RESEARCH ARTICLE

Is Ian Donald Inter-University School of Medical Ultrasound Ready for Distance Learning?

Sanja Kupesic Plavsic

ABSTRACT

This paper repots the findings of a survey performed at Ian Donald Inter-University School of Ultrasound to evaluate the technology readiness of the faculty for distance learning. Of 75 potential respondents, 55 participants completed the survey with a response rate of 73.3%. The 20 item survey was created and approved by Ian Donald IRB. The survey was administered online by Donald School central office between December 01, 2012 and January 31, 2013, using an anonymous format. Majority of the respondents were experienced users of computer technology. Fifty (90.9%) faculty members consider transferring their curriculum into an online distance learning curriculum. No respondents believe that the only way to teach is onsite teaching. Fifty (90.9%) faculty feel comfortable in communicating with their learners entirely through electronic communication (emails, website and/or chat-room). Forty eight (87.3%) faculty are willing to complete an orientation and training workshop in order to be better prepared for distance learning. Fifty one (92.7%) respondents are ready to invest time in professional development which will enable them to gain technical skills and participate in Ian Donald School distance learning program. Budget, introduction of learning management system and support services are identified as the barriers to develop and implement Donald School distance education.

Assessing the readiness of faculty to participate in distance learning program is an essential step to address faculty needs and concerns in order to be adequately prepared for introduction of novel teaching modalities.

Keywords: Distance Learning, Computer technology, On-line teaching, Learning management system, Distance education support services.

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INTRODUCTION

The dynamic nature of Internet and its explosive growth have already transformed medical education by introducing different teaching and pedagogical approaches and instruction formats. Modern technology allows the material to be accessed anytime and anyplace, which supports flexibility and convenience for the learners. Many studies have documented that web-based delivery of the curriculum is cost-effective because it is easy to update, disseminate and retrieve the learning material.[1-4] The shift of Ian Donald Inter-University School of Medical Ultrasound to web-based online teaching and learning has experienced many barriers to the faculty, which will be discussed in this article. Challenges include faculty time spent in development of learning modules, quality assurance, costs and technical problems.

MATERIALS AND METHODS

Our survey was conducted to assess the technical readiness and willingness of Ian Donald School board and faculty members to teach online courses. Seventy five potential respondents were notified via email by Ian Donald Inter-University School of Medical Ultrasound central office, with an invitation to participate in our survey. Of 75 potential respondents, 55 participants completed the survey for a response rate of 73.3%. Technical readiness was assessed by faculty's teaching competencies, technological skills and ability to design and prepare learning material for distance learning. Technical readiness was also evaluated by technology access, which refers to the availability of the computer technology and internet services in faculty's home and/or working place. In the second part of our survey, we assessed the existence of the technical support, tools and resources to create the learning material, and willingness of the faculty to gain technical skills and actively participate in an online learning program of Ian Donald Inter-University School of Medical Ultrasound. The 20-item survey was created and approved by Ian Donald Institutional Review Board (IRB). The survey was administered online by our central office between December 01, 20012 and January 31, 2013 using an anonymous format.

RESULTS

Data were collected by means of technical readiness for distance learning. Fifty-five obstetrics and gynecology ultrasound specialists from Albania, Afghanistan, Argentina,

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Bahrain, Bangladesh, Bosnia and Herzegovina, Brazil, Cameroon, China, Czech Republic, Colombia, Croatia, Chile, Dominican Republic, Ecuador, Egypt, Ethiopia, France, Georgia, Germany, Ghana, Greece, Honduras, Hong Kong, Hungary, Qatar, India, Indonesia, Iran, Israel, Italy, Japan, Jordan, Kazakhstan, Korea, Kosovo, Lebanon, Libya, Macedonia, Mexico, Montenegro, Nepal, Oman, Paraguay, Pakistan, Philippines, Poland, Portugal, Peru, Romania, Russia, Saudi Arabia, Serbia, Slovenia, Spain, Sudan, Thailand, Tunisia, Turkey, Ukraine, United Arab Emirates, Uruguay, USA and Vietnam participated in our survey. Figures 1 to 3 show the results of the technology associated readiness variables of Ian Donald School faculty to participate in distance learning activities.

Graph 1 illustrates for how many years faculty has been using personal computers (PC). Thirty nine faculty use PC for more than 15 years (24 faculty members use PC for more than 21 years, while 15 faculty members use PCs for 16-20 years).

Graph 2 illustrates whether respondents are using PC *vs* Mac *vs* both. The majority of our faculty are versatile in both PC and Mac computers (54.5%).

Majority of the respondents were experienced users of computer technology. Nineteen (34.5%) specified that the level of their computer literacy is advanced, 35 (63.6%) stated that it is intermediate, while only one specified him/herself as a beginner.

