

A lesson in listening: Is the student voice heard in the rush to incorporate technology into health professions education?

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Background. Early indications are that blended learning in health professions education has a positive influence on student satisfaction and learning. This is encouraging, as the call to incorporate technology in teaching and learning in higher education is increasing. The student voice in the planning and implementation of blended learning strategies is, however, not adequately addressed in many of the studies to date.

Objective. To utilise videos and blogging in a problem-based learning physiotherapy module to enhance student engagement with content of problem-based cases.

Methods. Students completed a needs-analysis and engagement questionnaire. Videos made by students were uploaded to the learning management system and subsequent use of these videos was recorded. Two focus group discussions were held to evaluate students' perceptions of the blended learning strategies.

Results. Students perceived the level of engagement during case presentation periods to be satisfactory, but unsatisfactory outside of such periods. Focus group discussions identified the technology used in this study as being inappropriate for this population. Students had specific expectations of the roles of staff and students. There was a perceived lack of skill with regard to the use of the technology chosen.

Conclusion. There is a need for the student voice to be heard with regard to both the rationale for implementation and the type of technology used in blended learning strategy innovations. This study recommends that student-generated videos of clinical skills could be implemented successfully with adequate support from staff.

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Blended learning, the 'thoughtful integration of online and face-to-face-instruction',^[1] is rapidly increasing in the higher education arena. Subsequently, a body of research has begun to develop that investigates the incorporation of technology into teaching and learning practices across disciplines and on various topics.^[2] In health professions education, early consensus in the literature was that students were satisfied with e-learning or blended learning – an effective method of instruction.^[3] Furthermore, blended learning has been identified as a possible means of bridging the gap between theory and clinical knowledge in health professions education.^[4]

Included in the body of research related to blended learning in health professions education, the use of videos in presenting patients for problem-based learning (PBL) cases has been shown to enhance the overall learning experience and engagement of medical students, and in turn supported a patient-centric perspective in the training of students.^[5] This study aimed to add to the body of research on the effectiveness of blended learning and apply the use of technology to a PBL physiotherapy module. The addition of videos and blogging was implemented to enhance the engagement of students in the PBL module by extending the dialogue platform available to the students.

The results of the study indicate that planning and implementation of innovation in teaching and learning should be done with careful consideration of student preference and level of competency with new technology. This article is therefore presented to aid health professions educators in their planning during the pre-implementation phase of an innovation in blended learning.

Literature

In the literature, blended learning is often used interchangeably with e-learning. The danger is that technology-enhanced teaching/learning, which might include mostly online teaching approaches, is not adequate in describing what a blended learning approach entails.^[6] Blended learning requires educators to adapt the method of instruction and overall planning of their modules. At the core of blended learning, is the underlying premise that teaching and learning practice incorporates both online and face-to-face instruction and has been dubbed to be one of the greatest trends in higher education practice within the past 10 years.^[7]

The literature provides a variety of definitions of PBL. There are six core characteristics that underpin the various definitions of PBL, two of which are that learning is student centred and new information is acquired through self-directed learning.^[8] Research has shown that students exposed to PBL are better equipped in the real world owing to their increased retention of knowledge, enhanced integration and application of basic science concepts into clinical contexts and subsequent enhancement of their intrinsic interest in the subject matter.^[9] However, PBL cannot be used in isolation to achieve the level of transfer to the clinical environment to the exclusion of other measures.^[10]

Using technology together with PBL in a blended learning approach has been found to have a positive impact on students' learning outcomes.^[11] Students have reported a high satisfaction and usage rate of e-learning tools in PBL programmes implemented in medical schools.^[12] Ultimately, students and staff alike have found that e-learning enhances both teaching and learning by enabling learners to achieve increased motivation, performance and retention rates of knowledge, skills and attitudes.^[3] It would be of value to explore the benefits of this approach within physiotherapy.^[13]

A number of authors have expressed concern regarding the apparent focus of blended learning research on technology and institutional benefits to the exclusion of pedagogy and theoretically supported application.^[2,6] Where the research has included the student perspective, it reported on their attitudes, knowledge and experience of information, communication and technology tools rather than providing insight into the participatory role in the design and revision of the initiative.^[14] There is, however, a trend in higher education research to recognise the student voice more explicitly.^[15] Furthermore, the most cited research regarding blended learning largely focuses on the learning outcomes to be reached with implementation of such a strategy,^[2] but provides limited insight into the potential that eliciting the student voice in planning these interventions could provide.

