Use of a Web-Assisted Approach to the Teaching of a Hospital Pharmacy Management Course

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ABSTRACT

Objective: To develop a hospital pharmacy management course incorporating a Web-based forum and to evaluate students' satisfaction with the course.

Methods: A 3-credit hospital pharmacy management course, consisting of twelve 3-h modules of traditional classroom teaching, was developed. The course material was made available via the World Wide Web, to maximize use of hyperlinks in the text, but was also provided to participants in hard copy. The course included a business case that raised 7 pharmacy issues. Students were asked to participate in a Web-based forum, which included a section dedicated to the 7 pharmacy issues. The forums were public, and the role of the professor was limited to observation and facilitation. Students were evaluated by means of a multiple-choice exam, an oral presentation, a written report, and their participation in the forum. The students were surveyed, by means of an anonymous Web-based questionnaire, to determine their satisfaction with this initiative.

Results: After 12 months of preparation, the new teaching approach was offered to 4 cohorts of pharmacy students in 2000 and 2001. A total of 121 students completed the questionnaire (response rate 85%): 40 students from Université Laval (20 in 2000, 20 in 2001) and 81 from Université de Montréal (31 in 2000, 50 in 2001). A significantly higher proportion of students were satisfied with the Web-based component of the course if their career orientation had to do with hospital practice (93% versus 75% for all other career orientations), if they had home access to a PC (90% versus 50%), if they had a positive attitude toward the use of chat rooms (93% versus 75%), and if they had a positive attitude toward Web-based teaching in general (92% versus 74%). A significantly higher proportion of students were satisfied with the course as a whole if they had a higher self-perceived ability related to information technology and computers, if they had home access to a PC, if they were in favour of Web-based pharmacy practice (e.g., use of the Internet for pharmacy dispensing or clinical services), and if they were in favour of Web-based teaching in general. There were no differences in overall scores among the 4 cohorts studied.

RÉSUMÉ

Objectif : Concevoir un cours de gestion en pharmacie hospitalière comportant un groupe de discussion électronique et évaluer la satisfaction des étudiants envers ce cours.

Méthodes : Un cours de gestion en pharmacie hospitalière de trois crédits, consistant en 12 modules d'enseignement traditionnel en classe de trois heures, a été mis au point. Le matériel didactique était offert en ligne, afin d'optimiser l'utilisation des hyperliens dans le texte, mais des copies imprimées étaient également fournies aux participants. Le cours comprenait une analyse de cas présentant sept problèmes liés à la gestion en pharmacie. On demandait aux étudiants de participer à un groupe de discussion électronique, dont une partie était consacrée aux sept problèmes en question. Les groupes de discussion étaient publics, et le rôle du professeur était limité à l'observation et à l'animation. Les étudiants ont été évalués à partir d'un examen à questions à choix multiples, d'une présentation orale, d'un rapport écrit et de leur participation à la discussion. Leur satisfaction à l'égard de ce projet a été évaluée au moyen d'un questionnaire en ligne anonyme.

Résultats : Après 12 mois de préparation, ce cours fondé sur une nouvelle méthode d'enseignement a été offert en 2000 et en 2001 à quatre cohortes d'étudiants en pharmacie. Au total, 121 étudiants ont rempli le questionnaire (taux de réponse de 85 %) : 40 étaient de l'Université Laval (20 en 2000 et 20 en 2001) et 81 de l'Université de Montréal (31 en 2000 et 51 en 2001). Le taux d'étudiants satisfaits de la composante électronique du cours était considérablement plus important lorsque leur carrière était orientée vers la pratique hospitalière (93 % vs 75 % pour toutes les autres orientations professionnelles), s'ils avaient accès à un PC à la maison (90 % vs 50 %), s'ils avaient une attitude positive face au clavardage (93 % vs 75 %) et à l'enseignement par Internet en général (92 % vs 74 %). Le taux d'étudiants satisfaits du cours dans l'ensemble était également considérablement plus élevé s'ils avaient la perception de posséder des compétences informatiques supérieures, s'ils avaient accès à un PC à la maison, s'ils étaient favorables à la pratique de la pharmacie en ligne (p. ex., le recours à Internet pour exécuter les ordonnances ou offrir des ser-

Conclusions: Web-assisted teaching can be a relevant complement to traditional teaching methods. The experience with this course suggests that online forum discussions are useful in hospital pharmacy management courses.

