'Future State' Working Group Report

Identifying best practices and determining how other institutions across the globe are implementing eLearning in medical education

Membership

Dr. Chi-Ming Chow, Director, eLearning Innovation, Office of Integrated Medical Education (Group Co-Lead)

Tamara Bahr, Manager, Instructional Design, Postgraduate Medical Education

Dr. Simon Kitto, Wilson Centre Scientist and Director of Research, Continuing Professional Development, University of Toronto (Group Co-Lead)

Clare Brett PhD, Associate Chair for Graduate Studies in CTL, Ontario Institute for Studies in Education (OISE)

Michael Corrin, Biomedical Communications

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SECTION 1. INTRODUCTION

A. Objectives of the eLearning Task Force and the 'Future State' Working Group

1. **eLearning Task Force Objectives:**

> The mission of the eLearning Taskforce is to make recommendations to senior leadership that will further position the Faculty of Medicine as a global leader in eLearning (i.e., teaching, learning and scholarship) across the education continuum so that we can provide the best education for today's and tomorrow's learners.

2. **'Future State' Working Group Objectives:**

> 2.1   To identify emerging global trends in medical education eLearning
>
> 2.2   To learn from the experience and expertise of other institutions

B. Overview of the 'Future State' Working Group Strategy

The working group conducted a scoping literature review of leading eLearning innovations and trends; reviewed Canadian and International medical school websites to create an inventory of global eLearning activities; and held interviews with key eLearning leaders and experts from around the world.

SECTION 2. METHODOLOGY

This section provides methodological details on each of the main phases of the Working Group.

A. Environmental Scan

An environmental scan was conducted in May 2014 to survey the eLearning climate from institutions across Canada and around the globe, using information extracted from institutional websites and online documents (Appendix B). The institution, country, contact and website information were collected and put into chart format, with appendices.

B. Structured Interview Guide and Questionnaire Design

The structured interview questions were first developed by the 'Future State' working group, then circulated to and discussed among members of the eLearning Task Force. A final version of the interview guide and methods for implementation were approved by the eLearning Task Force prior to participant recruitment. The focus of the interview was on current technology usage in participants' undergraduate, postgraduate and continuing medical education programs and in patient education; on organizational level supports for eLearning; future directions for eLearning; and the challenges and barriers experienced with regard to eLearning implementation.

C. Participant Recruitment for Structured Interviews

Participants with roles in eLearning and/or educational technology were purposively sampled from institutions across the globe, using the institutions surveyed in the Environmental Scan as a guide.

Individuals were given the option of participating in the interview over the phone or through an online questionnaire (created using SurveyMonkey software) consisting of the same questions.

D. Data Collection, Cleaning and Organization

Interview summaries were generated by the interviewer and online questionnaire responses were extracted from SurveyMonkey. Participants were given the opportunity to revise their interview summaries, expanding upon and providing clarification on their responses as necessary. Information obtained from the Environmental Scan of May 2014 was also included in analysis, primarily to fill gaps in the interview and questionnaire data. All data were organized into a single NVivo project.

E. Analysis

NVivo version 10 software was used for analysis, using a qualitative conventional, content analysis approach (Hsieh and Shannon, 2005). Firstly, data intimacy was achieved by reading and re-reading responses, while contributing to an analytic memo, noting common themes and areas for further probing. All participant data was initially assigned descriptive codes and these were sorted into categories based on the inter-code relationships observed. Major and minor themes were drawn from the data and code frequencies were used to assign prioritization. Comparisons were drawn at three levels: within a single interview/questionnaire, between participant responses for individuals within the same country, and between interviews/questionnaires from different countries.

SECTION 3. RESULTS AND DISCUSSION

A. Participant Demographics

A total of 9 individuals with eLearning and/or technology leadership positions were interviewed or surveyed, representing 8 institutions. Canada had the greatest representation, with 6 participants from 5 different institutions (McGill University, McMaster University, University of Saskatchewan, Queen's University (2) and the University of Toronto). Only 1 participant was from the United States (Cleveland Clinic Lerner College of Medicine) and 2 were from Europe (Leiden University and the University of Dundee).

Table 1. Participant Demographics

Name	Position/Role	Institution	Location
Dr. Anthony Levinson	Director of the Division of eLearning and Innovation	McMaster University	Hamilton, ON, Canada
Nancy Posel	Associate Director Molson Project at McGill University and Co-founder of the MUHC Patient Education Office	McGill University	Montreal,QC, Canada
Lindsay Davidson	Chair of the Teaching, Learning and Innovation committee	Queen's University	Kingston, ON, Canada
Dr. Tony Sanfillippo	Professor; Associate Dean, Undergraduate Medicine Program	Queens University	Kingston, ON, Canada
Deidre Bonnycastle	Clinical Teaching Development Coordinator	University of Saskatchewan	Saskatchewan, Canada
Cindy Plunkett	eLearning Project Lead and LMS Administrator	University of Toronto (Mount Sinai Hospital)	Toronto, ON, Canada
Neil Mehta	Director of Education Technology	Cleveland Clinic Lerner College of Medicine	Cleveland, Ohio, U.S.A.
Dr. Susie Schofield	eLearning lead at the Centre for Medical Education (PGME)	University of Dundee	Scotland, UK
Peter de Jong	Coordinator of Technology Group, Center for Innovation in Medical Education	Leiden University	Leiden, Netherlands

Environmental Scan vs. 'Future State' Interview Participants' Geographic Representation

Of the 14 institutions/organizations included in the Environmental Scan, 5 are represented in the 'Future State' interviews, with 3 more being conducted at other Canadian universities.

Table 2. Included Institutions in both the Environmental Scan and Interviews Conducted

Region	Interview Conducted (Y/N)	Environmental Scan Performed (Y/N)	Institution/Organization
USA	N	Y	AAMC
	Y	Y	Cleveland Clinic
	N	Y	Harvard
	N	Y	Mayo Clinic
	N	Y	University of Pennsylvania
	N	Y	Stanford University
Canada	Y	Y	McGill University
	Y	Y	McMaster University
	N	Y	Northern Ontario School of Medicine
	N	Y	University of British Columbia
	Y*	N	Queen's University
	Y	N	University of Saskatchewan
	Y	N	University of Toronto
Europe	Y	Y	University of Dundee
	Y	Y	Leiden University
Australia	N	Y	Monash University
Singapore	N	Y	National University of Singapore

*2 participants were from Queens University

B. Comparison of Technologies and their Uses across Medical and Patient Education Programs

According to participant responses, eLearning tools are most often used in Undergraduate Medical Education (UGME), followed by Postgraduate Medical Education (PGME), Continuing Medical Education (CME) and Patient Education. Software-based eLearning tools (such as Examsoft,Polleverywhere and the Learning Management System platforms Blackboard and MedTech), lecture capture and virtual patients or virtual interactive cases (VICs) are the most commonly reported eLearning tools used by the medical education programs surveyed. Educational software is mentioned mostly with regards to UGME and PGME programs, while lecture capture and virtual patients or VICs are primarily mentioned with regards to UGME. eLearning use in patient education was scarcely discussed, with only two participants (reporting of patient education eLearning initiatives, both of which are educational web-resources (see table 4).

The eLearning tools mentioned by participants are primarily web-based and accessible from multiple internet-enabled devices such as smartphones, tablets and laptops. Online learning, while widespread throughout all levels of medical education, was seemingly most fundamental to CME programs, for which training is completely online in many cases.

Table 3. Comparison of Technologies and their Uses across Medical and Patient Education Programs

eLearning Tools	UGME		PGME		CME		Patient Education		Total by eLearning Tool	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Discussion Boards	0	0.0%	1	11.1%	0	0.0%	0	0.0%	1	11.1%
Educational Web-site	0	0.0%	0	0.0%	0	0.0%	2	22.2%	2	22.2%
eLearning Portal	1	11.1%	0	0.0%	0	0.0%	0	0.0%	1	11.1%
ePortfolio	1	11.1%	0	0.0%	0	0.0%	0	0.0%	1	11.1%
Hardware	1	11.1%	0	0.0%	0	0.0%	0	0.0%	1	11.1%
Lecture capture (audio and/or video)	3	33.3%	1	11.1%	1	11.1%	0	0.0%	5	55.6%
Modules	0	0.0%	1	11.1%	2	22.2%	0	0.0%	3	33.3%
Other	0	0.0%	1	11.1%	1	11.1%	0	0.0%	2	22.2%
Podcast	1	11.1%	0	0.0%	0	0.0%	0	0.0%	1	11.1%
Social Media	1	11.1%	0	0.0%	0	0.0%	0	0.0%	1	11.1%
Software	4	44.4%	3	33.3%	1	11.1%	0	0.0%	8	88.9%
Virtual Learning Environment	0	0.0%	1	11.1%	0	0.0%	0	0.0%	0	0.0%
Virtual Patients or Virtual Interactive Cases	3	33.3%	1	11.1%	1	11.1%	0	0.0%	5	55.6%
Web and or Video Conferencing	1	11.1%	1	11.1%	1	11.1%	0	0.0%	3	33.3%
Web-based Evaluation	1	11.1%	1	11.1%	1	11.1%	0	0.0%	3	33.3%
Wiki	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Note[1]: The frequency refers to the total number of participants claiming to have used a given eLearning tool, regardless of how many programs it applied to.