Methods

This empirical study was conducted with a group of third-year physiotherapy students enrolled in the Applied Physiotherapy module at the Division of Physiotherapy, Stellenbosch University (SU), South Africa. Ethical approval was granted by the health research ethics committee at the Faculty of Medicine and Health Sciences, SU (N11/07/240). Students ($N=40$) and staff ($N=1$) provided their consent to participate in the study.

Context

A hybrid PBL strategy has been the main method of instruction for third-year undergraduate physiotherapy students at SU since 2007. This strategy consists of 36 cases, with a total of 10 hours of contact time available for each case. A case is initiated with a tutorial session on day 1, followed by a practical session on day 2, and a feedback session on day 3. Students would generally begin with the next case on the same day as the feedback session of the preceding one.

Module feedback from students and staff has consistently expressed concern with regard to the quality and depth of engagement with case content since inception.

Intervention

Students were invited to attend a training session on how to access and utilise a university-based blogging platform for discussion of case content and for post-study reflections. They were also provided with access to a hand-held video camera, with the aim of recording practical skills done during the practical component of each PBL case.

A self-administered engagement questionnaire was completed by all students prior to and upon completion of the study period^[16] (Addendum A). This was preceded by a needs analysis survey that aimed to identify perceptions of the staff and students of the need for enhanced engagement in the module. Videos made by students were loaded on the learning management system and usage statistics monitored. Digitally recorded semi-structured focus group interviews were held with two groups of students immediately after the intervention period. These were transcribed and thematically analysed.

Results

The needs analysis survey was completed by 18 students (45%). The survey identified students' perceptions of engagement at two different time points, i.e. during the completion of the PBL case and outside of that time period. With regard to engagement over the 3 days in which a case is presented, students perceived themselves to be engaged in the discussion and practical sessions of the cases (Fig. 1).

Students have the perception that case materials are unsatisfactory and that they are not provided with enough time to fully engage with

content for each case. They perceived themselves as being less engaged with case content and to have limited ability to recall the practical skills covered in the cases (Fig. 2).

The self-administered, validated, engagement questionnaire showed that students perceived that they were actively engaged in PBL cases both prior to and on completion of the study period.

With regard to the intervention, one student utilised the video camera to make two videos in a single case practical session. These two videos were accessed 23 times on the learning management system. Students did not access the blogging platform throughout the study period.

Five themes emerged from the thematic analysis of the focus group discussions. These are graphically represented in Fig. 3, with supporting quotes for clarification. Students perceived the intervention to be flawed in that they had to spend extra time collecting the video camera, which they considered to be unwieldy, and setting it up during the practical session. This was perceived to be unnecessary use of their time. They were unfamiliar with the practice of blogging and gave this as a reason for not accessing the blog even after the training session they attended for this purpose. Furthermore,

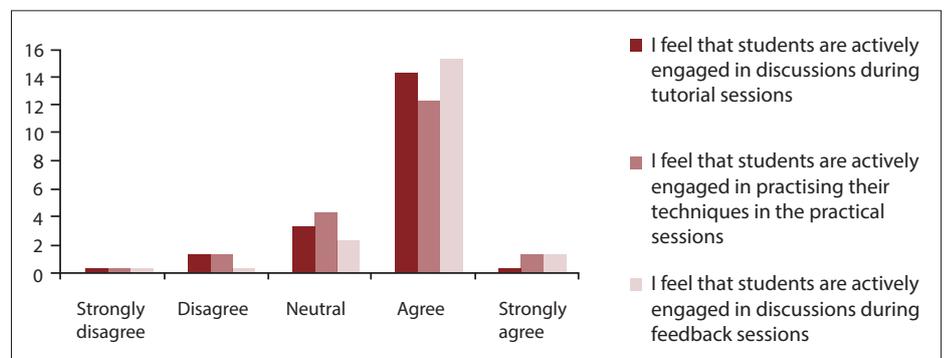


Fig. 1. Student perceptions of engagement during case sessions.

