



The relationship between Web-based MCQ-authoring by students and their performance in medical Physiology

KEYWORDS

Online MCQ authoring , medical students , medical physiology

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ABSTRACT *Background:* Online-MCQ-authoring is considered to have great potential in assisting students to perform better. There is evidence that authoring MCQ by students contributes positively to academic performance. *Aim:* This novel study aims to evaluate the effectiveness of an online-based MCQ generating tool, particularly in medical physiology. *SEGi University College* has pioneered the utilization of PeerWise for this purpose in Malaysia. *Methodology:* PeerWise is an online platform for MCQ-authoring developed by The University of Auckland, New Zealand. was utilized by 79 first year students to generate MCQs for medical physiology, individually and in groups. The questions were graded quantitatively. Academic performance of the students was measured via their weekly assessment marks. Correlation analysis of these parameters was performed. **Results:** A total of 258 questions were generated by the students within a period of six weeks. The distribution of question were found to be decreased in number from week 5 to week 8. When the weekly assessment was compared with MCQ generated the initial results showed a Person's correlation coefficient, (r) of 0.024, $P=0.609$. **Conclusion:** This preliminary study assessed the usage of PeerWise by medical students. However further investigation is required to validate its effectiveness. Moreover having Peerwise as a more regular and comprehensive part of the course will help students to explore in more depth and reinforce what they have learnt throughout the course.

Introduction:

Medical education is constantly evolving and innovative methods like online-MCQ-authoring is considered to have great potential in assisting students to perform better. (P.Denny et.al. 2009,2010), There is evidence that authoring MCQ by students contributes positively to academic performance. (Towers R et al. 2010) PeerWise is a freely available web tool that provides an online framework to facilitate student creation of problems as well as including much of the social functionality that increasingly forms the cornerstone of online interactions. Using the tool, students can create assessment questions (in the form of multiple choice questions, with associated explanations), answer each other's questions, rate and comment on questions, seek help from authors and follow their favourite question contributors. This novel study aims to evaluate the effectiveness of an online-based MCQ generating tool, particularly in medical physiology. SEGi University College has pioneered the utilization of PeerWise for this purpose in Malaysia.

Methodology:

79 Students of first year were challenged to research, author, and explain their own multiple-choice questions (MCQs) over a period of 6 weeks. They were also required to answer, evaluate, and discuss MCQs written by their peers. The technology used to support this activity was PeerWise — a freely available, innovative web-based system that supports students in the creation of an annotated question repository. The questions were graded quantitatively. Academic performance of the students was measured via their weekly assessment marks. Correlation analysis of these parameters was performed.

Results and Discussion:

A total of 258 questions were generated by the students within a period of six weeks. The total number of students in the class was 79, of which 64 (81%) contributed MCQ questions. One student contributed 28 MCQs and one of

the students answered 230 MCQs. Similarly one student contributed 128 comments on MCQs he had attempted.

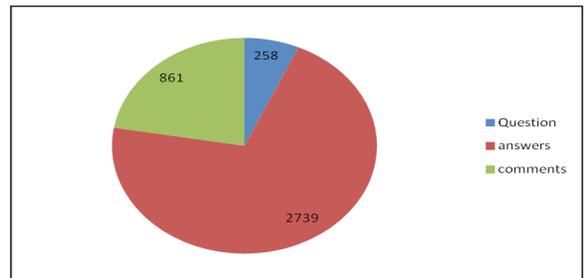


Fig1.Total Number of Questions,answers and comments generated in 6 week

As per the Fig 2 the number of questions generated were maximum (54) in week 5. The distribution of question were found to be decreased in number week 5 to week 8. This was because the Peerwise was not a part of course evaluation and students were found to be more busy in preparing the exam.

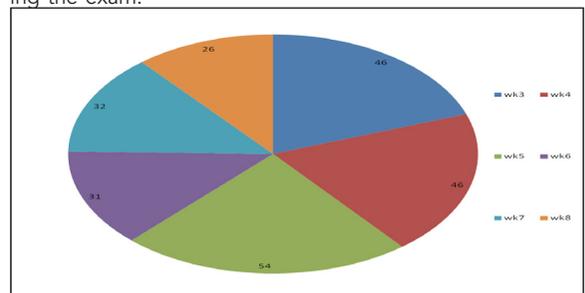
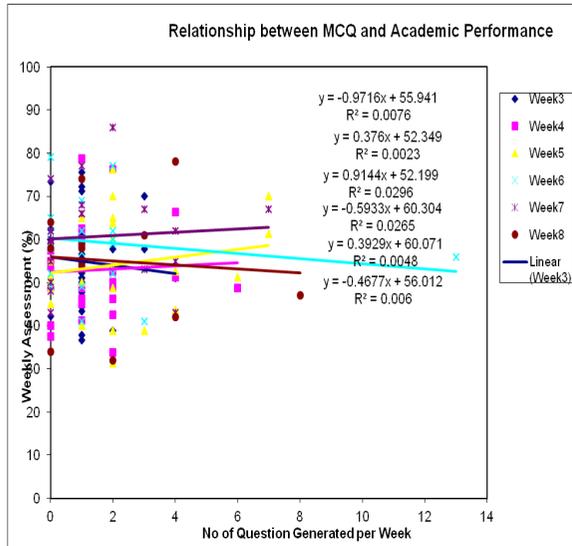


Fig2. Total Number of MCQ generated /week

When the weekly assessment was compared with MCQ generated the initial results showed a Person's correlation

coefficient, (r) of 0.024, P=0.609. "Usage of PeerWise did not seem to influence performance



Correlation Comparison				
	Pearsons		Spearmans	
	r	P	r	P
All Weeks	0.024	0.609	0.027	0.573
Week3	0.041	0.73	-0.003	0.98
Week4	0.176	0.146	0.201	0.095
Week5	0.039	0.741	0.031	0.797
Week6	-0.015	0.903	-0.016	0.894
Week7	0.028	0.805	0.083	0.468
Week8	0.018	0.881	0.077	0.51

In this study, it seems that the use of PeerWise is not being taken seriously, 15 students were found not contributing any questions to PeerWise (18% of the class). The fact that Peerwise was not a part of the overall assessment in the course may have lead to students losing interest. May be peerwise have not been marketed optimally to students. By encouraging students to use PeerWise throughout the course, students would have had more ownership of the activity and a greater perception of the link between the course and their contributions to Peerwise.

Since the database of questions was developed entirely by first-year students with no guidance at all from instructors, therefore we consider this an impressive result. It is clear that the quality of the repository may be improved by providing some guidance and motivation to the students on how to devise distracters, the best kind of explanations, choosing appropriate tags, and how to include more than one topic within a single question (Denny.P et.al2009).

Conclusion:

This preliminary short duration study assessed the usage of PeerWise by medical students. However further investigations are required to validate its effectiveness. The mandatory requirement for participation may have some effect on students taking the assignment seriously. Moreover having Peerwise as a more regular and comprehensive part of the course will help students to explore in more depth and reinforce what they have learnt throughout the course. If embedded appropriately in course assessment design, use of the system offers tangible benefits to both students and staff, enabling valuable peer discussion, interaction and feedback outside timetabled class hours.

By using the system weekly, students would become more familiar with the system and see it as an integrated part of the course. They would also be more aware of all the questions and feedback they can gain from using the system.

To exploit more fully the value of PeerWise and to improve student motivation towards using the tool more regular exposure and integration in the pedagogic process would be advised.

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