TQEF Research Informed Teaching Initiative

Title of Project: Games Teachers Play: games & visual aids for enhanced learning in the health sciences

Project team

Professor Heather Skirton PhD, MSC, Dip. Couns, RGN, Qual, Midwife, Reg Genetic Counsellor (Principal Investigator from January, 2008).
Professor Skirton is the Professor of Applied Health genetics and Deputy Head (for Research, Enterprise and Innovation) of the School of Nursing and Community Studies, University of Plymouth. .

Dr Simon Cooper PhD. MEd. BA. RGN. FHEA (Principal Investigator until January, 2008).
Dr Cooper is an Associate Professor (Acute Care) at Monash University, School of Nursing and Midwifery, Victoria, Australia.

Mr Peter Allum Paramedic, PGDip Clinical Education.
Mr Allum is a Lecturer in Health Studies, Paramedicine, School of Nursing and Community Studies

Mrs Pam Nelmes RN, MSc , BSc (Hons), PGCE, Dip.N.
Mrs Nelmes is a Lecturer in Critical Care. School of Nursing and Community Studies.

Miss Gillian Blakely (Research Assistant). BSc Adult Nursing, BSc Applied Mathematics, PGCE.
Ms Blakely is a qualified adult nurse and secondary school teacher.

The project was conducted by staff based in the School of Nursing and Community Studies, Faculty of Health and Social Work, University of Plymouth. Initially Dr Simon Cooper took overall responsibility for the project management, with Professor Skirton, Mr Allum & Mrs Nelmes contributing as part of the project team. In early 2008, Dr Cooper relocated to Monash University, Melbourne, Australia. He continued to contribute to the project but was replaced as Principal Investigator by Professor Skirton. Miss Gillian Blakely was employed as the Research Assistant for the project.

Aims and objectives

The original aim of the project was to identify and evaluate visual and kinaesthetic teaching and learning methods incorporated into health science programmes. The objectives were to:

1. Conduct a systematic review of the effectiveness of using games to support teaching and learning in the health professions
2. Investigate the current use of games by teachers in the health professions
3. Make a collection of appropriate games for use by teachers in the health professions.

Methods used

The study was undertaken in four phrases. Mixed methods were used, including a systematic review of the literature, a qualitative data collection and analysis and a survey conducted online.

1. To provide a sound theoretical basis for the empirical phase of the study, a systematic review of the published and grey literature was undertaken. This review focussed on studies that reported the evaluation of gaming strategies against more didactic approaches to teaching in the health professions. The quality of the studies reviewed was assessed but due to the variability in the studies reviewed, a meta-analysis of the data was not feasible.
2. A qualitative study was conducted to explore the way in which experienced health educators use games to facilitate teaching and learning in the health professions. Thirteen participants were recruited from the University of Plymouth. These participants were interviewed in person or by telephone, using a semi-structured interview guide. Verbatim transcripts of the recorded interviews were analysed manually for themes (Strauss & Corbin, 1998). The transcripts were reviewed by four members of the research team and were discussed until consensus was reached. The themes provided the basis for the survey tool used in the third phase.
3. A cross-sectional survey was conducted using a questionnaire derived from the material obtained via the systematic review and the qualitative study. Health professional educators (N=97) from the higher education sector in the UK and other countries were recruited via email distribution lists and advertisements on websites. The survey was completed online and the data were analysed using descriptive and inferential statistics and Chi^2 (χ^2) for measures of association.
4. During the first three phases, a search to identify relevant games for the planned resource was ongoing. Relevant games were sought in the published literature and via the world wide web; teachers in the health professions were also asked to 'donate' their favourite games. All games collected were evaluated for utility, applicability and ease of use. A resource of 100 games was prepared, with learning objectives and instructions for use for each game. The resource was prepared for publication with the support of staff from the Faculty of Arts (School of Media and Photography).

Findings and outcomes

1. Systematic review

Fourteen research articles that complied with the parameters for the review were assessed using published criteria. The findings of the systematic review indicated that whereas both traditional didactic methods and gaming were successful in increasing student knowledge, neither method was shown to be clearly more helpful to students. It appears that the use of games generally enhances student enjoyment and may enhance long-term retention of information. It was concluded that although the use of games is a viable teaching strategy, many games have not been assessed objectively. Further research on use of gaming is needed to fully inform educators.

A copy of the review 'Games Teachers Play: A Systematic Review of the Efficacy of Games as a Teaching Strategy in the Health Sciences', was produced for the University of Plymouth and the review has now been published in the Journal of Advanced Nursing.

2. Qualitative study

Three main themes emerged from the qualitative analysis: reflective practice, impact on students and logistics.

Reflective practice
The use of games was reliant on individual teaching preferences, with the use of educational games seen as a highly personal choice. Participants reported that the facilitator had to be aware of their own teaching limitations as well as the strengths and limitations of the students, with class responsiveness contributing to the outcome of the lesson. Being prepared to evaluate and to adapt was an essential skill for the educator. Providing variety in teaching methods was seen as fundamental to enhancing student interest in a lesson. Gaming was considered a rewarding strategy that helped maintain freshness in teaching.

Impact on students
Interviewees reported varying reactions to games used in lessons, but generally the response of students was noted to be positive. Interaction between students was seen to be a benefit, especially when educating health professionals who require effective communication skills. However, it was also acknowledged that a game might not suit the learning styles of all students and that unintentional alienation of individuals could weaken the lesson's outcome.

