Integration of technology and peer evaluation to enhance student evaluation process in pharmacy education

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ABSTRACT –The current study aimed to evaluate the feasibility of integrating peer evaluation as part of student's soft skills assessment in two pharmaceutical courses with the aid of Google Forms. Students' opinion on such evaluation method was analysed. No significant difference in the soft skills between year 1 and 3 was found. However, year 1 students showed a higher preference for peer evaluation compared to year 3 students. Further studies are carried out to investigate the factors that contributed to this finding. In conclusion, this innovation of technology-aided peer evaluation is a holistic and efficient approach to evaluate students' soft skills.

1. INTRODUCTION

Exceptional soft skills are extremely essential elements required for graduates to be prepared for the 4th Industrial Revolution [1]. This is part and parcel to produce competent graduates and prevent the production of poor-quality graduates due to the inaccuracy in student performance evaluation [2].

Conventionally, group assignment being one of the most established assessment tools in education which is often evaluated as a group work and every member of the group would receive the same marks despite the unequal efforts and contributions. This is because it would be extremely tedious and challenging for the lecturers to evaluate every student individually especially in larger classes involving more than 100 students. Thus, the ability of the students might not be evaluated and assessed accurately through this assessment method. Indeed, it is not feasible for the lecturers to evaluate every student individually in the university settings due to the large number of students [3]. Moreover, it is difficult for lecturers to identify the least contributed students as most of the work likely done outside the classrooms [4]. This may contribute to the problem of "free-riders" in the group who will obtain a similar grade as the others.

Even though the disadvantages of evaluation of students as a group have been discussed extensively in Malaysia education field, nevertheless no solid move has been taken by stakeholders to rectify this situation due to the infeasibility of evaluating students individually in a large class [3]. Furthermore, the individual assessment done by the lecturers may not reflect the true performance of the students as the lecturers only spend limited time with students.

Peer evaluation is a solution to overcome the disadvantages of conventional whole group assessment. There are also studies which recognise peer evaluation as an effective way to acquire individual grades which truly reflects the level of participation and contribution of a student in a group work [4]. Modern technology such as Google Form has the potential to be a technological tool that eases the student's soft skills evaluation process. The integration of peer evaluation and Google Form, which is user-friendly and freely-accessible enables the peer evaluation process to be done in a much more convenient and feasible way [3].

This study explores the feasibility of utilising technology to enhance the evaluation of student's soft skills. The focal points of the study are: (1) the use of peer evaluation to enhance the feasibility of individual evaluation and (2) the use of technology (i.e. Google Form) to ease the peer evaluation process.

2. METHODOLOGY

Microbiology for Pharmacy (Year 1, 111 students) and Biopharmaceuticals and Pharmacokinetics (Year 3, 106 students) were chosen for this study. Both subjects involve group laboratory practical and the groups consisted of students of mixed genders and races.

After the completion of practical sessions, the students were given a link to Google Form questionnaire which consists of Likert scale and open-ended questions that assess the student's communication skills, teamwork, leadership, time management and work ethics. In addition, the students' acceptance on peer evaluation, whether he/she feels good when they know their friends are evaluating him/her and whether he/she has put extra effort to impress teammates were collected.

The data was analysed with different attributes correlated to the peer rating and the results for both courses were compared.

3. RESULTS AND DISCUSSION

The results show that Year 1 students achieved a slightly higher peer score than Year 3 students in all aspects including communication skills, teamwork, leadership, time management and ethics, yet the difference is not significant (Figure 1). Besides, it is interesting to find that the overall students' soft skills are above the average from the perspective of their peers.

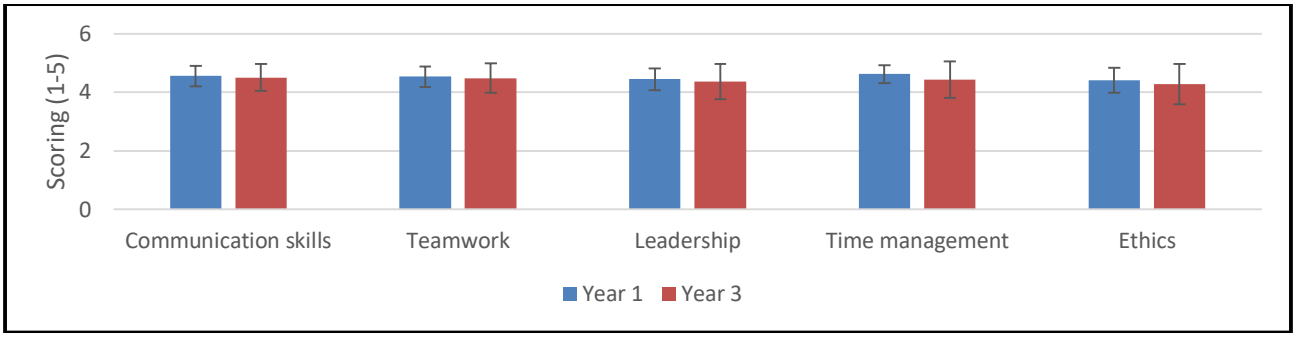

Figure 1 The soft-skill assessment of year 1 and 3 via peer evaluation. The scoring scale was presented as 1 for strongly disagree, 2 for disagree, 3 for neutral, 4 for agree and 5 for strongly disagree.

Table 1 Students' acceptance towards the soft-skill evaluation through the peer evaluation.

Year	Yes (%)	No (%)
He/she feels good when they know their friends are evaluating him/her		
Year 1	86.4	13.6
Year 3	44.0	56.0
He/she has put extra effort to impress teammates were collected		
Year 1	62.0	37.9
Year 3	59.3	40.7

Furthermore, 86.4% of year 1 students felt good when they know that their friends were evaluating them while only 44.0% of year 3 students felt the same (Table 1). This may be due to year 3 students are so much used to the conventional wholly grouped evaluation and did not like the feeling of getting out of their comfort zone while year 1 students are still at their adaption phase of university life.

It was also found that more than 50 % of the students from both batches had put extra effort to exhibit their soft skills during the laboratory sessions (Table 1). This correlates to the earlier finding that peer assessment activities could promote co-learning whereby a study shows that the use of peer assessment caused the students to be better prepared for laboratory work in organic chemistry practical sessions [5]. It is evidential that the use of peer evaluation could make the students work harder in doing the group tasks, as they would fear that their peers will evaluate them negatively if they did not perform well. Hence, this could eradicate the presence of "free riders" in group-based learning activities.

The Cronbach's Alpha obtained from the study is 0.906, which indicates a high degree of internal consistency for the scale and hence reliability of the questionnaire.

The essence of the study is that peer evaluation with the use of Google Form could ease the individual soft skills evaluation of larger classrooms holistically. This approach indeed negates the hassles of the conventional approach using hard copy material which usually takes weeks for compilation, keying-in and analysing the data. Thus, it is undeniable that this innovation is time and cost-effective which caters to the current education phenomena of laborious workload and scarce of resources.

4. CONCLUSION

The integration of peer evaluation and technology enables the soft skill of students to be evaluated in a much more efficient way in higher education. The utilisation of the user-friendly Google Form allows peer evaluation to be done in a more convenient way.

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