Key words: Web-based teaching, pharmacy management, forums, group discussions

vices cliniques) et s'ils étaient favorables à l'enseignement par Internet dans l'ensemble. Aucune différence dans les cotes globales des cohortes n'a été observée.

Conclusions : L'enseignement par Internet peut être un complément valable aux méthodes d'enseignement traditionnelles. L'expérience avec ce cours laisse croire que les discussions de groupe en ligne sont utiles dans le cadre des cours de gestion en pharmacie hospitalière.

Mots clés : enseignement par Internet, gestion en pharmacie, forums, groupes de discussion

INTRODUCTION

Since the early 1980s, technology has significantly influenced teaching methods. Today's institutions face challenges that include shifting demographics, rising student expectations, changing work environment, changing needs, and increased competition. To address these challenges, universities have implemented a variety of new teaching approaches, including distance learning through tele-education networks, audio and video conferencing, and Web-based or Web-assisted teaching.

Medical education communities have explored Web-assisted teaching for several years, and many educators are gradually turning to electronic classrooms.[1,2] Budgetary and physical constraints are forcing universities to re-evaluate their traditional teaching approaches even as they attempt to reach more students. It is essential to assess the impact of these new technologies on knowledge acquisition and retention, as well as students' satisfaction.[2,3] The Internet is an interesting pedagogical tool because of its text, audio, and video features. It facilitates active learning and increases opportunities to develop new communication skills.[4,5] However, effective use of the Internet for teaching does not entail simply converting existing text into Web pages. The Web format should take advantage of hyperlinks and the possibility of nonlinear navigation.[6-12]

Although there is no consensus on the absolute value of online education, some authors believe it has the potential to complete, broaden, and even replace traditional classroom teaching, while accommodating students' learning pace.[13-19] Some published studies have assessed online teaching or described a trial of this teaching approach. Bell and others[1] found that online teaching improved the learning process for medical residents, as well as their satisfaction level, relative to the use of a hard copy of the same teaching material.

However, knowledge acquisition and retention did not improve. Time spent studying was 30% less when the Internet was used. Yucha and others[14] found no difference in the results of a one-credit module of pathophysiology taught to nurses via the Web or in the traditional classroom environment.

The virtual learning environment challenges educators to redefine their role; that role is no longer to simply inform but now includes guiding students toward the pursuit of knowledge, giving technical support, and guiding exchanges. Some have proposed that these changes have shifted teachers' role from "sage on the stage" to "guide on the side".[15-17]

In 1999, the Faculties of Pharmacy at the Université de Montréal and Université Laval decided to reorganize their pharmacy management courses. At the same time, the Université de Montréal was implementing a Web-based platform (WebCT, an e-learning system designed specifically for educational institutions; WebCT Canada, Vancouver, British Columbia) to provide distance learning. This article describes the development of the new hospital pharmacy management course, which included a Web-based forum, and the evaluation of students' satisfaction with the course.

METHODS
Pedagogy

The pharmacy curriculum being followed at the time the new course was developed included 2 optional management courses, one in hospital practice management and the other in community practice management (3 credits each). Two mandatory courses covered law and ethics and the health care system. Before the reorganization, both the hospital and the community practice management courses were taught by means of traditional classroom lectures, and student performance was evaluated by multiple-choice final

exams. The following principles guided the reorganization of the content of the management courses: the courses should retain, in part, a traditional classroom teaching approach; a teaching case based on a real-life situation should be added; opportunities for discussion among students should be created; the methods of student evaluation should incorporate not only participation but also the relevance of that participation; and a Web-assisted approach to teaching the course should be implemented and evaluated. The hospital pharmacy management course was taught by the same team at both universities.

A new 3-credit course was developed, with twelve 3-h modules of traditional classroom teaching. The following general learning objectives were defined: at the end of the course, the student should be able to define and understand health care networks and the positioning of a hospital pharmacy department; the student should have acquired basic management knowledge and be able to apply that knowledge to hospital pharmacy practice; and the student should be able to analyze the key external and internal elements of the health care environment relevant to pharmacy practice and to identify opportunities, threats, strengths, and weaknesses related to hospital pharmacy practice. The modules were developed according to the following themes: organization of a pharmacy department within the health care system (i.e., organizational aspects of the health care system as a whole, the hospital specifically,[1] and the pharmacy department itself[1]) applied financial management,[2] applied human resource management,[1] risk and quality management,[1] stock management,[1] pharmacy distribution services,[2] clinical pharmacy services,[2] and information technology.[1] Each module had a minimum of 15 specific learning objectives with 15 to 20 pages of relevant content in the course learning materials. Three suggested readings per module were provided for classroom and Web-based forum discussions. The course materials were made available on the Web to maximize students' use of suggested hyperlinks in the text; however, because high-quality printers are not available to students at either university, a professionally printed copy of the course materials was also given to each participant. These course materials were not edited for optimal Web-based learning, but if the course eventually becomes an online-only course, they will have to be re-edited. Students were expected to attend all classroom sessions.