Note[2]: The percentage is the proportion of participants (n=9) that claimed to use a given eLearning tool.

Note[3]: This is not a comprehensive list of eLearning tools in use by each institution. It only lists those tools mentioned by participants. Some said they use various eLearning materials without further specification. These were not accounted for in the above table.

Table 4. eLearning Tool Use, Description and/or Context

eLearning Tool or Technology	Description
Discussion Boards	Discussed at the PGME level
Educational Web-site	Includes the McGill University Health Centre (MUHC) website and the McMaster Aging project online web resource, both discussed with regards to patient education
eLearning Portal	Used populating all eLearning materials (UGME level)
ePortfolio	Student portfolio that students annotate and share with advisors and is reviewed with their faculty mentor at the time of evaluation (UGME level)
Hardware	At one institution (Cleveland Clinic), all students are said to be given a tablet (UGME level)
Lecture capture (audio and/or video)	Lecture capture in both audio and video formats for off line and online use (UGME, PGME and CME levels)
Modules	Mainly discussed with regards to CME (ex. Emergency Department Geriatric care and the Supplemental Emergency Medicine Experience program); Also includes technical skills modules at both the UGME and PGME levels
Other	Includes email and completely online courses
Podcast	Discussed at the UGME level
Social Media	For one participant of Queen's University, it is mentioned that a group of faculty use Twitter in their teaching (UGME level)
Software	List of software mentioned includes One Note, for accumulating notes throughout the curriculum; MedHub for summative feedback; Blackboard learning management system (LMS); MedPortal software platform for curriculum delivery, eLearning and student email; CME Manager to track the CME process (noted that this software is "aged"); MedTech/Entrada LMS for curricular delivery, scheduling, reporting, tracking, assessment, logging, asynchronous discussion and linkage to resources; Polleverywhere for in-class polling with clickers; Examsoft for administration of student assessment using students' devices; T-Res for recording and evaluating clinical and academic activities using any web-enabled device
Virtual Learning Environment	Discussed at the PGME level
Virtual Patients or Virtual Interactive Cases	Includes CLIPP cases for Pediatrics (UGME level); At one institution, virtual patients are said to be crucial for providing UGME students with clinical experience and for objective assessment; Also discussed with regards to PGME (ex. for surgical education)
Web and or Video Conferencing	An example of its use includes faculty development, sharing the knowledge and insight of global experts in educational technology to enhance teaching in eLearning
Web-based Evaluation	Online examinations and quizzes; Web-based marking of assessments
Wiki	Discussed at the PGME level for collaborative writing

C. Comparison of eLearning-Related Learner and Teacher Expectations

None of the participants surveyed stated that technology hardware was required of either learners or teachers, although it was recommended by most. The majority of learners and faculty are said to already possess a form of internet-enabled device (smartphones, tablets and/or laptops). Only one participant, from the Cleveland Clinic, stated that their program provides all students with internet-enabled devices (in this case tablets). One other participant stated that they provide students with clickers for in-class polling.

A minimal level of digital competency and/or literacy was deemed important for both learners and teachers. In addition, teachers are said to possess the responsibility of educating learners on these matters. Supports mentioned for improving digital competency and/or literacy were mandatory eLearning modules; orientation sessions for students at the beginning of their curriculum; voluntary faculty development courses held 1-2 times a month on topics such as technology integration and eLearning pedagogy; and dedicated staff for training of faculty in eLearning-related areas. Queen's University appears to be particularly well-equipped in the latter category, possessing 2 in-class technology support staff; a web designer with capabilities in eLearning development employed by MedTech; a dedicated trainer to support staff in the use of technology; faculty development sessions and retreats on eLearning use; 2 dedicated educational developers; an assessment expert who also supports staff in technology use on a one-to-one level; and an informal peer support network composed of faculty skilled in technology use.

Table 5. Comparison of the Most Common eLearning-related Expectations and/or Requirements of Learners and Faculty

In Order of Response Frequency	Expectations/Requirements of Learners	Expectations/Requirements of Teachers
1	Hardware ("bring your own device; recommended, not required)	Digital competency (ability to use available technologies)
2	Digital literacy; Digital competency (necessary to provide training as levels of digital literacy vary)	Involvement in the creation of eLearning/technology-based courses and course content
3	Completion of compulsory eLearning modules	Educating learners in digital literacy; No hardware requirements mentioned

Note[1]: Technologies or technology uses with same frequency are listed together and are separated by a semi-colon
Note[2]: Complete list of learner and teacher expectations can be found in Appendix B

The majority of participants reported that they do teach informatics topics, whether formally or informally. The only participants who reported that they do not teach informatics topics were from Canada (University of Toronto and McGill University).

Some participants expressed the importance of teaching digital literacy, stating that educators often assume that students are better with technology than they actually are. It's said that digital literacy (consisting of critical appraisal skills, advanced word and referencing skills, for example) should be taught in order for effective learning with technology.

One of the top 3 reported challenges in providing technology-based education for both learners and teachers is the variability in level of acceptance and willingness to embrace technology among different generations (table 8). Acceptance levels might be improved by incorporating mandatory digital literacy and competency training into the medical curriculum and providing faculty development opportunities in these areas.

Table 6. Responses to the Interview Question: "Are informatics topics taught in any of your education programs?"

	Location			
	Canada	Europe	U.S.A.	Total
No	2	0	0	2
Yes	3	2	1	6
Total	5	2	1	8

Note: Frequency is by institution

D. Organizational-Level Supports for eLearning: Main Findings

1. Strategic Planning

Most participants (n=5) responded either "no" or "I don't know" to the question "Is eLearning part of your institution's strategic plan and/or policy documents?" Only one participant from a Canadian institution (from Mount Sinai Hospital, affiliated with the University of Toronto) responded "yes".

Interestingly, while Cleveland Clinic's educational philosophy centers around technology integration, choosing to replace didactic lectures with online learning and incorporating sophisticated online evaluation and feedback software platforms into their programs, eLearning is reportedly not a part of their strategic plan. The participant from Cleveland Clinic suggested that "rather than orders coming from above" small centres of excellence should "pave the way" for eLearning, advocating for a bottom-up approach to eLearning implementation.

From the environmental scan and participant responses, it appears that Canadian institutions are still in the progress of devising strategic plans for integrating technology into the medical curriculum, with only the

Northern Ontario School of Medicine (NOSM) exhibiting a clear eLearning strategy. The U.S.A. (Environmental Scan, Appendix 2) and UK (Future State Working Group results and Environmental Scan) appear to be further along, in this respect. This is evidenced primarily by a greater abundance of available information on eLearning strategies for these institutions. The University of Dundee (UK), Mayo Clinic (USA) and Cleveland Clinic (USA) stand out as being innovative in their strategies for integrating eLearning into their medical curriculums. The University of Dundee prides itself on their use of state-of-the-art technology for use in medical education, such as virtual hospital wards and 3D projection lecture facilities; the Mayo Clinic has a strong information technology infrastructure to support their educational programs; and Cleveland Clinic has developed a system to manage and deliver eLearning training called the Centre for Online Medical Education and Training (COMET) (Appendix C-2C).

Table 7. Responses to the Interview Question: "Is eLearning part of your institution's strategic plan and/or policy documents?"

	Location			
	Canada	Europe	U.S.A.	Total
I don't know	3	0	0	3
Yes	1	1	0	2
In progress	0	1	0	1
No	1	0	1	2
Total	5	2	1	8

2. Copyright and Commercialization

Approximately half of participants (44%; 4) claimed to engage in the commercialization of eLearning resources, the same amount (44%; 4) did not mention commercialization explicitly and 11% (1) said they do not commercialize their resources. Examples of commercialization efforts include Massive Open Online Courses (MOOCs) being used to market courses to learners and commercializing virtual patient cases (eg. Medical Council of Canada collection on trauma). Even among those who said they do commercialize their eLearning resources to some extent, most expressed a disdain for doing so. For example, one participant said that they are "Keen on collaboration but not necessary commercialization."

Chart 1.

Engagement in eLearning Commercialization

Not mentioned, 44%
Yes, 44%
No, 11%
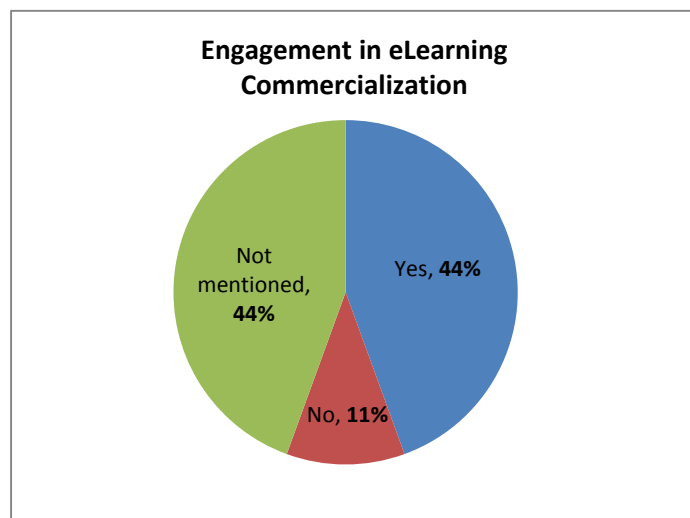
Two types of mentalities emerged from the data, those that are "copyright conscious" (eg. whom understand the policies, its application, limitations, etc.) and those who avoid copyright and copyright-related issues. Those deemed to be "copyright conscious" (33%; 3) are aware of copyright policies, in most cases due to training offered for faculty through the library, for example, (22%; 2) and apply them to their eLearning resources (eg. following Creative Commons Licensing or their university intellectual property policies). Those who avoid copyright practices (22%; 2) are unanimously in support of free access to educational material and the sharing of material between programs and institutions, a view also expressed by others who did not specify their extent of copyright use (33%; 3).