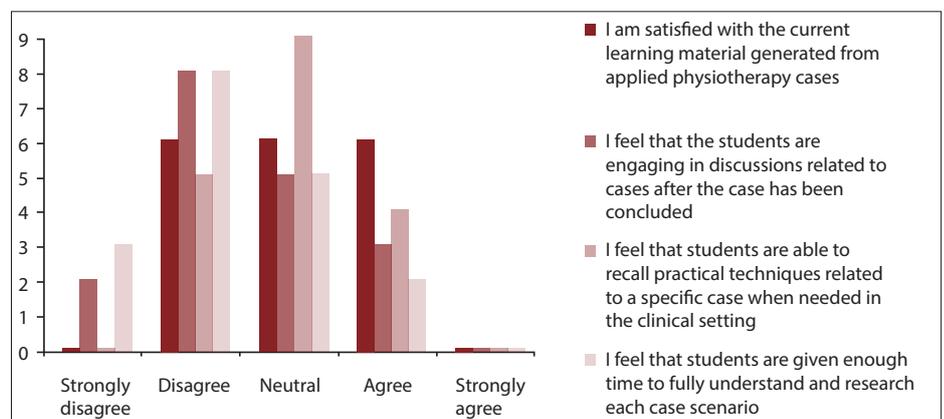


Fig. 2. Student perceptions of engagement after case completion.

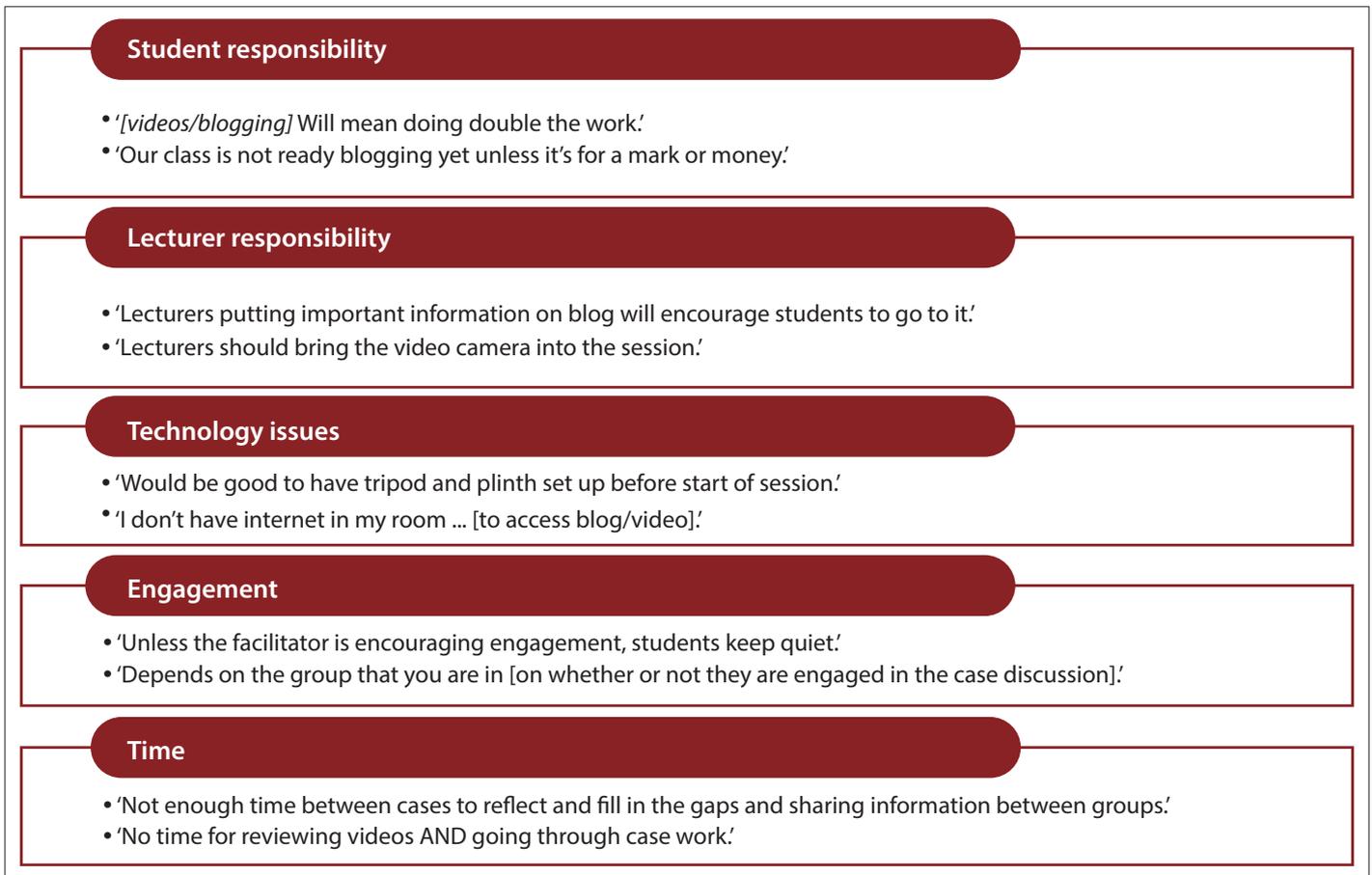


Fig. 3. Themes identified from focus group discussions on the inclusion of blended learning strategies in a problem-based learning module in an undergraduate physiotherapy curriculum.

they indicated that the intervention was not a priority for them as it was not a compulsory assessment-related activity. Finally, students considered it the responsibility of the lecturers to facilitate the increased engagement with cases, also staff-generated videos.