When asked about software options 50 respondents (90.9%) were familiar with MS Word, 52 (94.5%) use power point on regular basis, while 42 (76.4%) are familiar with creation of Excel/Spreadsheets. Forty eight (87.3%) Donald faculty use email and instant messaging on regular basis. Distribution of the faculty using different software options is shown in Graph 3.

Great majority of respondents to our survey have access to high speed Internet both from home and at work (41 faculty members or 74.5%). Nine (16.4%) has access to Internet only at work, while 5 (5.1%) educators have access only from home.

When asked whether they have ever taken an online course, 26 (47.2%) faculty answered positively, while 29 (52.8%) faculty has not experience of taking online courses. Fifty of 55 (90.9%) respondents regularly use Internet for preparation of their lectures. Interestingly, only 19 (34.5%) of the faculty has ever created the material for distance learning. Thirty four faculty (61.8%) use online material (web page and distance learning modules) created by other authors to supplement their onsite teaching. Twenty three (41.8%) of Ian Donald faculty members have used online quizzes for knowledge assessment of their learners, while only twelve (21.8%) of them use 'chat rooms' for discussion and feedback from their learners.
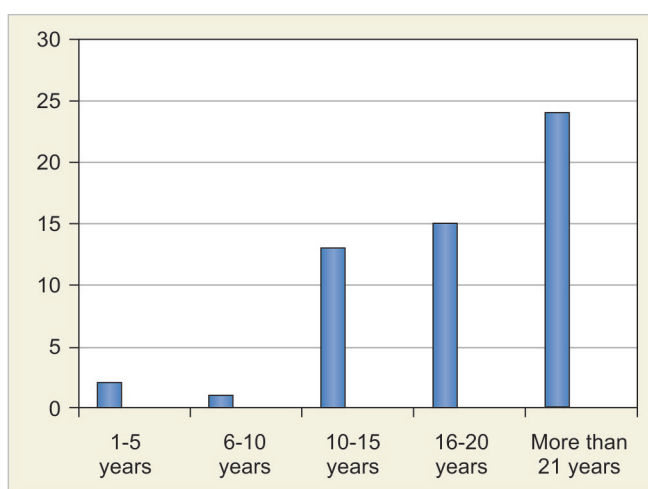
Graph 1: Distribution of Ian Donald faculty experience with personal computers
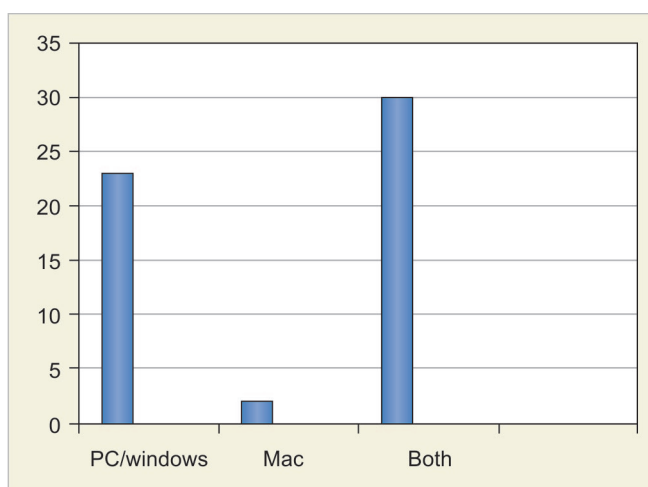
Graph 2: Distribution of Ian Donald faculty experience with PC, Mac or both
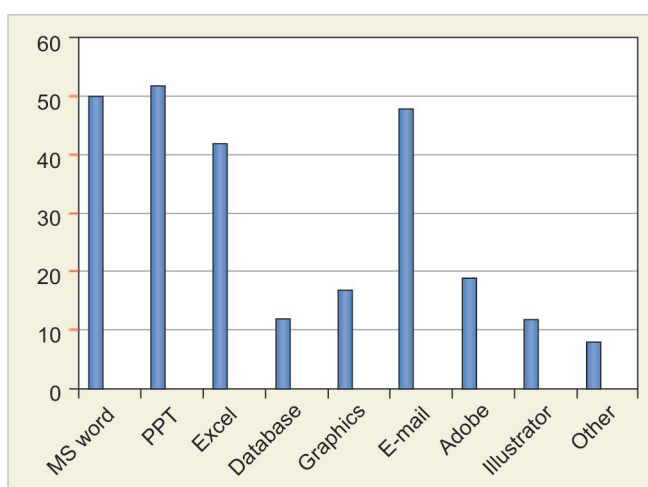
Graph 3: Ian Donald faculty experience with different software options

Fifty faculty (90.9%) consider transferring their curriculum into an online distance learning curriculum. Interestingly, no respondents believe that the only way to

teach is onsite teaching. Nearly two thirds of respondents (74.5%) are satisfied with the electronic technology they use for effective communication with their learners and colleagues. Forty three (69.1%) faculty feel that they have adequate knowledge level for effective electronic communication with their learners and peers. Forty three (78.1%) respondents believe that they can effectively teach without direct interaction (face-to-face contact) with their learners.