3. eLearning Infrastructure

Poor infrastructure is the most commonly cited barrier to eLearning innovation and implementation. Participants cite a lack of funding dedicated to eLearning initiatives. For example, one participant said that a barrier to eLearning implementation is, "…well of course costs - everybody talks about cost". Limited organizational and technological support (for example, lacking a "cohesive plan" that incorporates

eLearning; having limited time and resources for the development of eLearning initiatives) are also cited as barriers to implementation. Most participants report that their funding for eLearning initiatives is acquired at the university level, followed by financial supports at the faculty level, external funding and obtaining grants (primarily for research).

Issues with software platforms are commonly reported by participants as being barriers to eLearning implementation and/or disadvantages to their application. Common complaints are that a given platform is not suitable for all courses; the use of multiple platforms makes sharing of modules between courses very difficult; and that LMS platforms, in particular Blackboard, can be "challenging" to use (for example, having issues with platform customization).

Table 8. Most Common Challenges/Barriers to eLearning Implementation

In Order of Response Frequency [1]	Challenges/Barriers	Corresponding Proposed Solutions
1	Poor infrastructure (1. Funding, 2. Time, 3. Resources)	None mentioned
2	Use of multiple software platforms	Choosing an appropriate and effective platform (which requires research and, thus, research grants)
3	Divided generation (variability in willingness to embrace technology)	Collaborate locally and nationally to solve these issues
3	Lack of teacher motivation	-Using good examples/role models -Demonstrate value of using eLearning technology for improved teacher-student connectivity -Motivate through students
3	Need for greater innovation through research	-More research grants -"pioneers with initiative who can keep the steam going on innovative projects"

Note[1]: Response frequencies according to challenges/barriers only. Only the associated solutions are listed alongside these barriers/challenges. Proposed solutions to overcome barriers for implementing technology are listed by response frequency below.
Note[2]: Challenges/barriers of the same frequency are listed together, separated by a semi-colon

E. Benefits and Drawbacks of Using Technology in Medical Education

Table 9. Most Frequently Stated Benefits and Drawbacks of Technology Use

In Order of Response Frequency	Benefits of Technology Use	Drawbacks of Technology Use
1	Availability (24/7 access to material); Enables distance learning; Enhances learning/education	Faculty resistance (lack of participation in/use of eLearning in teaching due to, for example, generational divides and differences in beliefs); Inherent technology issues; Poor infrastructure;
2	Facilitates the accreditation process; Flexible and customizable content delivery; Increases collaboration; Increases learner engagement	Learner resistance (generational divide); Little focus on eLearning pedagogy
3	Enables greater standardization of curriculum content and assessment measures/methods Facilitates evaluation of students; Implementation provides opportunity for greater reflection on pedagogy; Improves access to materials from teachers and courses across the curriculum;	Difficult to get all faculty "up to speed" on digital competency and literacy topics Limited knowledge of available eLearning tools; Little faculty recognition in eLearning teaching and scholarship; No cohesive plan to implement and integrate eLearning;

*Technologies or technology uses with same frequency are listed together and are separated by a semi-colon

F. Most Valuable Technology-Related Opportunities to Pursue

Most Common Responses (listed in order by frequency):

1. Use of technology to increase learner engagement and collaboration (ex. video and web-conferencing, improved Learning Management Systems, etc.)
2. Choosing an appropriate and effective LMS
3. Hardware-related opportunities (implementing "bring your own device" in program; greater incorporation of mobile technology into learning)
4. Blended learning (integrating technology into traditional curriculum; technology as a supplement for not replacement of traditional methods); Organization of available resources

G. Solutions for Overcoming Barriers to Implementing Technology

Most Common Responses (listed in order by response frequency):

1. Cohesive planning; Improved infrastructure; Increased innovation (research)
2. Generation and sharing of solutions through collaboration (locally and nationally)
3. Choose an appropriate software platform/LMS; Greater integration of eLearning technologies; Efforts to motivate teachers (described above); Appropriate use of technology for learner and learning context; Use technologies demonstrated to be effective.

H. Looking Towards the Future

1. Preference for Blended Learning

For many participants there is a preference for blended learning, with emphasis on the integration of technology with more traditional methods rather than completely replacing them. Examples of participant comments illustrating this are:

Participant 1: "eLearning is not the only way to teach. Wonderful teachers are very important."

Participant 2: "Blended learning…An integrated experience to connect all the pieces together (small group sessions, lectures, and online learning)."

Participant 3: "People need to learn but not necessary eLearn."

2. Importance of Pedagogy in eLearning Implementation

Many participants have expressed the importance of focusing on pedagogy first and foremost, prior to deciding which eLearning tools and technologies to implement and their most appropriate uses.

3. Need for Increased Collaboration

Participants also expressed the desire for greater collaboration by meeting on a local and national level to discuss the role of informational and instructional technology in medical education. Technologies such as web and video-conferencing and social media are praised for their ability to promote a culture of collaboration between faculty, students and colleagues. Going forward, participants expressed the need for a well-defined action/strategic plan to guide technology use in medical education and the need to take advantage of all available tools and to maximize their use for effective teaching and learning.

I. Limitations

The total number of respondents falls short of our goal of 15-20. Having a larger sample size and from a greater geographic distribution would allow for more conclusive global comparisons. For example, the USA is not well-represented in this study (n=1) as there were difficulties in securing participants. For this reason, the comparisons made between institutions and/or countries are not necessarily representative of the population at large.

In one interview, from Queen's University, responses were missing for 6 out of 14 questions. There were two participants from Queen's University, however, so the data was combined for greater institutional representation.

SECTION 4.   REFERENCES

Hsieh, H.-F., and Shannon, H. 'Three Approaches To Qualitative Content Analysis'. Qualitative Health Research 15.9 (2005): 1277-1288. Web.

Section 5. Appendices

Appendix A: Interview Questions

FUTURE STATE WORKING GROUP – INTERVIEW QUESTIONS
12 May 2014

Introduction: The University of Toronto, Faculty of Medicine has created an eLearning Task Force to help shape the Faculty's role in eLearning and use of educational technology to provide the best education for today's and tomorrow's learners.

Under the Task Force, a Future State Working Group was established to complete a survey of best practices and examine how other institutions across the country and around the world are implementing eLearning with a specific focus on medical education. The purpose of this interview is to gather information about eLearning in your institution to learn from your experience and expertise.

A. Current Technology Usage

1. What is your role and responsibility in eLearning at your institution?

2. How does your institution use technology in the following programs?
   a. undergraduate (medical school)
   b. postgraduate residency
   c. CME/CPD
   d. patient education

3. What expectations/requirements do you have of your learners regarding using technology in their studies? (For example, hardware – portable, iPad, clickers or software- video conferencing, Articulate/Captivate.)

4. What expectations do you have of your faculty and preceptors regarding using technology in their teaching and research? What supports are they given to use technology in their teaching and research?

5. Are informatics topics (e.g. digital competency, digital professionalism) taught in any of your education programs (undergrad, postgrad, CME/CPD, in-service training)?

6. What are the top 3 benefits and top 3 drawbacks of using technology in your institution?

Organizational Level Supports

1. Is eLearning part of your institution's strategic planning and policy documents? (Ask for copies.)

2. How are your institution's eLearning activities supported financially (program budget, infrastructure)?

3. How does your institution approach eLearning copyright and commercialization?

C. Future

1. Based on your experience in eLearning, what is the one technology-related opportunity that you would like to pursue or think would be most valuable for your institution/program to pursue? Why is this important?

2. What are the greatest challenges/barriers to utilizing and implementing informational and instructional

technology in your institution/program(s)?

3. What would you do to overcome these challenges/barriers to improve the outcomes of using education technology in your institution/program(s)?

