



REVIEW

How to keep medical preceptors effectively motivated in a web-learning environment? An overview[☆]



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Abstract Distance learning has strengthened medical education, especially in geographically extensive regions. Despite the many characteristics of these web-based resources, the motivation of students to perform effectively in virtual educational programs remains a challenge. © 2017 Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

PALABRAS CLAVE

Educación a distancia;
Educación médica;
Preceptoría

¿Cómo mantener a los preceptores médicos motivados de manera efectiva en un entorno de aprendizaje en la web? Una visión general

Resumen La educación a distancia ha permitido potenciar la educación médica, especialmente en regiones geográficas más extensas. A pesar de la gran cantidad de propiedades de los recursos Web, los aspectos motivacionales de los alumnos para un desempeño efectivo en los programas de educación virtual siguen siendo un desafío.

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Abbreviations: DE, distance education; ABEM, Brazilian Association for Medical Education; MOODLE, modular object-oriented dynamic learning environment; VLE, virtual learning environment; CPCP, Development of Pedagogic Competencies for Preceptorship Practice.

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Introduction

The act of learning and teaching by distance have been a great challenge throughout the years. The appearance of information and communication technologies brought new perspectives for Distance Education (DE), allowing educators to develop digital resources with a spread of approaches. Brazil approved the specific legislation for national education in 1996¹; nevertheless, e-learning systems for Brazilian medical educational programs just became widely used recently.^{2,3}

The insertion of DE technologies is not specifically a revolutionary action; however it comprises a field of possibilities.⁴ The simply availability of any subject for learners via media shall not be motivational enough. It is strictly important to favor the significant learning; and this learning should encourage the continuous improvement, providing organized and pertinent information on a proper moment; and promoting the internalization of this knowledge.^{4,5}

If, on one hand, the educational web-based tools overpass some traditional programs limitations, such as high cost; on the other hand, the effective participation in the virtual environment precedes intimacy with the technology resources, connectivity and time availability.^{6,7}

The Brazilian Association for Medical Education (ABEM) is a non-governmental institution that cares about the quality of medical education. It acts in under-graduation, medical residency and graduation programs. Recently, the national demand of preparing the preceptorship for new educational perspective, based on individual student profile and active methodologies, incited ABEM to finance the project of qualification for regional leaders in order to nationally empower the medical education.⁸

Initially, this project qualified over three hundred leaders among professors, tutors and preceptors from 12 Brazilian Federal Universities. These institutions were established as qualification centers, so the leaders could replicate the methodology locally. Additionally, as a consequence, a national educational network were structured.

The project, named Development of Pedagogic Competencies for Preceptorship Practice (DPCP), was divided in two steps: an initial face meeting, then, a distant phase.⁸ A MOODLE platform was applied for DE activities.⁹ Along the course, it was observed that the participant's motivational endeavor to keep effectively connected fluctuated, reasoning the purpose of this review.

Methods

The problematizing methodology was used in the DPCP course: the authors, according to each personal and previous experience, were required to enroll the factors they considered to influence the quality in distance education; then, a brain storm was performed. A list of different variables was cited. Mutually, the items in the list were numbered according to what the group classified as the most important. The effective participation and motivation in the virtual platform was pointed as the main influencer factors for higher performance in DE.

Then, the authors reviewed the medical literature individually, focusing the solution for the problem: how to keep effectively motivated the learner in a web-learning environment. As the papers were being selected, they were shared by MOODLE forum. A deadline of two months to finish the selection was covenanted.

After that, a final paper was gradually written by all through the Wiki tool, available in MOODLE. This source allowed a mutual textual construction. Ultimately, a single member was randomly selected to review the final text.

Review

What do Virtual Learning Environment, e-learning and MOODLE mean?