The course included a business case covering 7 pharmacy issues. Student teams (consisting of 5 to 7 students, depending on the number of students enrolled in the course) were formed, and each team was assigned to work on 1 of the 7 issues. One team was assigned to examine the management of the pharmacy department, in addition to analyzing its assigned pharmacy issue. The business case was based on data from a real pharmacy department in a teaching institution. The students were given the hospital's annual report, the pharmacy's annual report and financial statements, and other relevant documents. From this large amount of data, the students had to efficiently identify the key elements and figures relevant to their pharmacy issue, prepare a written report, and make an oral presentation at the end of the course. Each team was asked to present recommendations, taking into account the strategy of the pharmacy department, the department's budget, the institution's needs, and the professional context. Each team had a leader (elected by the group members), who was responsible for managing the group during the semester; this included moderating discussions related to the oral presentations, choosing and exercising a leadership style, determining an appropriate approach for feedback, informing group members, and reporting decisions. Students were encouraged to make decisions by consensus.

The pharmacy issues covered in the course included the following: Should the pharmacy department automate its activities? Should the pharmacy department implement point-of-care dispensing technology (e.g., drug cabinets)? Should the pharmacy department reorganize its research services? How should the pharmacy department plan and implement a new clinical pharmacy service in a specific clinical sector (e.g., surgery)? What strategies should the pharmacy department adopt to improve drug utilization? Pharmacy issues for the business case were selected from real issues that the pharmacy department had faced. The professor (J.-F.B.) assigned topics to groups, taking into account each team's interest. Because the course workload was substantial, the teams were strongly encouraged to delegate tasks, according to the strengths and weaknesses of each team member. Tasks to be asssigned included reporting to the team leader, conducting a literature search, writing the final report, and producing the material for the oral presentation.

Finally, students were asked to participate in their group's Web-based forum. The following learning objectives were set for this component of the course: students should be able to participate actively in group discussions, share personal experience relevant to the topic under discussion, and provide relevant input and

suggestions to the group. At the beginning of the course, the professor presented a 60-min session on how to use the platform, and a printed copy of a 5-page technical tutorial was given to all students. Guidelines for use of the forum were also provided (Table 1).[20-24] Participation in the forum was on an individual basis (i.e., not on behalf of the student's team) to encourage everybody to participate and to avoid dominance by team leaders. Participants were expected to discuss the business case not only on the basis of the data provided, but also in relation to their personal experience as a member of pharmacy organizations in community or hospital practice (e.g., as pharmacy technicians). Each student was expected to read all messages posted for each discussion topic. The forum was structured with a section dedicated to each pharmacy issue. Within a section, students were encouraged to discuss one topic at a time, and the team leader was responsible for summarizing the opinions expressed. The forums were public (i.e., available to all students registered in the management course), and the role of the professor was limited to observation and facilitation.

Assessment of Student Performance

The performance of students in the new course was evaluated in 4 ways. Students' knowledge was evaluated by a multiple-choice exam, and their competencies were evaluated on the basis of the oral presentation, a written report, and their participation in the forum. Both the quantity (50%) and the quality (50%) of the student's participation in the forums were evaluated. Assessment of a student's forum participation was based on points assigned for the number of messages read and the number of comments posted by that student and was categorized as "did not meet expectations", "met expectations", or "exceeded expectations". The quality of participation was monitored by the professor, who took note of comments that brought new ideas and alternatives to the debate or that positively influenced the discussions. Points were also assigned on the basis of whether or not the quality of the student's input met, exceeded, or failed to meet expectations.