Conclusion

1. Is there anything you would like to add?

2. Is there anyone else that I should speak with that would be helpful as we gather our research?

Appendix B: Complete List of Learner and Faculty Expectations Regarding eLearning

1. Expectations of Learners Regarding eLearning

Expectations of Learners	Description (where necessary)
Bring their own internet-enabled devices	Smartphone, tablet and/or laptop
Comfortable in the use of technology	Orientation and educational sessions take place during the 1st week of the curriculum to ensure student comfort
Mandatory eLearning modules	
No formal requirement	
Training in digital literacy and competency	

2. Expectations of Faculty Regarding eLearning

Expectations of Faculty	Description (where necessary)
Contribute in the creation of eLearning content	
Digital competency	Ability to interact with the LMS; use digital presentation equipment; and audio/video-record lectures
Engage in eLearning-related faculty development	
No formal requirement	
Use technology in their teaching	

eLEARNING FUTURE STATE WORKING GROUP
Environmental Scan, updated May 5, 2014

UNITED STATES

University/ Organization	Contact	Website Information and Documents
AAMC	GIR: Morgan Passiment Director, Information Resources Policy & Programs Telephone: 202-828-0476 mpassiment@aamc.org Education Technology Work Group Co-Chairs: Chandler Mayfield, Director, Technology Enhanced Learning School of Medicine, University of California San Francisco William Holloway, Senior Information Technology Architect NYU School of Medicine	Group on Information Resources (GIR): https://www.aamc.org/members/gir/ The AAMC's Group on Information Resources (GIR) promotes excellence in the application and integration of information resources in academic medicine. In an age when Health Information Technology is a strategic asset, GIR's research, development, and policy-setting on information resources, informatics, educational technology, infrastructure, standards, and related science and technology is vital to the advancement of medical teaching institutions. Latest Publications: -2012 AAMC Medical School Tablet Device Survey Summary (log-in required to access) - Technology Now: Game-based Learning in Medical Education (January 2013) See *Appendix 1* for additional information about GIR resources. Education Technology Work Group: https://www.aamc.org/members/gir/about/156700/education_technology_roster.html The Educational Technology working group is responsible for informing GIR members and the AAMC on education technology issues, trends and related infrastructure as well as interfacing with AAMC groups (GSA, GIP, GEA) and other external groups (EDUCAUSE, etc.). The working group may also be tasked with responding to emerging education technology issues. The working group will be comprised of GIR members who have an interest in and knowledge of education technology infrastructure. See *Appendix 2* for membership. ------ Linking Technology to Medical School Offers Benefits, Flexibility AAMC Reporter: October 2011 -By Sarah Mann See full article at: https://www.aamc.org/newsroom/reporter/october2011/262458/technology.html Excerpt: Maryland began exploring how to integrate technology into its curriculum in the mid-1990s. Maryland developed a computer-based platform known as MedScope, and has continually upgraded the system over the years. Today, it is a one-stop educational shop for Maryland students and faculty. Students use the system to make and check schedules, plan courses, review class materials, and participate in student forums. All first- and second-year lectures are available online. Students can stop, rewind, and replay lectures while they study, allowing them to focus on understanding the material during lectures rather than furiously taking notes.
Cleveland Clinic	Help Desk: 216.445.4566 comet@ccf.org	Center for Online Medical Education and Training (COMET) https://www.cchs.net/onlinelearning/default.htm See *Appendix 3* for listing of COMET Services.
Harvard	Subcommittee on Networked Learning, Technology and Global Connections	Strategic Planning for Continuing Education: Subcommittee on Networked Learning, Technology and Global Connections The subcommittee was asked to consider the vision for teaching online CME, the technology needs to support CME online, how HMS should engage in networked

University/ Organization	Contact	Website Information and Documents
	Co-Chairs: Elliot Chaikof, PhD, MD, Head of the Department of Surgery (BIDMC) David Golan, PhD, MD, Dean for Graduate Education and Special Advisor for Global Programs (HMS) Staff: Megan Halligan, Coordinator, Institutional Planning (HMS) Aili Lewis, Director of Institutional Planning (HMS) Cat Sherrill, Project Manager, Institutional Planning (HMS)	learning, and what role HMS should play in the global market for continuing medical education. The subcommittee reviewed the current status of online learning in the Department of Continuing Education (DCE), explored networked learning, discussed a course content review process for online CME offerings, engaged in a discussion about pedagogical principles and interactive networked learning as well as the use of technology to supplement live CME courses. In addition, the subcommittee discussed the infrastructure and administrative needs for the current state of online CME as well as any potential expansions, and reviewed criteria for evaluating online courses. Finally, the subcommittee discussed a framework for a cycle of inquiry to help define further a strategic vision for HMS about which CME courses to offer online. http://hms.harvard.edu/about-hms/office-dean/strategic-planning/faculty-committee-strategic-planning-continuing-education/networked-learning-technology Note: report is log-in protected. ------ The Harvard Macy Institute presents: Become a Digital Citizen Technology in Health Care Education October 20 – 24, 2014 Harvard Medical School Joseph Martin Conference Center Boston, Massachusetts http://www.hms-cme.net/3414574/
Mayo Clinic	None listed	Dean's Message mentions: Embracing state-of-the-art educational technology, such as online learning and simulation, while preserving the age-old methods of face-to-face learning from experienced preceptors and mentors. ------ Information Technology http://www.mayo.edu/mshs/resources/information-technology Computing An extensive information technology infrastructure supports Mayo education programs. This includes a campus-wide gigabit ethernet, research computing staff, and a fully integrated intranet accessible from all three campuses. Mayo faculty and students also have access to the latest computational technologies developed by the Biomathematics Resource and Biomedical Imaging Resource. MSHS students may attend computer training classes offered through Mayo's Microcomputer Services. Telecommunications A state-of-the-art video communications network provides full-motion, two-way, interactive videoconferencing among the Rochester, Scottsdale and Jacksonville campuses. This dynamic resource allows students at each Mayo campus to participate in courses, seminars and other programs regardless of their origination. Visual Communications Media Support Services staff can assist you with the production of high-quality graphics materials and photographic images for educational presentations and publications.
Perelman School of Medicine,		Strategic plan does not specifically mention eLearning. http://www.pennmedicine.org/strategic-plan/

University/ Organization	Contact	Website Information and Documents
University of Pennsylvania		------- "MedPage" - MedPageToday.com is a trusted news service for physicians that provides a clinical perspective on the breaking medical news that their patients are reading. Co-developed by MedPage Today, LLC and the Perelman School of Medicine at the University of Pennsylvania, each article alerts the reader to breaking medical news, presenting that news in a context that meets their educational practice needs. Physicians and other healthcare professionals may also receive Continuing Medical Education (CME) credits at no cost for participating in these educational activities. http://www.medpagetoday.com http://www.medpagetoday.com/About/About/
Stanford	Michael Halaas Chief Information Officer, SoM - Information Resources & Technology halaas@stanford.edu Tel: (650) 498-6387	Stanford Information Resources and Technology (IRT) provides information technology, informatics, simulation and knowledge management services in support of the School of Medicine's clinical, research and educational missions. http://med.stanford.edu/irt/about/ CourseWork is the course management system used by the university's main campus, as well as by many other universities. CourseWork is based on the open source platform known as Sakai. http://med.stanford.edu/irt/teaching/cwp.html See *Appendix 4* for additional details. ----- Stanford Center for Immersive and Simulation-based Learning http://cisl.stanford.edu ----- Strategic Plan contains section on Information Resources and Technology (see *Appendix 5*) http://medstrategicplan.stanford.edu/

CANADA

University	Contact	Website Information and Documents
University of British Columbia	eHealth Strategy Office http://ehealth.med.ubc.ca Kendall Ho, Director Email: kendall.ho@ubc.ca Phone: (604) 875-4111 ext. 69153	No specific details about eLearning in the Strategic Plan or Action Plan. http://med.ubc.ca/about/our-strategic-direction/ The eHealth Strategy Office carries out research, community engagement and educational activities to explore how modern information and communication technologies (e.g. mobile and web-based applications, etc.) can improve health care. Though there are several research groups in eHealth or Health Informatics in Canada and worldwide, the eHealth Strategy Office uniquely combines research and educational expertise in eHealth and community engagement projects. Projects Gallery http://ehealth.med.ubc.ca/projects/ Resources http://ehealth.med.ubc.ca/harnessingthesocialweb
McGill University	Centre for Medical Education? Director - Dr. Yvonne Steinert 514-398-4988 yvonne.steinert@mcgill.ca	McGill introduced a renewed MD curriculum in 2013 – no mention of eLearning. The new curriculum was the result of a strategic planning exercise called "Thinking Dangerously". The terms of reference for their Education

University	Contact	Website Information and Documents
		Design Group looked at whether McGill should continue to deliver medical education in the same way (e.g. technology-enabled instruction, online modules.) http://www.mcgill.ca/medicine/about/vision-mission/strategic-planning/designgroups/education
McMaster University	Division of E-Learning Innovation (DELI) Marie Levesque, Program Administrator Ext. 26525 mlevesq@mcmaster.ca Anthony Levinson, Director eLearning/DELI, 905-525-9140 x 22210 Sarah Garside, Associate Director eLearning/DELI, 905-525-9140 X 26525	No documents or information found on Faculty of Health Sciences or School of Medicine website. Sarah Garside and Anthony Levinson are directors of the division of e-Learning Innovation for the Michael G. DeGroote School of Medicine. They are testing and incorporating electronic learning technologies into a renewed medical curriculum. ------ Designed for physicians, other health care professionals and trainees, the machealth website and programs are a convenient way to keep your knowledge and skills up to date. http://machealth.ca/ The website allows you to work through an interactive multimedia module, download resources and tools, then connect with colleagues in the discussion forums, all from the comfort of your home or office. The machealth program list can be found in *Appendix 6*.
NOSM	Dr. Rachel Ellaway Assistant Dean, Informatics (705) 662-7196 rachel.ellaway@nosm.ca	One of NOSM's Values: Innovation - The Northern Ontario School of Medicine (NOSM) encourages ingenuity, creativity, a culture of inquiry and discovery, and the importance of learning from others in every aspect of the School's education, research, social accountability, and corporate mandates. NOSM uses innovative approaches to ensure continuous improvement of our distributed model of education and research. Strategic Enabler #2: Explore, partner and invest in informatics and technologies that enable innovation across our distributed model of education, research, corporate services and social accountability. The NOSM Informatics unit focuses on the School's ability to collect, manage, use, store, and, most importantly, apply and communicate data, information and knowledge. As such, it is integral to all aspects of the School and its ability to deliver on its Strategic Plan. http://www.nosm.ca/about_us/organization/informatics/