There are several technologies currently being used in medical education. Although their approach overlap in terms of components and instructional possibilities, the main goals are similar: to make easy the acquisition of basic knowledge; to improve the ability of making decisions; to enhance perceptual variation and coordination skills; to practice rare or critical events; and to develop psychomotor capacities.¹⁰

The virtual learning environment (VLE) represents the online classroom. It contents a bunch of interfaces, tools and structures for an interactive learning. The management of this environment comprises a myriad of aspects, especially strategies for communication and learners' participation, supportive care and self-assessment.¹¹

The e-learning is an educational technology based on computer, which information subjects are left available electronically. It is a generic definition, with a spread of usage.¹² Few examples are: the *Computer-assisted Learning*, which supports the face-to-face classes to enhance the discussion; the *Personal Digital Assistants* (PDA), that are available on smartphones and routinely used for quick researches, like medical questions, patient management and treatment decisions; the *Digital Games*, especially for some motor skills training, as surgeries simulation, for instance; and the *Simulation*, which a patient condition, or anatomic region, or even some clinical tasks are imitated, and the students are required to solve them.¹⁰

Likewise, MOODLE appears as tool to benefit some e-learning medical education programs. Its name is an acronym of Modular Object-Oriented Dynamic Learning Environment^{9,13}; and it is an oriented dynamic strategy with a clear aim. This model demands an active participation of learners, once the knowledge is continuously debated and shared; so, the final success depends on the quality of subjects, the cooperative learning and the tutorial easiness.¹³

Another key of success for MOODLE courses is giving opportunity for learners to know about the platform tools. For instance, if a face meeting happens before the distance activities; then, the student performance in VLE shall to be higher. This previous meeting also interferes positively the motivational aspects during the virtual phase.¹⁴

Overall, it is incorrect to consider as e-learning strategy the simply information delivery by internet. This technology demands a group interaction; it requires the mutual presence of learners and tutors, besides the supportive materials. Having said that, its definition implicates the

participation, the sharing and the consideration of ones else experiences.¹³

Which aspects are motivational in VLE?

Some authors explain that motivational aspects in VLE are divided into two groups: external and internal. The perception of the virtual tool usefulness in the daily practice is an example of external motivation; and, non-cognitive aspects, as emotion, symbolism and personality traces, are comprised as internal ones.¹⁵

Furthermore, according to these motivational domains, a model with six different variable was proposed, including: technical support, computer self-sufficiency, perception of the system easiness, system usefulness, the attitude for the system adoption and its coverage. The same authors highlighted that technical support directly influenced all the others.¹⁵

Some aspects that interfere the learners' performance, participation and persistence in DE activities were also identified. The sense of community in VLE beyond the online mediation, including a real interaction between participants, is one of them. This collaborative environment provides a qualified learning and the student satisfaction. Yet, some other aspects include the clearness of learners' expectations, the VLE self-assessment and the debate of subjects based on real problems.^{16,17}

A qualitative study discussed the students' perception of some aspects they considered to contribute the motivation in VLE. The tutors' role was pointed as crucial. Promoting immediate feedbacks, showing enthusiasm, managing properly the tasks length and having a friendly, flexible and affectional attitude along the activities were listed to be the ideal tutor profile.¹⁸

About feedback, it is an irrefutable variable for educational success. It is important to highlight that its role is not to evaluate simply, but giving a nonjudgmental performance analysis, considering particularly the expected standard. It should be frequent in order to be meaningful and effective.¹⁹ As an example, a German trial, aiming to assess different strategies of learning, addressed three groups of students according to the time of feedback: they concluded that those with more frequent feedbacks had better outcome, and managed smartly the emotional interferences throughout the learning process.²⁰ Nevertheless, if feedback is not appropriate, it can cause anxiety not only for students, but also for teachers.¹⁹

So, the feedback must be planned. In VLE, it involves setting the timing and the appropriate place (an open forum or a private message). It is clear that feedback is more beneficial to the learner if it is immediate. If it is delayed, there is potential for errors of observation and unreliable recollections of the clinical situation. A learner is also more likely to respond positively and act upon the information given, if it is recent and fresh in their mind.²¹

Therefore, the expected tutor profile with ability of giving feedbacks, leading a group of students harmonically and dealing with contradictory issues is far to be easy. It is clear that, even clinical teachers having high qualifications in their specialty might not be enough. Specifically in VLE, they must be trained on proficiency in teaching and

education by distance, and cannot be uniquely responsible for the entire process.²²