Evaluation of Program

Data were collected from 4 cohorts of pharmacy students who registered for the new hospital pharmacy management course. The course was offered to fourth-year pharmacy students enrolled in the pharmacy undergraduate degree program at the Université de Montréal and to pharmacy students enrolled in the

Table 1. Guidelines for Use of Electronic Discussion Forums[20-24]

Reach agreement on the expected frequency of forum access by each participant (e.g., daily, every other day, weekly)

Identify the main discussion subjects, to focus the students' contributions to forum discussions

Ensure that the students master the forum's main functionalities (e.g., how to reply with historical background, how to attach a signature, how to insert a document)

Avoid initiating several discussions at once within the same subgroup; refrain from starting new discussions before previous discussions have concluded

Identify a moderator for each subgroup; this person should summarize the ideas discussed before closing the subject

Avoid unnecessary messages; in the case of an opinion poll, ask the participants to reply through e-mail and present the compiled results after a predetermined deadline

Encourage participants to present brief messages and respect the following rules: limit each paragraph to 1 idea, limit each message to a maximum of 2 ideas, present a clear conclusion (i.e., restate the question asked, identify the new information added to the discussion, and indicate approval or disapproval of the idea under discussion)

Identify beforehand the "Netiquette" rules applicable to the group; specify whether participants play a role or simply offer their personal opinions; specify what should be kept confidential

Indicate explicitly the forum's participants; specify if other teachers, observers, or students from other groups will have access to the platform

Encourage students to keep their passwords confidential and to change passwords if needed to maintain confidentiality

The nature and frequency of the teacher's role must be specified beforehand (Is the teacher acting as a moderator? an informant? a referee? How often will the teacher read the posted messages?); intervene in an appropriate and foreseeable way

master's degree program at Université Laval. A WebCT survey was conducted to determine students' satisfaction with the new teaching approach. The 43-question survey was accessible through the Web platform during the last 7 days of the course. The survey was pretested with a group of 5 students to obtain their comments and clarify the statements as necessary. Descriptive data about the students (e.g., career orientation, self-evaluation of software knowledge, interest in information technologies), their access to the technology needed to participate in the course (e.g., physical facilities to access a computer, type of computer, type of Internet connection), their use of the Web (e.g., number of e-mail addresses, number of e-mail messages processed weekly, number of Web sites visited weekly, perceived importance of online learning), and their satisfaction level (with the course in general and more specifically

with online learning via the WebCT platform) were collected for analysis. Satisfaction was evaluated on the basis of the following categorical statements: totally agree, partially agree, partially disagree, or totally disagree. A student was considered to be satisfied if he or she partially or totally agreed with a positive statement.

Univariate analysis of dichotomous variables (satisfaction vs. dissatisfaction) was performed with the Fisher exact test or the likelihood ratio χ^2 test. A p value less than 0.05 (uncorrected) was considered significant.

RESULTS
Pedagogy

After 12 months of preparation, the new teaching approach, incorporating traditional classroom teaching, a pharmacy business case, and a Web-based forum for discussions, was implemented. The new hospital pharmacy management course was offered to a total of 4 cohorts of students in 2000 and 2001.

The traditional classroom teaching component was retained because pharmacy students do not have much exposure to management topics in their training. The authors believe that students should be exposed to a role model in the classroom setting to stimulate their interest in pharmacy management.

The pharmacy business case was based on a real-life situation from Hôpital Sainte-Justine, where the course professor serves as director of pharmacy. Site visits to the hospital were encouraged, and students were invited to contact pharmacists at that institution to get more information, discuss the case, and survey employees.

More opportunities for discussion among students were available in this course than had been available with the previous course format. The Web-based forum was widely used, with an average of 935 (standard deviation [SD] 215) messages posted per course, an average of 840 (SD 215) messages read per student per course, and an average of 17 (SD 15) messages contributed per student per course. The professor spent an average of 44 h (SD 3 h) per course monitoring the forum. Student time spent on the forum was determined from a survey of the participating students. Nineteen percent of the students spent less than 10 h, 29% spent from 11 to 20 h, 29% spent from 21 to 30 h, and 23% spent more than 30 h on the forum. A 3-credit courses usually consists of up to 45 h of classroom time and 90 h of homework. The WebCT component of the course required more time than expected at the beginning of each course, especially for the professor.

Assessment of Student Performance

In the assessment of student performance, the multiple-choice exam was worth 40%, the oral presentation 30%, the written report 15%, and participation in the forum 15%. There were no differences in overall scores among the 4 cohorts of students.

Evaluation of Program

Table 2 presents students' satisfaction with the Web-based approach to teaching and with the course as whole.