INTERNATIONAL

University	Contact	Website Information and Documents
University of Dundee	?? ------ Professor Charlotte Rees Director, Centre for Medical Education +(44) 01382 381971 c.rees@dundee.ac.uk	The University of Dundee College of Medicine, Dentistry and Nursing has some of the most innovative and technologically advanced clinical and surgical training facilities in Europe – including simulated hospital wards, 3D projection lecture facilities, virtual reality surgical simulation and anatomy training using Thiel cadavers. Our medical and nursing students, by way of our close partnership with NHS Tayside at Ninewells Hospital and Medical School, come face-to-face with real patients early-on in their courses. Much training and monitoring, however, is conducted in a stunning, technologically advanced, Clinical Skills Centre - which is also used by doctors, dentists, nurses and other health professionals for continuing development. http://www.cmdn.dundee.ac.uk/innovative-teaching-0 ------- The Centre for Medical Education has unique experience in the development of attractive and useful distance learning materials, such as new postgraduate programmes in Medical Education. We have moved to an e-learning environment using the latest developments in ICT and incorporating a range of exciting interactive teaching and assessment techniques. These enable peer interaction and include podcasts, blogs, discussion boards, webinars, video clips, formative feedback and much more. http://medicine.dundee.ac.uk/medical-education-centre/centre-medical-education
Leiden, Netherlands	??	Leiden University Medical Centre (LUMC) – no information found on LUMC website. https://www.lumc.nl/home/?setlanguage=english ------ Leiden's Department of Higher Education supports the implementation of educational technology in higher education through training programmes and support in curriculum or course development projects. We also advise on implementation strategy and carry out university-wide projects e.g. online acculturation for foreign students planning to study in Leiden. Furthermore, the department is actively involved in the E-merge Consortium. Four institutes of higher education are co-operating in the consortium in the implementation of educational technology into higher education, for example, with regard to the use of the student portfolio, an online training on learning technology for university staff or e-coaching. http://iclon.leiden.edu/higher-education/introduction/higher-education.html#educational-technology
Monash	George Kotsanas Academic Director, Information Technology +61 3 990 58532	The Faculty of Medicine, Nursing and Health Sciences provides eLearning Services and has supported development of a number of eLearning projects (see *Appendix 7*). http://elearning.med.monash.edu.au/ The eLearning Services Team is an academic support unit under the portfolio of the Deputy Dean (Education). Our role is to provide services that enhance the faculty's excellence and innovation in education. We provide: •Support for a range of learning systems including those of the Monash Virtual Learning Environment such as Moodle, Turnitin etc. •Design and development of general eLearning Projects •Development of specialised applications to support education.

University	Contact	Website Information and Documents
	------- Dr Julie Willems, PhD Department of Rural and Indigenous Health, School of Rural Health +61 3 5128 1030 Julie.Willems@monash.edu	Note: did not locate Strategic Plan. ------- Learning Designer/Education Developer, Dr Julie Willems, conducts a seminar series looking at educational technology. The "Educational Technology Inservices" run monthly via videoconference. Topics include: Virtual learning environments, Cool tools on my Android/iPad, etc. http://www.med.monash.edu.au/srh/learning-teaching/ed-tech-inservice.html
National University of Singapore (NUS)	Director Mr Ravi CHANDRAN Tel: 6516 4575	NUS Centre for Instructional Technology http://cit.nus.edu.sg/ The Centre for Instructional Technology was formed in 1999 to drive the use of technology in teaching and learning at NUS. CIT offers a smorgasboard of educational technology services. These include staples such as the Integrated Virtual Learning Environment (IVLE), lecture webcasts and video capture. We develop custom courseware to fulfil individual faculty staff's teaching needs. Backing this up is our multimedia team which provides a full range of audio-visual production services. Core Services include: IVLE Mobile-enabled service | Lecture Webcasts Mobile-enabled service Audio-Visual Services Conferencing | Web/Desktop Courseware | Flipped | MOOCs eLearning Services include: Breeze | Screen Recording Blogs Mobile-enabled service | Wikis Mindmapping | LAMS Plagiarism Prevention Classroom Response Systems -------- Note: Besides simulation, it's unclear from the website how instructional technology is used within the Yong Loo Lin School of Medicine. http://medicine.nus.edu.sg/corporate/default.aspx

APPENDIX 2A - GIR Resources

Tech Briefs

One-page "briefs" that summarize the latest technologies, trends and issues facing our community. Designed to make it easier for Information Resources professionals to communicate with stakeholders (Deans, students, colleagues) and help in the decision-making process. Members must be signed in to view past issues of Technology Now.

Digital Literacy for Educators and Learners Toolkit

The goal of this toolkit is to create a dialogue among current and future physicians about social media and issues regarding digital literacy and digital professionalism.

Member Viewpoints

Featured in issues of the GIR Newsletter and the GIR Web site, these articles are contributed by GIR representatives on current IT-related issues, challenge solutions, and technological innovations in academic medical institutions.

Medical School IT Reporting Tool

The Medical School IT Reporting Tool gives Institutions that participated in the Medical School IT Survey access to school level data. Schools can query on topics such as IT organization, FTEs, and software and vendor usage for various systems (e.g. admissions, clinical, etc.).

Learning Center Virtual Tours

This collection of virtual tours showcases educational innovations implemented in old or new learning spaces, and were originally presented at the 2011 AAMC Annual Meeting. These innovations improve or extend the use of space beyond the educational methods for which they were designed.

Leadership Conversations

A series of informative discussions held by teleconference with one of our member experts on a topic of interest to technology leaders in academic medicine.
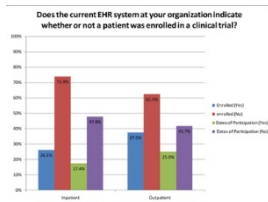
GIR Reports

Reports from GIR surveys and research.

Webinars

Web conferences featuring GIR member and industry experts on a variety of topics related to IT and information resources in academic medicine.

Data SnippITs

Member-generated polls distributed to fellow GIR representatives for snapshots of current trends in academic medical technology and tools. GIR members can submit polling questions on a Group-relevant topic to be distributed to the GIR Membership by AAMC staff.

APPENDIX 2B - AAMC Education Technology Work Group MEMBERSHIP

Co-Chairs:

Chandler Mayfield Director, Technology Enhanced Learning School of Medicine, University of California San Francisco	**William Holloway** Senior Information Technology Architect NYU School of Medicine

Members:

Susan Albright Director of Technology and Learning Tufts University School of Medicine	**Brian Andregg** Systems Manager Duke University School of Medicine
Stephen Bayley Instructional Design Specialist UCONN Health Center	**Jane L. Blumenthal** Director & Associate University Librarian University of Michigan Medical School
Leslie Bofill Director, Educational Technology Herbert Wertheim College of Medicine	**Paul Brandt** Associate Dean for Academic Technology and Curriculum Innovation College of Medicine, Texas A&M Health Sciences Center
Kevin Brewer Lead Academic Computing Specialist Wake Forest University School of Medicine	**Michael Campion** Director, Academic and Learning Technologies University of Washington School of Medicine
Victoria Cannon Project Manager Ohio State University College of Medicine	**Janet Corral** Educational Informatics, Academy of Medical Educators and Department of Internal Medicine University of Colorado School of Medicine
Sue Crowell Manager, Education Technologies Loyola University Chicago Stritch School of Medicine	**Eric J. Fox** Associate Director of Educational Technology The Ohio State University College of Medicine
Anthony Frisby Director, AISR Education Services, Associate Professor Thomas Jefferson University	**Enid M. Geyer** Associate Dean for Information Resources and Technology Albany Medical College
Randy A. Graff Assistant Director, Training University of Florida Health Science Center	**Amanda J. Hagzan** Instructional Technologist Albany Medical College
Gary C. Hamill Senior Research Scholar, CAPE Stanford University Medical School	**Matt Havard** University of Texas Medical Branch Hospitals at Galveston
Larry Hurtubise Team Lead, Instructional Services Ohio State University College of Medicine	**Jason Korenkiewicz** Director, Educational Computing Weill Cornell Medical College
Evie Kumpart Director, Student Information Systems David Geffen School of Medicine at UCLA	**Dave Lampron** University of British Columbia
Terence P. Ma Assistant Dean for Educational Informatics Albert Einstein College of Medicine	**Helen Macfarlane** Director, Education in Technology School of Medicine, University of Colorado
Shannon Manley Project Manager University of Iowa Roy J. and Lucille A. Carver College of Medicine	**Marina Marin** NYU School of Medicine
Robert McAuley Associate Dean William Beaumont School of Medicine, Oakland University	**James McGee, Jr.** Assistant Dean for Medical Education Technology University of Pittsburgh School of Medicine
Geraud Plantegenest Manager, Blended Curricular Learning Resources College of Human Medicine, Michigan State University	**Duane Staskal** Database Developer University of Iowa Roy J. and Lucille A. Carver College of Medicine