In order to cover all those aspects, the supportive VLE team should be multidisciplinary, enrolling members with different actions: the professor, selecting the educative materials; the editor, acting as virtual manager; the programmer, helping editor for software development; the system manager, promoting the program security; and the tutor, which is required to develop a supportive role along the entire learning process. The tutors and professors training for VLE tools usage is fundamental, once it is expected they must be aware of all these technology domains, helping learners whenever requested.^{17,23}

Nonetheless, although the multidisciplinary learning model promotes collaboration and flexibility, it is important to note that consideration be given to participants who are not computer literate. Computational skills are not widely present among health professionals. Therefore, some workshops and library availability are strongly suggested. An interprofessional environment can assist health professionals to operate outside their "traditional silos" leading to a more collaborative approach.²⁴

One extra barrier for the multidisciplinary team is to update information continuously. Time commitment might be required for that. Pooling resources and sharing online modules among institutions and professional bodies is a useful strategy for the optimum use of available information. This strategic plan reduces long-term costs and let the educational program to thrive.²⁵

Besides that, the educational planning for virtual teaching activities is crucially demanded: it reinforces the effective and the qualified participation of all enrolled individuals.⁴ The general principles of strategic planning for teaching session must involve the following items: teacher goals; students' background and experience; student learning objectives; teaching tools (equipment, aid resources etc.); key questions (questions are planned to be asked to address the learning aims); major difficulties anticipated; evaluation of learning (how to notice the objectives have been achieved?) and self-evaluation.²¹

Furthermore, the purpose of educational planning and the supportive material in VLE, besides the tutor performance, is to incite learners' autonomy. They must be motivated to search different learning contents and turn VLE into a reflexive environment, favoring the concepts of a significant learning.⁴

One another point about debates' quality in VLE is the mediation. Forums without a precise mediation do not achieve any learning result. The required abilities for a mediator are: fully comprehension of all processes enrolled in VLE, technical capacity and domain of the entire educational program.²³

According to Salmon (2000), a committed mediator should: be present during VLE activities; give always welcoming greetings; provide the opportunity for learners to get to know the media tool; previously organize and create expectations for the activities; clearly enroll the aim of each task and fulfill learners' demands; provide interventions; include and value everyone's participation; be flexible, responsible and innovator for planning the activities; limit the discussion to one or two focal points; enlighten the central line of the discussion; offer a way to get through

the challenging questions; and feel him/herself comfortable with opposite points of view.²⁶

As reinforcement of all the elements previously listed, a meta-analysis disclosure about internet-based learning programs for health professions empathized interactivity, practice exercise, repetition and feedback as variables associated with improved learning outcomes.²⁷

Finally, the activities would not be reasonable if they were not useful for the students' reality. For the qualified and effective performance of all participants, it is mandatory the inseparable connection between educational subjects and the learners' daily practice. Empathy with the educational content is highly expected.²⁸

Comments

Ultimately, the evidence base for health professions virtual education is lacked. Some professional fields have been already extensively supplied by the Theory of Multimedia Learning.^{29,30} Some else relevant theories have come from the constructivist approach such as cognitive flexibility theory (which has been applied across health professions education),^{31,32} the Systems Approach Model³³ and Cognitive Load Theory.³⁴ So, there remains a great need for clarification studies of e-learning applications for medical education and strategies to understand how and why they work and establish clearer roles for their use.³⁵

However, overall, a propitious VLE is highly important for DE programs successful. Ideally, few face meetings (one or two) between the DE activities are strongly suggested; so the sense of community would be empowered. The VLE must enroll an expert team, since the initial pedagogic conception and the processes mediation, up to an agile technical support. It also should be based on shared reflections, experiences and mutual knowledge. The tutor is expected to be available and motivator, encouraging participants to interaction, and also modeling attitude of respect and sharing. After all, the empathy, the welcoming reception, the credibility, the trust and the methodologic ability guarantee adherence, respect, motivation, persistence and harmony in every learning environment, especially the virtual.

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Conflict of interest

The authors declare no conflict of interest.

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