A total of 121 students completed the anonymous satisfaction questionnaire: 40 students from Université Laval (20 in 2000 and 20 in 2001) and 81 from Université de Montréal (31 in 2000 and 50 in 2001); this represented an average response rate among students enrolled of 85%. A significantly higher proportion of students were satisfied with the Web-based component of the course if their career orientation had to do with hospital practice (93% versus 75% for all other orientations), if they had home access to a PC (90% versus 50%), if they had a positive attitude toward the use of chat rooms (93% versus 75%), and if they had a positive attitude toward Web-based teaching in general (92% versus 74%). The rate of satisfaction was also higher among those who felt that the 60-min basic WebCT training was adequate (96% versus 63%; $p = 0.007$).

A significantly higher proportion of students were satisfied with the course as a whole if they had a self-perceived higher level of ability in the use of information technology and computers, if they had home access to a PC, if they were in favour of Web-based pharmacy practice (e.g., use of the Internet to provide pharmacy dispensing or clinical services), and if they were in favour of Web-based teaching in general (Table 2).

Fifty-four percent of the respondents (65/121) had a positive attitude toward Web-based pharmacy practice (defined as either dispensing or advising patients through the Web), 67% (81/121) had a positive attitude toward Web-based teaching approaches (defined as part or all of the course given via the Web), and 69% (83/121) had a positive attitude toward tele-health. Ninety-four percent (114/121) of the respondents trusted the confidentiality of online teaching.

The questionnaire included a few open-ended questions to gather students' comments. About 75% of the respondents felt that the course should maintain the traditional classroom component in light of students' limited exposure to management before beginning the

Table 2. Evaluation of Student Satisfaction with Trial of a Hospital Pharmacy Management Course

Variable	Satisfaction Rate (% of Students)			
	With Web Approach	*p* value	With Course as a Whole	*p* value
Student demographic characteristics				
Year		0.79		0.27
2000	86		96	
2001	88		90	
School		0.26		0.27
Université de Montréal	84		91	
Université Laval	93		98	
Career choice		0.05		0.29
Hospital	93		96	
Community	75		88	
Industry	67		83	
Other	100		100	
Technological profile				
Self-evaluated ability to use information technologies with comfort		0.46		0.01
High	81		97	
Medium	89		96	
Low	92		69	
Home access to a PC		0.004		0.02
Yes	90		96	
No	50		70	
Owner of a PC		0.15		0.68
Yes	92		96	
No	82		94	
Home access to Internet		0.17		0.16
Yes	89		95	
No	77		86	
Attitude toward use of information technologies in professional practice				
Perceived utility of the Web		0.17		0.69
Useful	89		94	
Not useful	77		91	
Perceived utility of chat rooms (forums)		0.01		0.46
Useful	93		95	
Not useful	75		91	
Attitude toward a Web-based pharmacy practice		0.19		0.02
Favourable	91		99	
Not favourable	82		88	
Attitude toward telehealth		0.99		0.06
Favourable	87		96	
Not favourable	86		87	
Attitude toward Web teaching		0.01		< 0.0001
Favourable	92		100	
Not favourable	74		82	

*Satisfaction with the Web-based approach to course presentation, including forum discussions.
†Satisfaction with overall course content, media used, teaching approach, and professor or lecturer.

course. The students indicated that the discussion forums should be more focused, specifically by shortening the messages, reducing the number of messages, and reducing the duration of discussion. Students indicated a preference not to be evaluated on the basis of the quantity of their contribution to forum discussions; they felt that this form of evaluation encouraged some students to participate even when their input added little to the discussions.

The students found it somewhat difficult to acquire an understanding of the pharmacy department as a whole while focusing on a specific aspect of the pharmacy's operation (i.e., the assigned pharmacy issue). This integration appeared easier for the master's level students, as they had more previous exposure to hospital pharmacy practice. Also, a virtual business case has its limitations. Information on every aspect of the case could not be provided, and there were some situations in which data were limited. The students sometimes had to make assumptions and validate them with the professor before going on. Some respondents noted that many students who usually did not participate in class in other pharmacy courses took a very active role in the forum.

DISCUSSION

This article documents successful implementation of a new hospital pharmacy management course at 2 universities. The combination of classroom teaching, teamwork for analysis of a business case, and a Web-based forum discussion allowed the professor to provide knowledge in a structured manner and to be a role model, allowed students to apply their newly acquired knowledge to a realistic business case in a virtual pharmacy department, and encouraged ongoing discussions based on the pharmacy issues of the business case as well as personal experience. To the authors' knowledge, the use of a Web-based forum has not previously been described for teaching pharmacy management.