Discussion

Students in the hybrid PBL module responded to the needs analysis survey with their perceptions of a lack of engagement with case material and, worryingly, their inability to recall clinical techniques in relation to specific pathological conditions. This was interpreted by the researchers as a positive indication that the implementation of videos and blogging may be useful to address these issues in addition to the evidence in the literature for a more blended learning approach. However, the lack of participation in the study prompted us to investigate the underlying reasons for the students' response to the intervention and their expectations with regard to the methods used to increase engagement in PBL sessions.

Students' perceptions, as highlighted by the focus group discussions, were useful in identifying the limitations of the strategies employed in this study. If we as a research team had adequately engaged with students in planning with regard to the technology used and method of generating videos, the possibility of a higher participation level could have been realised. Students perceived the videos of clinical skills as important for their learning,

but ultimately expected lecturers to take responsibility for generating and providing access to the videos. The perception of this cohort is similar to what has been previously reported, where students rate the facilitator/academic staff member as being integral to their ability to become self-directed learners in PBL.^[17] Furthermore, the usefulness of clinical simulations in a digitally recorded format, when developed and provided by academic staff, has been shown to be effective in preparation for clinical placements in allied health professions education.^[18] One of the most important lessons learnt while conducting this study, was the need to approach innovations in teaching and learning practices as an opportunity to support students to change their *modus operandi* for learning. Applying principles of change management has been shown to be necessary in an international setting.^[19] The eight strategies recommended consist of three phases, the first being to introduce the concept and establish its relevance, then to make it happen, and finally to engage in activities to ensure sustainability.^[19]

A recommendation from this study is therefore to ensure student participation in the selection of technological devices, method of sharing and availability of recorded techniques. To meet this recommendation, the academic staff would need to investigate the use of mobile devices if students are to participate in the recording of techniques. Should academic staff recognise the need, in consultation with students on the usefulness of these student-generated videos, the assessment opportunity thereof will

need to be investigated. We envisage adding assessed student-generated videos to a database or a repository as a viable option for expanding learning opportunities for undergraduate physiotherapy students. The rationale is that if students are required to demonstrate a clinical skill for assessment purposes, the quality of the videos would be of a sufficient nature for use as a resource. Cell phone technology allows students to use their own devices to record these videos and would therefore eliminate the difficulty students had with the video camera provided for them in this study. The practice of generating their own videos for a database could furthermore have a positive impact on their clinical skills.^[20]

Alternatively, if physiotherapy curricula should implement the use of video recording for student learning, the following should be considered: infrastructural technology changes to practical venues, provision of technical support, and staff-generated videos of core techniques. The videos would then be a learning resource for students as opposed to an additional task.

Conclusion

This study highlights the necessity for a deeper understanding of the study population in addition to the literature before following the call to include technology in teaching and learning. Evidence from the literature and results of this study support a collaborative effort in the planning of blended learning innovations. Even though the participation level and self-directed learning were not clearly evident, we maintain that technology can be used to enhance engagement for students. In hindsight, success is dependent on sufficient planning and implementation of various strategies to ensure optimal participation and satisfaction of both academic staff and students.

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Addendum A

Items and scoring guide for the student self-report of engagement measure*

- I contributed meaningfully to class discussions today.
- I was not paying attention most of the time in class.
- I contributed my fair share to class discussions.
- I participated in class discussions today.
- I talked in class with other students about class material.
- I was mostly a passive learner in class today.
- I paid attention most of the time in class.
- I was mostly an active learner in class today.
- Most students were actively involved in class today.

Note: Response categories for all items ranged from 1 (*strongly disagree*), 2 (*disagree*), 3 (*neither agree nor disagree*), 4 (*agree*), to 5 (*strongly agree*). Subscale totals were calculated by reverse scoring items 2 and 6 and averaging the nine items.

*O'Malley KJ, Moran BJ, Haidet P, Seidel CL, et al. Validation of an observation instrument for measuring student engagement in health professions settings. *Evaluation and the Health Professions* 2003;26(1):86-103. [http://dx.doi.org/10.1177/0163278702250093]