Fifty (90.9%) faculty feel comfortable in communicating with their learners entirely through electronic communication (emails, website and chat room). Forty eight (87.3%) faculty are willing to complete an orientation and training workshop in order to be prepared for distance learning. Fifty one (92.7%) respondents are ready to invest time in professional development which will enable them to gain technical skills and participate in Ian Donald School distance learning program.

DISCUSSION

The exceptional response rate of Ian Donald School educators (73.3%) indicates the importance of the matter to our faculty. This is significantly higher response rate than the one reported by Sheehan at al.[5] Only 47.2% of the faculty has had online learning experience through professional development courses at other institutions. Despite the lack of personal experience with distance learning, Ian Donald School educators have positive attitudes and are highly motivated toward training opportunities on distance learning.

The pros and cons of distance learning are illustrated in Table 1. Continuous medical education and professional development in the field of obstetrics and gynecology ultrasound could be reinforced through interactive learning modules and tutorials, since many subject areas do not need face-to-face interaction. Integrating multimedia and videos of most illustrative ultrasound studies may enhance comprehension and promote meaningful learning. Learners appreciate the flexibility, better time management and 24/7 accessibility of online courses. It has been demonstrated that the ability to review subject content multiple times improves knowledge retention and increases the knowledge depth.[1] The cons of distance learning are that the learners are learning

independently, which requires development of learner's comprehension skills. Hands-on experience is mandatory to acquire ultrasound scanning skills and could not be mastered by online courses. Therefore, there is a need to organize small group and/or individual hands-on onsite training back-to-back with distance learning modules. The mission of Ian Donald basic and advanced educational programs is to establish the core of hand-eye coordination and develop critical thinking skills, necessary to execute a systematic ultrasound exam, differentiate normal from abnormal findings and communicate ultrasound findings clearly and in a sensitive manner to the patients and their families.

With regard to designing and developing online courses it would be important to organize advanced multimedia training for all the faculty who are interested to take a part in our distance learning initiative and teach them how to create learning objectives and syllabus content for Ian Donald School distance learning program. The next step would be to adopt the existing lectures to the online platform and learn how to create multimedia and develop good multiple choice testing items. Faculty also has to become more familiar with the feedback strategies and electronic communication with their learners and colleagues, which is necessary to establish the trust in the absence of face-to-face interaction.

Ian Donald Inter-University School of Obstetrics and Gynecology Ultrasound with more than 80 branches worldwide may significantly benefit from its distance learning program by providing learning experiences that are more tailored to individual students than in the classroom.[6] Multimedia and HTML tools can be used to create course material relevant to their everyday clinical practice. Chat rooms and discussion boards may be utilized for constructive feedback and building a real-time collaborative online environment.

Distance Learning Delivery Modalities at Ian Donald School of Ultrasound

At this time there are three modalities of distance learning at Ian Donald Inter-University School of Ultrasound: online courses, hybrid models and instructional courses delivered using videotapes and DVDs.

Online courses: Ian Donald Textbook with 65 chapters and Video Atlas series consisting of 27 videos and 11 learning modules are available via Internet using Jaypee-digital support. Learners are required to use a computer with Internet access as the primary technology.

Hybrid model: A hybrid course combines the use of Internet to complete the assignments (e.g. selected chapters and/or videos) with a traditional face-to-face classroom activities (lectures, seminars, team-based learning, problem based learning, etc.) and hands-on sessions.

Table 1: *Pros* and *cons* of distance learning

The pros of distance learning	The cons of distance learning
Flexibility	No face-to-face interaction
Time management	Independent study
On-line library	Comprehension skills required
On-line degree from accredited institution accepted by most employers	Lack of hands-on experience

Instructional courses: Course material is delivered using videotapes and/or DVDs. Learners study asynchronously and independently without face-to-face interaction.[7]

To ensure high quality standards of innovative distance education, instructors who wish to teach online should be proficient in basic technology skills, strategies of adult learning, instructional design and online pedagogical skills, and have to complete adequate training. By the end of 2014 the editor of Ian Donald Distance Learning program, Dr Kupesic Plavsic will create a series of interactive learning modules and tutorials for faculty development, which will be posted on Jaypee-digital and/or published as DVD.