Several positive aspects of online teaching are often cited, such as flexibility, elimination of time and distance constraints, the possibility of asynchronous discussions, improvement in computer competency, participation of students who are usually less involved in classroom discussions, improvement in students' ability to synthesize, analyze, and evaluate, increase in students' willingness to form an opinion and defend that position, improved access to current information, more opportunities for creativity, and greater collaboration and mutual aid among students.[2-5,15-19] In the development

of this course, all of these benefits were realized. In addition, this course structure represented a great way to confront the student with realistic administrative problems faced by a real department of pharmacy, while offering them the oppportunity to debate and discuss the issue with colleagues, as they would do in a real-life situation.

Reported negative aspects of online teaching are the need for technical support (e.g., for Internet connection problems), the need for self-discipline, feelings of isolation, lack of face-to-face interaction with the teacher and with other students, the risk of pursuing technical advancement rather than acquisition of new knowledge, concerns about confidentiality, the need to train the user, heavy workload, and development and maintenance costs.[2,5,13,18,25] In this case, the most negative aspect was the large number of messages posted. Some students felt that they should have been responsible for reading only messages dealing with their particular case study (rather than all messages for the course as a whole). However, the authors believe that students will learn more by taking part in all discussions. The possibility of setting a maximum number of forum contributions per student has been considered but has not yet been implemented. This experience has also shown that online teaching significantly increases the teacher's workload. However, the role of the professor can be minimal, and interventions in the forum should target inefficient discussions rather than providing content. It was estimated that a minimum of 30 supplementary working hours was needed for each cohort of students for monitoring of exchanges, guiding student contributions, and performing student evaluation. Fortunately, no technical problems were experienced during the course.

Students taking online courses are generally satisfied, although there is not necessarily any difference in terms of academic success compared with those taking a traditional classroom course. In the course described here, no significant differences were observed in terms of the distribution of marks within the 4 cohorts. Leasure and others[3] found no difference in results obtained by students taking a nursing course via the Internet and those taking a more traditional course. Mehta and others[15] found no difference in results obtained by medical students studying an oncology module through the Internet or using traditional methods. Goldberg and others[10] found that the grades of students taking a neuroscience course in a virtual environment were 14% higher than those of students taking the course in a traditional classroom environment. In that study, the majority of students

(70%) found the virtual environment more effective in providing information than the classroom approach and felt it was a better medium for content transmission. Maki and others[16] found that students taking an online psychology course obtained better results on 4 exams during the semester, which led the authors to believe that learning was enhanced through the Internet. However, grades on the final exam were not statistically different between the 2 groups. Ryan and others[2] found that students in a nursing course felt that the subject matter was covered better by the traditional approach, that there was better interaction, and that better communication skills were required. There was no difference between the 2 groups in terms of the time required for the assignments and the need for a critical attitude and an analytical mind. Several descriptive studies have evaluated online teaching.[5,14,17,19,22] They report the necessity to simplify the technical aspects, to respect the students' pace, and to set markers for time management.

As for the use of electronic discussions, also known as forums, as a component of academic courses, several authors believe it is necessary to develop quality exchanges among the students as well as between students and the teacher in order to increase the knowledge base; to stimulate further discussion, reflection and writing skills; to allow the application of theoretical concepts; to help develop personal opinions; to initiate students in the use of new communication media; and to democratize teaching. This approach has been noted to give students a fairer opportunity to express themselves than in a classroom, where each student tends to adopt a particular role over the years. However, the effective use of discussion forums requires advance preparation, rules for participation, well-targeted discussion subjects, an appropriate evaluation method, and availability of the technology.[23,24,26-35]

The students' satisfaction rate for the course described here was high (greater than 85%), both for the online aspect and for the course in general. The authors have not evaluated any other platform for Web-based teaching because WebCT is currently the only tool available at these 2 universities; however, WebCT was viewed as a valuable tool, because it allowed faculty members to group the teaching material and the exchange elements within the same platform and included tools allowing the teacher to monitor students' frequency, quantity, and quality of participation. It did not come as a surprise that satisfaction was higher among the students intending to practice in a hospital environment, given the nature of the course itself.

Satisfaction was also higher among those with access to a home personal computer and those who were in favour of information technologies.

CONCLUSIONS

Web-assisted teaching can be a valuable complement to traditional teaching methods. The experience described in this article suggests that online forum discussions are useful in pharmacy management courses.

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