthermore, there are too many categories in Table 4. I see no use including 8 categories which only one percent of the students or even less mention. These small categories should be combined into larger categories.

5. The most problematic aspect in the present study to me is the connection between assessment practices and students' approaches to learning. Because a part of the title of the manuscript deals with learning strategies, an important question arises: How were students' approaches to learning or learning strategies measured in the present study? It is not possible to answer the title's question without asking
students about their learning strategies or approaches (by using interviews or by asking students to answer an inventory). Learning approaches and strategies are only mentioned in the Introduction and the Discussion, but not in Method or Results sections. Thus, it seems that they were not looked at in the present study. They only form a framework of this study.

Page 7, end of the 1st paragraph.
The author writes: "The reward system appeared to have inherent benefits, as is reflected in student responses to the principle of obtaining a few extra marks - motivating, confidence-building and increased understanding. These are factors that are undoubtedly conducive to students adopting appropriate learning approaches, and would confirm Knapper's (1995) belief that learning is greatly encouraged if it is rewarded."

There are many problems in the excerpt: First, it is not clear to me how many students found the reward system as motivating, confidence-building and increasing understanding because these comments were not included in Table 3. I can only guess. Is 'confidence-building' referred to in Table 3 as 'boosts self-confidence'? If yes, only 3 percent of the students, in other words only one student mentioned this! Is 'motivation' referred to in Table 3 as 'motivates one to work harder'? If yes, only two students mentioned this! I cannot say which category in Table 3 includes the increase in understanding. To conclude, so far only three students have mentioned the aspects above. Thus, is it possible to draw such a conclusion? I would answer 'no'.

Second, because the present study did not examine students' approaches to learning, it is not possible to say that this study confirms Knapper's belief. Furthermore, it is unclear for me, what is the appropriate learning approach the author is referring to. Both students who apply deep approach and students who apply surface approach may very well be motivated. However, previous research indicates that a deep approach is related to intrinsic motivation and a surface approach to extrinsic motivation. Both student groups (deep and surface) may also feel confident - the former group because they feel they understand what they study and the latter group because they feel that they know so much facts by heart.

Page 7, 2nd paragraph
I agree with the author. I want to remind that study approaches were not looked at in the present study.

Page 8, 1st paragraph, line 15
It is true that 'good assessment practices' may support deep approach to learning. However, once again I must remind that study approaches were not looked at in the present study. This conclusion cannot be drawn on the basis of the current data. It is, however, possible that a good examination measures deep approach to learning. It would be very interesting to examine how study approaches are connected with examination grades: are high course grades related to high scores on deep approach and are low course grades related to high scores on surface approach?

6. Page 9, 1st paragraph, last sentence
It is not clear how Histology examination assesses understanding. This should be explained in more detail in Materials.

7. Page 9, 2nd paragraph, line 3
Just a comment. Research has shown that students cannot always choose their study approach. Particularly, students who apply surface approach do not know how to study differently. They often know that their way of studying is not the most functional and effective but they don't know how to develop their study practices. Students are not always conscious about their study approaches.

8. Please note that in many places the letter 'o' is written as 'o'.

9. Page 9, the end of the page
I have understood the meaning of Vygotsky's zone of proximal development differently. By this term Vygotsky means (to my knowledge) a situation in which a student (a child for Vygotsky) cannot solve a problem alone but is capable of solving the problem with help from a teacher. Thus, Vygotsky differentiates between two levels of achievement: one level which shows what a student can do alone and another which shows what the student can do with help from others. The difference between these
two levels (Vygotsky measured this by years) is the zone of proximal development.

To conclude, the manuscript should concentrate on students’ comments on the reward system, not linking the reward system to approaches to studying. All the conclusions of the present study cannot be drawn on the basis of the data. By reading the current version of Discussion section the reader gets a misleading conception about the research questions and aims of the study.

**Competing interests:**

None declared.