Educators were keen to emphasise the element of realism that gaming could contribute to a session, through linking theory and practice in a safe learning environment. Gaming was strongly associated with reinforcement and recall of knowledge. Working on games in small groups enabled the teacher to recognise struggling students who otherwise could be lost in the large group, whilst enabling less forthright students to contribute and ask questions.

Logistics
Time, class size and the teaching environment were identified as key gaming constraints. Timing was judged as a barrier to the flexibility within teaching sessions and as a major drawback for the preparation of gaming resources. Nevertheless, it was also viewed by the minority as a temporary obstacle that, once surmounted, would allow the repeated usage of the resource with minimal amendments.

3. Survey

From the 97 participants, 69.1% were female, the modal age range was 50-59 years and 61.9% had taught health studies for more than seven years. The

majority of participants were from the United Kingdom, but 29.9% (n = 29) were health professional educators from other countries including United States, Australia, Denmark, Holland, Iceland, Iran, Israel and the Philippines. The survey data indicated that 34% respondents used games three to five times per year to support their lessons and 73.2% preferred using the internet on its own or in combination with other formats as a gaming resource.

The main benefit of using games to support teaching was the enhancement of the students' learning, enjoyment and interest, identified by 62.3% (n = 48) of respondents. Interaction and participation of the students was recognised as the secondary theme by 44.2% (n = 34). The fundamental disadvantage of gaming recognised by 43.8% (n = 32) was the potential negative reaction of students i.e. their unwillingness to participate or their scepticism of the game's effectiveness. Additionally, 27.4% (n = 20) believed the timing constraint for preparation of resources and time available for the lesson itself to be another limiting factor.

Individuals replying 'never' or 'rarely' to the question discussing the frequency of using educational games were asked to specify what would encourage them to use games more frequently. The most common theme was the provision of gaming examples with guidelines, and the ability to find applicable resources for subject specific criteria. With respect to the preferred media for a resource describing a number of games for use in the health sciences, there was strong preference for the internet, either on its own or in combination with other formats (73.2%, n = 71) (Table 4),.

No significant association was found between the number of years taught by the respondent and the frequency of using games in lessons ($\chi^2 = 12.960$, $p < 0.372$). Similarly, no significant results were found between the age grouping of the respondent and the frequency of using games ($\chi^2 = 19.811$, $p < 0.470$).

4. Resource

The collected games have now been formatted into a resource for ease of accessibility by teachers. A book entitled 'Games, games, games: educational resources for the health professions' has been professionally illustrated and formatted and is available for purchase via the University of Plymouth Press. Arrangements are being made to enable prospective buyers to order and pay for the book online.

Continuation/ dissemination plans

The research has shown that studies of gaming from a student perspective are required. The project team will apply for funding to develop this work further.

Dissemination has already occurred via:

1. Report

Blakely G, Skirton H, Cooper S, Allum P, Nelmes P. (2008). ***Games Teachers Play: A Review of the Efficacy of Games as a Teaching Strategy for Health Sciences.*** Report from the University of Plymouth Games Project.

2. Publication in peer-reviewed journals

Blakely G, Skirton H, Cooper S, Allum P, Nelmes P. (2008) ***Games Teachers Play: a Systematic Review of the Efficacy of Games as a Teaching Strategy in the Health Sciences.*** *Journal of Advanced Nursing.* Nov 14. [Epub ahead of print]

Blakely G, Skirton H, Cooper S, Allum P, Nelmes P. ***A mixed methods study of the use of educational gaming within health professional education*****.** Submitted to *International Journal of Nursing Education Scholarship* for publication, in review

3. Conference presentations

Blakeley G, Skirton H, Cooper S, Allum P, Nelmes P. ***Games Teachers Play.*** *Vice Chancellors' Teaching and Learning Conference, University of Plymouth, 2008. (Appendix 1)*

Abstract submitted, awaiting decision.
Blakeley G, Skirton H, Cooper S, Allum P, Nelmes P. ***Educational gaming in the health sciences: a quantitative systematic review*****.** Clinical Skills conference – Prato, Italy 1-3 July 2009

4. Published book

Blakeley G, Skirton H, Cooper S, Allum P, Nelmes P.
Games! Games! Games! Educational games for teaching health professionals.
Currently being formatted for publication by University of Plymouth Press.

Appendix 1. Poster presentation, University of Plymouth, 2008.

TQEF Research-Informed Teaching Initiative

Games Teachers Play

Gillian Blakely, Heather Skirton, Peter Allum,
Pam Nelmes and Simon Cooper

Background

- Students have a range of learning styles
- Educators in the health sciences not only have to deliver specific curriculum requirements, but use a variety of teaching strategies to enhance the student's potential.
- Despite the increasing popularity of gaming, preference is still given to traditional didactic rather than experiential strategies

Empirical Study

13 health educators interviewed- analysis proceeding but main themes are: teacher experience and background, learning styles, perceived effectiveness, enhanced interaction and practical issues.

Currently, an online survey of health educators' use of games is being conducted.

The Study

Phase 1 Systematic review of studies on effectiveness of educational games

Phase 2 Collection of games from published and grey literature and personal contributions

Phase 3 Mixed methods study of use of games by educators

Games book preparation

- 17 games supplied by lecturers, 59 from journal articles
- All journal publishers or article authors were contacted to receive publication permission
- A final draft of the games list is being edited and illustrated by the UoP Press.

Project outputs

- One book of games for publication/download
- Two peer-reviewed papers
- One report