Shenifa M. Taite Instructional Design & Support Florida State University, College of Medicine	**Courtney Terry** Project Leader, Academic Systems UMDNJ-New Jersey Medical School
Sherry Vafa Assistant Director, Education Resource Center Baylor College of Medicine	**Dale Voorhees** Director, Educational Technology College of Medicine, University of Central Florida
Warren Friedrich Wiechmann Associate Dean, Instructional Technologies University of California, Irvine School of Medicine	**Lynn Yeoman** Professor of Pharmacology & Medicine Baylor College of Medicine

Steering Committee Liaison:

Boyd Knosp
Associate Dean for Information Technology
Carver College of Medicine, University of Iowa

APPENDIX 2C – COMET Services

The COMET team strives to provide just-in-time access to excellent eLearning for all Cleveland Clinic employees through our dedication to the four cornerstones of our mission: Quality, Innovation, Teamwork, and Service. Our Services Include:

Course Design and Development

Explore the process we use to create eLearning—a dynamic, flexible Instructional Design model for building effective training and performance support tools.

Learning Management Systems (LMS)

Do you want to increase opportunities for students to share and learn from one another across a broader, more diverse audience? Consider our Collaborative Learning Platform.

Testing and Support

Learn how COMET supports learners and educators while maintaining quality.

Emerging Technologies

Would you like to complete your training through a mobile device? Do you have a project that would be perfect for this type of delivery?

Portal Development

See how we provide access to training for individuals in healthcare who are outside of the Cleveland Clinic system.

Reporting

What do you do if you receive a request to verify that your direct reports completed this year's compliance training? Use the Reporting feature available in COMET.

Classroom Manager

Did you know that the COMET LMS also helps you manage classroom training? Let us show you our Classroom Manager.

Quality: We strive to produce the most effective learning experience for all learners through the use of accurate and appropriate content, interactions, imagery, assessment, and reporting.

Innovation: We have built a Learning Management System (LMS) from the ground up to meet the growing needs of the organization. Our team is dedicated to continuous improvement based on what we hear from you. We keep up with the ever-changing demands of technology and continue to explore new delivery methods.

Teamwork: We partner with subject matter experts throughout Cleveland Clinic and its hospitals to design and develop interactive web-based courses. We capitalize on the strengths of each team member throughout the development process—tapping into the wide range of skills and over 75 years of combined experience in the eLearning industry.

Service: We provide the opportunity for training anytime, anywhere, which helps our caregivers focus on the patient.

COMET Showcase

Healthcare professionals have partnered with us to design and develop a wide variety of eLearning solutions. The following are samples from some of our eLearning solutions.

Moodle—Collaborative Online Learning

EcoCaregiver™ is highly interactive and collaborative, co-designed by the Office for a Healthy Environment and COMET, to educate Cleveland Clinic caregivers about sustainability in healthcare. Become an EcoCaregiver by enrolling in the program and completing the courses.

Interactive Case Studies

Interactive case studies provide emergency physicians with real-world situations to practice the concepts of Geriatric Emergency Medicine. The example shown here is A Case of Altered Mental Status.

Video and Audio

We worked with Pediatrics to create a course for residents and fellows to learn how to assess and treat pediatric pain. Learners view a video of a child experiencing pain and based on what is observed, determine the pain level and make a pharmacologic or non-pharmacologic decision.
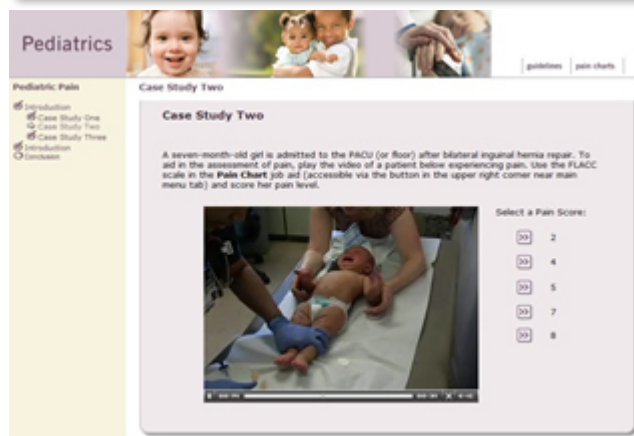
Animations

Working with the Head and Neck Institute and Nursing Education, we animated the mechanics of swallowing.
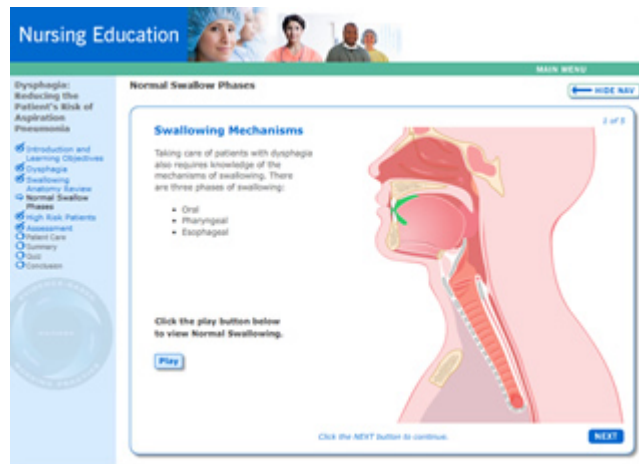
Interactive Exercises

For this client, we created interactive exercises that provide nurses with the skills and knowledge required for defibrillation. Learners have the opportunity to practice the steps in performing the paddles and multifunction electrode (MFE) pads defibrillation method.
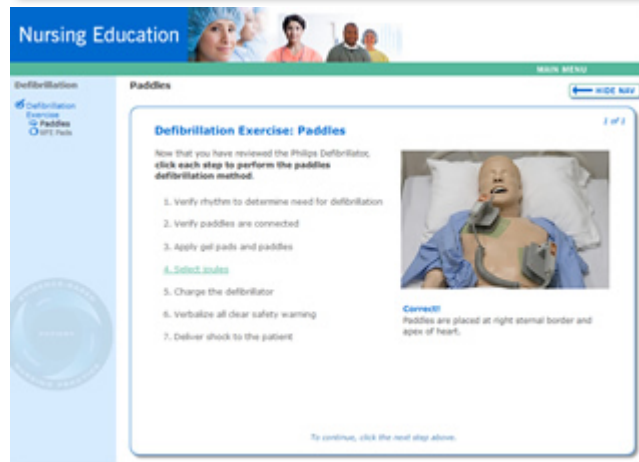
Sharing Cleveland Clinic's Knowledge of EMR

Want to learn more about COMET's Student Nurse Portal and its creation? Read the article, "Student Nurses and the Electronic Medical Record: A Partnership of Academia and Healthcare", which was coauthored by two of COMET's team members; Instructional Designer , Yolanda Campbell, and former Manager, Julia Shumway, along with clients from Nursing Education and Professional Practice Development.

Physicians in Singapore work in teams to create eLearning

The "Advances in Information Technology & Support Systems to Enhance Medical Education" module was part of a five-week course for Essentials for Clinician Teachers Organized by the National HealthCare Group and NHG College (Singapore) in collaboration with the Harvard Macy Institute and Partners Harvard International. The module, which focused on technology in medical education, was attended by about 45 participants from October 24 to 28, 2011 at the Raffles Town Center in Singapore.

During the week, Dr. Mehta demonstrated various aspects of technology in learning including instructional design principles, software for creating interactivity, creating collaboration in eLearning, Social Media and Web 2.0 tools, theories of learning and knowledge, the community of inquiry model, and tools for lifelong learning.

The participants worked in small groups to create eLearning that used the learning principles and development tools demonstrated by Dr. Mehta. On the final day, the teams presented their projects to their peers for feedback.
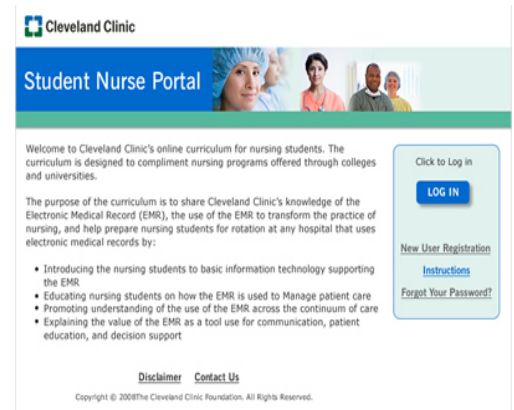
APPENDIX 2D – Stanford CourseWork

CourseWork Features

- Much easier to use and more intuitive navigation (compared to the previous system, CWP) based on faculty and student feedback

- Automatic site enrollment based on Axess rosters

- Authentication and user identification managed with Stanford's SUNet ID system

- Integration and support with the university's main campus' CourseWork team

- Many tools available to help instructors manage their site, including:

- Announcements

- Online Assignments (Quizzes, Self-Tests, Final Exams, Problem Sets, Surveys/Evaluations, etc)

- File storage space

- Gradebook

- Schedule

- Section management

- Photo Roster

- Chat room

- Forums

- Wiki

- And more, including new tools under development.

