Original article

Evaluation of a new eLearning platform for distance teaching of microsurgery

Évaluation de l'enseignement à distance dans l'apprentissage de la microchirurgie : à propos d'une nouvelle plateforme de e-learning

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Abstract

Online learning (or eLearning) is in constant evolution in medicine. An analytical survey of the websites of eight academic societies and medical schools was carried out. These sites were evaluated against parameters that define the quality of an eLearning website, as well as the shareable content object reference model (SCORM) technical standards. All studied platforms were maintained by a webmaster and regularly updated. Only two platforms had teleconference opportunities, five had courses in PDF format, and four allowed online testing. Based on SCORM standards, only four platforms allowed direct access without a password. The content of all platforms was adaptable, interoperable and reusable. But their sustainability was difficult to assess. In parallel, we developed the first eLearning platform to be used as part of a university diploma in microsurgery in France. The platform was evaluated by students enrolled this diploma program. A satisfaction survey and platform evaluation showed that students were generally satisfied and had used the platform for microsurgery education, especially the seven students living abroad. ELearning for microsurgery allows the content to be continuously updated, makes for fewer classroom visits, provides easy remote access, and especially better training time management and cost savings in terms of travel and accommodations.
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Keywords: eLearning; Platform; Microsurgery; Distance education; Website; Webmaster

Résumé

L'apprentissage en ligne (ou *e-learning*) est en constante évolution dans le domaine de la médecine. Nous avons évalué la première plateforme *e-learning* utilisée dans le cadre d'un diplôme d'université (DU) de microchirurgie en France. Une enquête analytique des sites web de 8 sociétés savantes et des facultés de médecine a été menée, utilisant des paramètres qui permettaient de définir la qualité d'un site web destiné à l'*e-learning*, ainsi que la norme *Shareable Content Object Reference Model* (SCORM) pour évaluer ces sites. Notre plateforme a été évaluée par les étudiants inscrits au DU de microchirurgie. Toutes les autres plateformes étudiées étaient réalisées par un webmaster et étaient régulièrement mises à jour. Seules 2 plateformes offraient des possibilités de téléconférences, 5 des cours sous format PDF, et 4 permettaient de faire des examens en ligne. Selon la norme SCORM, 4 plateformes avaient un accès direct sans mot de passe. Le contenu de toutes les plateformes était adaptable,

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interopérable et réutilisable. Mais leur pérennité était difficilement appréciable. L'enquête de satisfaction et la grille d'évaluation de notre plateforme faisait apparaître que les étudiants étaient globalement satisfaits, et avaient utilisé la plateforme dédiée à notre enseignement de microchirurgie, notamment les 7 étudiants vivants à l'étranger. L'*e-learning* en microchirurgie permet une actualisation permanente des contenus, une diminution des cours présentiels, un accès facile à distance, et surtout une flexibilité de la gestion de son temps de formation et des économies en termes de déplacements et d'hébergements.

1. Introduction

Distance learning via a dedicated website (or eLearning) is increasingly used in universities. According to the European Union, eLearning is defined as "the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services, as well as exchanges and remote collaboration" [1].

ELearning emerged in the US in the 1990s. Since then, it has been constantly evolving in high schools [2], universities [3], and of course, medical schools [4]. In 2001, the Scottish Higher Education Funding Council proposed the creation of a virtual university for medical education through distance learning and classes. In 2003, 36 medical schools in Europe, USA and Australia adhered to the Scottish innovation [5]. Since 2005, 56% of higher education institutions in the United States identified distance education as one of the most important areas of their development strategy for the coming years [6]. In the field of continuing medical education in Europe, particularly in France, these platforms have been in use since 2009 [1].

Nevertheless, the classical post-graduate medical education approach continues to be based on a mentoring type of relationship. Each group of medical students is often accompanied and supervised by a tutor. But this tutoring principle can be applied in an eLearning setting [4]. Training in microsurgery has not escaped this new interactive learning tool.

The aim of this work was to study the outcomes achieved with the first electronic distance learning platform used as part of a university diploma (UD) in microsurgery during the 2013-14 academic year at a French university.

2. Materials and methods

2.1. Materials

This study aimed to assess the contribution of eLearning to microsurgery education, and to describe its pros and cons in order to define appropriate website specifications. First, we conducted an analytical survey of websites developed by learned societies or medical schools. Second, we asked students enrolled in the microsurgery diploma program to evaluate an internet-based eLearning platform.

Analytical study and review of websites using eLearning in medicine were carried out to analyze eight platforms offered by learned societies, universities or medical schools in France and Morocco. These sites were from the following institutions:

French Virtual Medical University (UMVF) [7], French Society of Orthopedic Surgery and Traumatology (SOFCOT) [8], Canal-U [9], WebSurg [10], University Paris Descartes [11], Microsurgery UD of the Strasbourg Faculty of Medicine [12], University of the French West Indies and Guiana [13], Faculty of Medicine and Pharmacy of Marrakech [14].

A new platform was developed in the context of a microsurgery diploma in France. Fifteen students enrolled in the 2013-14 academic year were asked to evaluate it. Among these 15 students, 12 were surgical residents and three were senior surgeons enrolled in the continuing education program. Eight practiced in France (three practiced outside the registration area) and seven practiced abroad (Algeria, Germany, Belgium, Luxembourg, Morocco and Switzerland).

2.2. Methods

When reviewing the digital platforms for medicine-related education, we identified several parameters that were used to define the quality of an eLearning website. These parameters were site development by a computer professional, regular updates by a webmaster, the presence of videos (streaming in high definition format) [15], courses (online, PDF format with or without videotaped lessons), teleconferences and session duration of less than 30 minutes [16]. The following parameters were added: availability of a forum for discussions between teachers and students, presence of teaching materials, a list of contact information, terms of knowledge controls, the opportunity to do online tests and evaluation questionnaires. We evaluated these sites against the technical standards adopted by the majority of eLearning sites, the sharable content object reference model (SCORM) (Table 1), which consists of rigorous specifications [1–6] related to accessibility, adaptability, sustainability, interoperability and reusability of the site and its content.

Our site was evaluated by the students registered in the microsurgery diploma through a satisfaction survey, with a rating from "very satisfied" (5/5) to "not at all satisfied" (0/5) assigned for the following seven items: overall presentation of the platform, access to the platform, video quality, value of the videos for practical learning, videotaped classes, available of contact information for the teachers and students and e-mail exchanges. We completed the eLearning site evaluation by determining the number of times students had used the eLearning site, the time spent on the site in minutes and if all the documents and videos had been viewed (yes/no).