GYMIT: Teaching and Learning of Gymnastics in a Technology-Mediated Learning Environment

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Abstract: This project describes the design implementation of a technology-mediated learning environment with two components: (a) a video-capturing software on TabletPCs and (b) an online platform for uploading and carrying out collaborative critique and reflection in the teaching and learning of educational gymnastics. Findings indicate that the effectiveness of the teaching approach is not apparent.

Keywords: Educational Gymnastics, Video technology, Online discussion, Technology-mediated Learning, Tablet PC

1. Introduction

Video technology has often been used by sports coaches in athletics training [1]. Koh (2003) investigated an online multimedia environment for teaching gymnastics. He involved his trainee teachers to collaboratively critique video clips of gymnastics movement using online discussions [2, 3, 4]. The teachers agreed that their understanding of the course content was enhanced but they were reluctant to apply the same approach in imparting gymnastics skills to their students.

The second author implemented the online educational gymnastics module into a local primary school Physical Education (PE) programme with his colleagues. The teachers designed a technology-mediated learning environment to allow their students to analyse their gymnastics movement with opportunities for co-operative learning. This paper describes the design and outcome of the project.

2. Participants and Location

Two Primary 3 classes (age group of 9 years old) in a local school participated in this project. Students in the experimental and control group were matched. The students were divided into groups of four in each class for both groups throughout the 8 week GYMIT project. The classes were taught by the same teachers. All the students had prior learner educational gymnastics experience at the lower grade level.

3. The Learning Activity

The GYMIT technology-mediated learning environment consists of two components: (1) the video capturing component where students capture their performance through a video camera and upload the video onto a Tablet PC followed by using "E-Coach" to annotate the positive and negative attributes of their

Fig 1: E-Coach Interface

performance frame by frame; (2) an online environment which allows the students to upload their annotated videos for collaborative critique and reflection.

4. Student Outcomes

Both groups were administered a pre-post survey containing 4-point Likert-scale items (Excellent - 1, Very Good - 2, Good - 3, Needs Improvement - 4) and open-ended questions through the LMS. The experimental group had an additional question requiring them to rate their IT skills. Table 1 describes the set of pre-post survey questions:

Table 1: Set of Pre-Post Survey Questions for the Experimental and Control Group

Pre	Post
1. How do you rate your gymnastic ability?	1. How do you rate your gymnastic ability now?
2. How would you rate your previous gymnastic experiences?	2. How would you rate your gymnastic experience now?
3. How comfortable are you working in a team?	3. How comfortable are you working in a team now?
4. How would you rate your IT skills?	4. How would you rate your IT skills now?

A mixed between-within subjects analysis of variance (2 way ANOVA) was conducted to assess the impact of the intervention of the GYMIT programme for Q1, 2 and 3 and a one-way repeated measures ANOVA was conducted to compare the scores for Q4. There was no significant effect between or within the groups for all the questions except for question 2; Wilks Lambda = 0.93, $F(1, 60) = 4.85$, $p = 0.03$, partial eta squared = 0.08. The means for Q2 indicated that both groups had an improved gymnastics experience. [Experimental: pre = 2.46, post = 2.21; Control: pre = 2.44, post = 2.09]. The one-way repeated measures ANOVA did not yield any significant findings; Wilks' Lambda = 1.00, $F(1, 27) = 0.02$, $p = 0.89$.

The experimental group (96%) indicated that they would like to continue with the use of IT in your gymnastic lessons in the future. This was consistent with the open-ended responses from the students on how IT had helped them such as '*I can look at movie clip again and what I did wrongly*.', '*It help me by recording me and I can see what I done wrong*.' and '*The integration help me to improve*.'

5. Discussion and Conclusion

The effectiveness of the technology-mediated environment is not obvious. A suggestion would be to compare the actual student outcomes in the form of a performance test at the end of the 8-week programme between the groups.

Acknowledgements

The authors wish to express their gratitude to Mr Kiran Kumar Gosian and Dr Michael Koh.

References

[1] Hamlin, B. (2005). Moto Competency and Video Analysis. *Teaching Elementary Physical Education, 16(5)*, 8-12.

[2] Lim, W.-Y., & Koh, M. (2006). Effectiveness of Learning Technologies in the Teaching and Learning of Gymnastics. *Pacific Asian Education, 18(2)*, 69-77.

[3] Koh, M. & Anwari, K. (2004). Integrationg Video and Computer Technology in Teaching – An example in Gymnastics Initial PE Teacher-Training Programmes In Singapore. *British Journal of Teaching Physical Education*, *35 (3)*, 43-46.

[4] John, T., & Michael, K. (2003). Collaborative Learning in Physical Education through the Use of IT. *REACT*, *2(2)*, 125-135.