Materials	**Roster**	**Schedule**

Online Assignments

ASSIGNMENTS TOOL

CourseWork features an assignments tool that lets instructors quickly and easily create an online assessment for students to take. Assignments settings can be adjusted to allow for single or multiple submissions, anonymous or identified grading, release dates and due dates, password protection, and much more. Instructors at Stanford School of Medicine have used CourseWork's assignments tool to create online problem sets, quizzes, self-tests, lecturer evaluations, surveys, and many courses and clerkships

regularly use CourseWork to conduct online final exams. Contact us for more information to see how you can use CourseWork's online assignments.

Scores	**Overall Assignment Statistics**	**Statistics by Question**

CourseWork Mobile

CourseWork has a mobile interface designed for smartphone browsers (e.g. iPhone, Android, etc) that allows students to access their announcements, schedule, materials, lecture media, and more, all from their mobile device. The mobile interface is undergoing a redesign for open beta testing in Summer 2010, with a final release scheduled for Autumn 2010. Contact us if you'd like to beta test the new mobile interface.

Project Sites

CourseWork also supports Project Sites, which have many of the same tools as a course site, but are not linked with any Axess enrollment lists. Project Sites can assist with managing groups, hosting and organizing files, sending out announcements, setting a schedule, and much more. Contact us for more information.

Policies

- CourseWork Content Posting Policy

- Course Content Access & Appropriate use Policy

CWP to CourseWork Migration Complete!

The CWP was the online course management system for the School of Medicine until Spring 2009, and was shut down July 11th, 2009. Content from CWP was migrated to CourseWork over the course of several months, and new courses have been hosted inside CourseWork instead, the course management system run by Stanford's main campus.

Educational Technology will continue to support School of Medicine courses within CourseWork. Our goal is to support every Medical School course via the web both administratively (handouts, scheduling, basic course information, etc.) and with rich content based learning tools (java applets, interactive images, animations, interactive quizzing, and streaming video of lectures).

Successful Uses of CWP

The CWP was used for over 40 individual courses and groups. These included:

- all preclinical courses

- all core clinical clerkships (e.g. Surgery, Cont. of Care, Pediatrics)

- student resources (MSSG on-line, graduating class site, NBME info, etc.)

- scholarly concentrations

APPENDIX 2E – STANFORD STRATEGIC PLAN – EXCERPT RE: Information Resources and Technology

"If we are to continue on our present trajectory of scientific discovery in biomedicine we must support human genius through the innovative application of effective information technologies."
—Henry Lowe, Senior Associate Dean for Information Resources and Technology

Mission and Goals

The mission of the Stanford University School of Medicine's programs in information resources and technology is to facilitate excellence in education, biomedical and clinical research and patient care through the application of innovative and effective information resources and technology.

We envision the development of an innovative information technology (IT) infrastructure and knowledge access environment that can support the clinical, research, educational and community outreach missions of the Stanford community. This infrastructure will be designed to address critical, real-world problems. It will be developed collaboratively using a process that brings together information technology, library science and biomedical domain expertise from both within Stanford and from regional, national and international partners. The new information technology and knowledge resource infrastructure will be standards-based, user-centric and designed to support the essential systems inter-operability that will ensure free flow of the data and knowledge that powers patient care, research and education.

We support our mission and fulfillment of this vision by striving towards the following goals:
- Develop and promote a simple and uniform user-centric IT environment.
- Develop, maintain, promote and support defined Medical School standards for systems inter-operability.
- Provide database design and development services supporting the acquisition, storage, access and transmission of Medical School data.
- Promote and support the introduction, development and extension of IT as a tool for teaching and learning.
- Deliver information and knowledge resources to faculty, students, staff, patients and the community.
- Represent the School of Medicine in defining needs, promoting expertise and building partnerships for the design and development of IT systems for the Stanford medicine community.
- Develop an IT infrastructure that remains compliant with changing regulations and guarantees an appropriate level of systems security and data privacy.
- Provide technical services support to the School of Medicine's administrative functions at all levels of the organization by utilizing appropriate available technologies.

APPENDIX 2F – machealth PROGRAMS

- [Advanced Access and Efficiency for Primary Care](#) Modules to help you learn, test, and implement best practices, change concepts, and innovative approaches to improvement that will enable you and your team to "do today's work today".Public Program

- [Asthma Action Plan](#) A program from The Lung Association on Asthma Action Plans for providers to develop baseline knowledge of the components and benefits of using an Action Plan with patients and describe the recommended steps for escalating therapy within an action plan.Public Program

- [Benign Uterine Conditions Online](#) Evidence-based tools and modules to help you manage benign uterine conditions such as endometriosis and menorrhagia. Public Program

- [CAMH and McMaster Addictions Curriculum Project](#) This collaboration between the Centre for Addiction and Mental Health (CAMH) and McMaster is an educational initiative to promote curriculum innovation and resources related to the spectrum of alcohol use disorders.Public Program

- [Collaborative Mental Health Network](#) links family physicians from across the province with a GP Psychotherapist and Psychiatrist mentor in a collaborative relationship to support easy access to case-by-case support and ongoing continuing professional development regarding mental health care. Private Program

- [Curriculum of Caring](#) CommunicateCARE: A Curriculum of Caring for People with Developmental DisabilitiesPublic Program

- [Emergency Department Asthma Care Pathway](#) The Emergency Department Asthma Care Pathway (EDACP) from the Ontario Lung Association and partners is a proactive tool that provides considerations for asthma management based on Asthma Guidelines.Public Program

- [Emergency Management of Bleeding Disorders](#) Recognize, diagnose and treat patients with bleeding disorders like hemophilia in the ED.Public
Program

- [Extreme Heat Events](#) Info and tools for health care providers on the dangers of extreme heat, and how to properly prevent, diagnose and treat heat-related illnesses.Public
Program

- [Fluids & Electrolytes](#) This program presents the various components of acid-base disturbances in a well-structured, easy to understand layout.Public
Program

- [HBHC Screening Liaison Nurses Community of Practice](#) The Healthy Babies Healthy Children Program is an evidence-informed early identification and intervention program available to all expectant families in Ontario and those with children from birth to the transition to school.Private
Program

- [I-EQUIP](#) I-EQUIP is a unique collaboration between McMaster University, Brock University and the Niagara Health System that focuses on improving health care quality and patient safety.Private
Program

- [Interprofessional Education](#) This is an online community where students, staff and faculty members can further their learning about interprofessional education and collaborative patient-centered care.Private
Program

- [Le bilan de santé amélioré à 18 mois en Ontario](#) Information, ressources, modules de cyberapprentissage, événements, forums de discussion et groupes en ligne liés au bilan de santé amélioré à 18 mois en Ontario.Public
Program

- [Le Radon](#) Basé sur le programme national de sensibilisation sur le radon de Santé Canada, ce programme est conçu afin de répondre aux questions de vos patients sur les risques à la santé liés au radon et, au besoin, réduire l'exposition de leur famille.Public
Program

- **McMaster MD Student Discussions** We are excited to welcome you to the McMaster Medicine family. Starting at the end of August you'll be thrown into a world of new people, experiences, places, and acronyms. This forum is to help ease the transition.Private
Program

- **Medical Mentoring for Addictions and Pain** Mentors and Mentees for the Ontario College of Family Physicians (OCFP) MMAP Network in the fields of addictions, pain management, and methadone prescribing.Private
Program

- **Mental Health Law: CCB Hearing Preparation** For Ontario psychiatry residents and psychiatrists: prepare smarter for Ontario Consent and Capacity Board (CCB) hearings.Public
Program

- **Northern Ontario Forest Fire Evacuation** This forum will provide support, information and a tool for communication for health care providers in communities hosting residents displaced due to the Northern Ontario forest fires.Private
Program

- **Ontario's Enhanced 18-Month Well-Baby Visit** Information, resources, e-learning modules, events, discussion forums, and online groups related to the enhanced 18-month well-baby visit in Ontario.Public
Program

- **Osteoporosis** Get great osteoporosis management tools and resources, and learn the 3 secrets to an evidence-based clinical approach. Public
Program

- **Palliative Care** Learn best practices in how to manage common symptoms in terminally ill patients.Public
Program

- **Périodes de chaleur accablante** Information et outils pour les professionnels de la santé portant sur les dangers de la chaleur accablante et sur la prévention, le diagnostic et le traitement de maladies liées à la chaleur.Public
Program

- Quality Improvement in Colorectal Cancer in LHIN4 (QICC-L4) Supporting Surgeons at Key Point of CarePublic Program

- Quality in Family Practice Learn more about a major initiative of the OCFP and the McMaster Department of Family Medicine to improve the quality of health care through a voluntary quality assessment program funded by the Ontario Ministry of Health & Long Term Care.Public Program