Intellectual Property Right and Copyright

Close collaboration with Jaypee Publisher ensures fair use of learning material. Distance learning policies are clearly identified by the Publisher and effectively protect intellectual property rights, copyright issues and faculty compensation.

Course Quality Standards

Innovative Donald School online courses should provide the highest standards and best practices in distance education, which include consistency in course format and use of common delivery platform (Jaypee-digital). In order to improve learners' understanding of difficult concepts in hybrid model the onsite educators provide additional material, identify appropriate resources, organize small group discussions, problem based learning sessions and/or individual counseling. Satisfaction evaluation should be based on the assessment of support system, analysis of course organization and design, learning outcomes and learners' feedback.

Learning Management System

A learning management system (LMS) is a software application used to plan, implement and assess a specific learning process. LMS allows creation of class rosters, publication of course/conference calendars and delivery of course content. LMS provides an instructor a way to monitor learner's participation and performance and to assess and test the learners' knowledge. LMS is an excellent tool to improve the interaction between the learners and instructors, and among the learners via instant messaging, emails and discussion forums.

Distance Education Support Services

In addition to resources needed for successful implementation of distance education (e.g. budget), the quality of distance learning program is dependent upon committed institutional support services (Information Technology Department, Distance Education Division, and subspecialized staff responsible for uploading, coordinating and overseeing the support services). A stable password protected LMS with permanent technical help support is a critical component of support system. During the curriculum development phase it is crucial to assure the availability of logistical, instructional and technical support. Components of distance learning website (faculty, support services and student/learner components) are listed in Table 2. Table 3 presents the checklist of the questions to ask before you design an online course.

CONCLUSION

Ian Donald School of tomorrow should provide an option to complete all lectures, assignments and quizzes online. On-campus skill acquisition which is necessary to gain ultrasound scanning skills should be organized in national and/or international centers of excellence. To prove their competency the students need to work side-by-side with their instructors. Computer based simulations should also be available for onsite ultrasound education. This method

Table 2: Components of distance learning website

Faculty components	Support services components	Student/Learner components
Learning management system log in	Administrative support	Learning management system log in
PC technical requirements	Instructional design services	PC technical requirements
24/7 helpdesk for faculty	Training workshops (how to create multimedia, HTML…)	24/7 accessibility
Policies, guidelines and procedures	Online pedagogy workshops	Course(s) schedule/Calendar
Training support	Copyright/intellectual property assistance	Guidelines and tutorials
Faculty development opportunities	24/7 technical support services—helpdesk for faculty and learners	Availability of backup teaching material (textbooks, chapters, hands out)
Student/learner evaluation	Updating and maintenance of the website (daily-weekly)	Online counseling
Discussion board	Office of distance learning curriculum development and evaluation	Online self-assessment

Table 3: Questions to ask before you design an online course

Faculty components	Support services components	Student/Learner components
Is course appropriate for the online environment?	Is administrative support available for maintaining the course over time?	Will students benefit from the course being online?
What are the expected problems of teaching this course online?	Are instructional design services available?	Who is the audience of this course?
How you will ensure the quality control of your course?	Is learning management system in place?	What is the expected number of learners?
Are policies, guidelines and procedures for distance learning in place?	What software are you using?	Are requirements for learners' interaction clearly articulated?
Is faculty teaching the course on board and in agreement about the development and delivery of the course?	Is copyright/intellectual property assistance in place? How is the faculty compensated for developing the course?	Do learners have precise instructions how to access the resources?
How you will measure the success and improvement of your course?	Is 24/7 helpdesk available?	Are course materials self-describing, accurate and up-to-date?
How you will know if online course is equally successful or better than face-to-face learning activity?	How often you will update the course material?	Is online counseling available?
How you will assure effective feedback and interaction with your learners?	Do you have adequate funding for course development, technical support, software and equipment?	Are online self-assessment and immediate feedback available?

uses computer software which allows learners to apply their scanning skills in a controlled environment, without presence of real-patients. Integration of online courses and side-by-side hands-on training leads to dissemination of high quality ultrasound education. Once learners' skills-base education is completed, learners return to their institutions and continue submitting samples of their work (ultrasound images, videos, 3D volumes) to their mentors.

To ensure rigorous content, adequate instructional design and online pedagogy, Ian Donald School has to assure a professional development course for educators who are interested to participate in institutional distance learning program. The development of Donald School distance education program should be congruent with the institutional strategic plan and mission. A well-articulated mission statement should emphasize the importance of increasing access to underserved areas and developing countries. To assure consistent technical support, first class accessibility and high standard of our learning material, we are partnering with our official publisher Jaypee, on their Jaypee-digital website.

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