- Radon A program designed to help you answer your patients' questions about the health risks of radon and the need to test their home and reduce their family's exposure based on Health Canada's national radon awareness program.Public Program

- Social Determinants of Child Mental Health An outlined approach to understanding and assessing social determinants of health by examining how children's environments affect their biology and their pathways in health.Public Program

- Spirometry A Clinical Primer A program for health care providers to help them understand the role of spirometry as an objective measurement of lung disease, review spirometry testing, terms and measurements, understand the criteria for best test acceptability/repeatability.Public Program

- Tales from the Heart I wish I'd had an online case-based, multimedia conceptual overview of cardiovascular physiology and pathophysiology when I went through medical school.Public Program

- Thrombolysis in Pediatric Stroke (TIPS) The first clinical trial to explore safety and dose finding of intravenous Tissue Plasminogen Activator (tPA) in children with acute stroke.
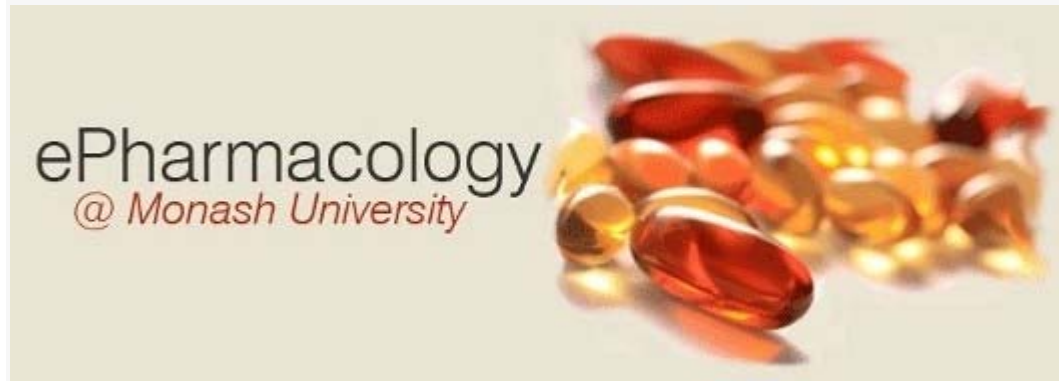
APPENDIX 2G – MONASH eLEARNING PROJECTS

eLearning Projects

eLearning Services work with various schools and departments within the Faculty to provide custom and innovative solutions to enhance student learning, teaching quality and improve staff efficiency.
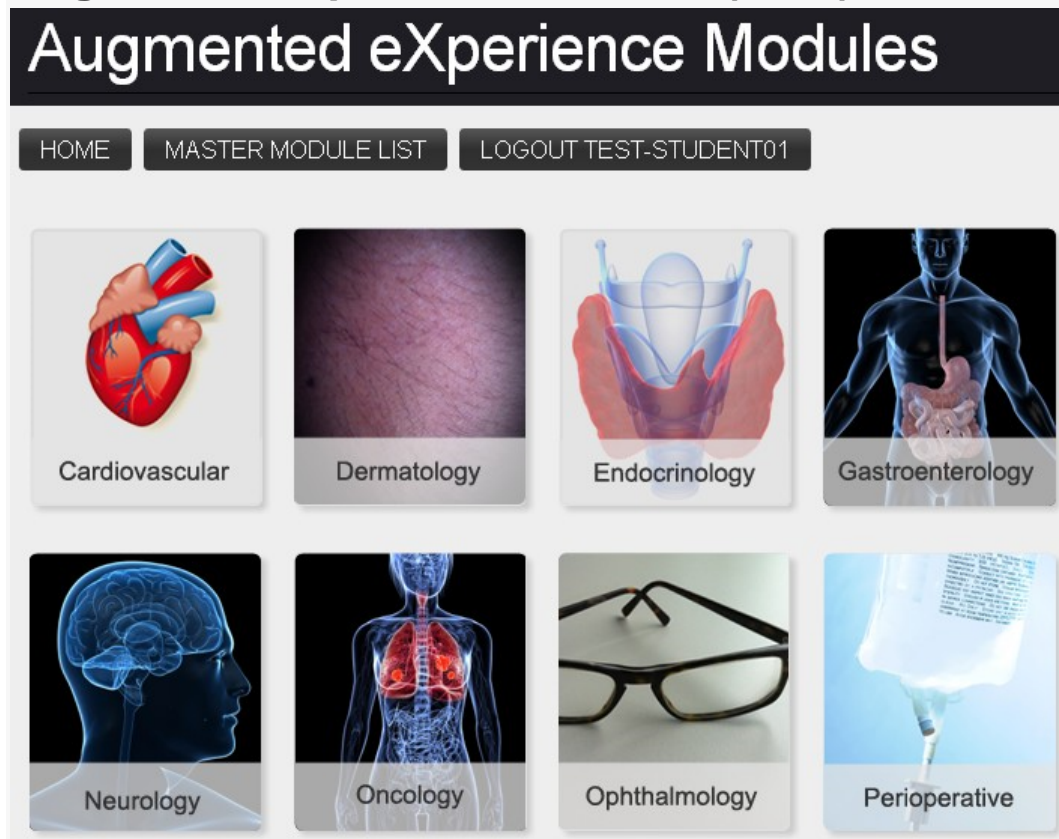
Some of the team's projects are listed below.

ePharmacology

A student resource to aid learning. The site includes a core drug list, as well as correct dosage and route of administration information, and various self-assessment modules that students can undertake to test their knowledge.

Augmented Experience Modules (AXM)

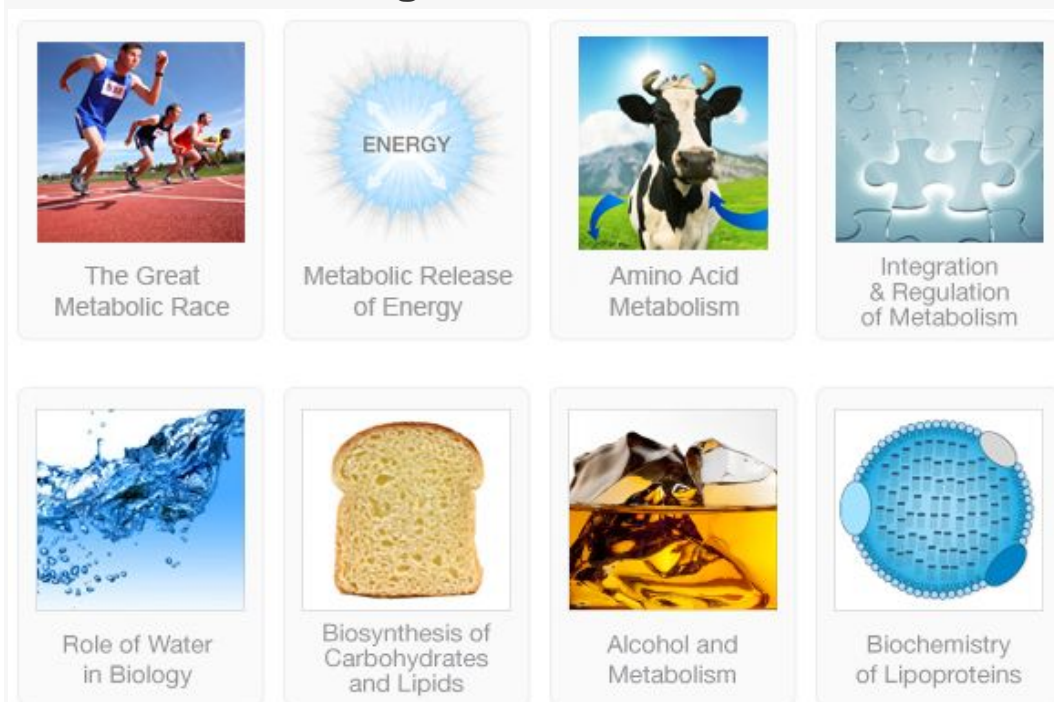AXM is designed to promote student learning with real patients and consists of 5 steps:

1. **Patient identification:** A patient with a particular medical or surgical condition is identified

2. **Pre-interview learning:** Before seeing the patient, the student then learns about the condition through an interactive experience
3. **Patient interview:** The student then sees the patient with the module providing tips on what to ask and look for and records the information
4. **Gathering results:** The student looks up the relevant patient investigations and enters them into the module
5. **Assessment:** The student is assessed on what they have learnt through multiple-choice questions

The outcome is a student who has learnt about a condition, which has been reenforced through a real patient experience and they have tested their knowledge in context. They also retain a de-identified record of their patient encounters as a resource that can be reviewed later.

Metabolic Challenge

The Great Metabolic Race

Metabolic Release of Energy

Amino Acid Metabolism

Integration & Regulation of Metabolism

Role of Water in Biology

Biosynthesis of Carbohydrates and Lipids

Alcohol and Metabolism

Biochemistry of Lipoproteins

An interactive online resource designed to assist students learning biochemistry. It includes self-paced exercises which employ a problem based approach to address metabolism issues.

The exercises are complemented by a set of interactive tutorials covering the basic principles of metabolism.