Information Technology and Curriculum Delivery in the Undergraduate Medical Education Program

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Introduction

In April of 2005, an ad-hoc working group of the UGMS Committee presented a report on students’ computer use, and their attitudes towards computers and the internet in their educational experiences (See the report: *Attitudes and Skills in Computer Use: Survey of undergraduate medical students*). In general it demonstrated students’ attitudes towards the use of computers and the internet in their studies is quite favorable and their use of these resources is frequent. Of the 118 students who completed the survey (95% of 1st Years, 41% of 2nd Years, 11% of 3rd Years and 25% of 4th Years) over 80% searched the internet on a daily basis and 40% searched the internet daily for educational purposes.

Students’ comfort level with various aspects of using computers in their studies was also rated high. Students in general have significant experience with personal computers, various software packages, and the internet in relation to their educational experiences. Students agreed strongly with survey statements such as “Computer use in a learning environment is a necessity” (4.42 on a 5-point Likert Scale), and “Computer use in a learning environment is better than non-use” (4.31). Students also disagreed with negative statements regarding their attitudes towards computers. For example, students on average rated the following statements in the range of strongly disagree (1) to disagree (2): “I will never be able to use computers”; “Computers make me nervous”; and “I’m afraid to break something when using computers”.

Most undergraduate students are, in fact, currently using web-based technologies as part of their course work. Since January 2006, Second-Year medical students have been participating in Interprofessional Health Education courses partially delivered using WebCT (Web Course Tools). Students are required students to interact and work collaboratively in this online environment. Since 2002, the Faculty of Medicine has been using WebCT to deliver and distribute curricular materials in the Undergraduate Program (see Appendix I). Students regularly access their course sites to view, print and interact with online content. For example, the Class of 2008, now in their second year, accessed online Anatomy, Physiology and Biochemistry materials as part of their Basic Science of Medicine I (BSM I) course. 100% of the class accessed the 2008 BSM I site, which contains over 247 resources that can be tracked\(^1\). On average each BSM I student had 772 ‘hits’ on the site between August 30th and the end of the course in December 2005. Similar results were found when evaluating student usage of resources in other courses: BSM II, ISD and ISD II, Clinical Skills I and II, Community Health I and II, and the Clinical Clerkship Program site. For more information about WebCT and medical students’ use of their online curricular resources, please see the *eMedicine @ MUN Online Course Sites Usage Report* (attached).

While technology, in various forms, is already part of students’ educational experiences, questions arises as to whether these strategies meet the current and future learning needs of students, the teaching and learning needs of faculty, and the goals of the Undergraduate Program and the Faculty of Medicine. Is the use of technology promoting the skills and attitudes of lifelong learning? Can technology be used to facilitate small group teaching and learning – while not depersonalizing educational experiences? Can technology be used to facilitate integrated systems-based program development and delivery? Can technology be used to support students and preceptors participating in community, rural and distant clinical placements?

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\(^1\) Tracked resources are pages/materials (html, pdf, doc, etc) that have been added to Content Modules – a tool in WebCT that allows for the organization of related curricular materials or materials focused on a common subject. Examples of Content Modules in the Undergraduate Program sites include “Presentations and Handouts”, “Objectives”, and “Tutorials”. Because many resources are also linked from the “Schedule” sites using a direct link to the resource, and bypassing the Content Module, not all hits on a particular resource are tracked or counted.
**Current State**

To take a closer look at the questions posed above it is important to first consider how information technology, including computers and the internet, is being used in the Undergraduate Medical Education Program? What technologies are being used to support students’ educational experiences - including in-class learning activities, self-directed learning, and clinical experiences?

The following table lists some of the current technologies used to support the delivery of Undergraduate Medical Education Program.

**Table 1: Current Technologies Utilized in the Delivery of the UGME Program at MUN**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Details of availability and use</th>
</tr>
</thead>
</table>
| **Computer Workstations** | Throughout campus and the HSC, students have access to computer terminals and computer lab facilities.  

  - Computer stations in the Health Sciences Library  
  - Two 25-station computer labs  
    - Health Sciences Library - available only during library hours  
    - Room 1758 - available 24 hours a day, 7 days a week  

  Both Computer lab facilities have standard sets of software installed. Software includes:  

  - MS Windows  
  - Microsoft Office (including Word and PowerPoint)  
  - Corel Suite (including Word Perfect)  
  - SPSS  
  - MediTech (test system) – only in Room 1758  
  - Internet Explorer  
  - Adobe Acrobat Reader and various plug-ins  
  - Computer-Based Self-Instruction Modules in Geriatric Medicine  

  Two printers are also available for student use and are located in the two computer labs. Students pay ten cents (10¢) per page which is automatically removed from their printing account set up with their Student Card and computer user account.  

**Limitations:**  
There are approximately 60 students in each class of medical students. No one computer lab has enough stations to accommodate at least half (½) of the class (30 students). Both lab facilities, if used simultaneously, also do not support the entire class with one workstation per student.  

Printing is a source of frustration for students who have seen rising costs in the last several years. As more curricular materials are being posted online students have suddenly had to absorb the printing costs which might otherwise been covered by the UGME Office.
### Internet Access

**Wired:**

All computer stations in the HSC Library, the Library Computer Lab and the 1758 Computer Lab have internet access through a local area network (LAN).

Internet access through a LAN is also available in many conference and small meeting rooms. These connections work much like docking ports, but users must first register their laptop computers. This is available for faculty and staff.

MUN’s Department of Computing & Communications offers free Internet access to all students from off campus via dialup or modem accounts. Long distance charges may apply.

**Wireless:**

In general, wireless accessibility is available to students in the Health Sciences Centre in the following areas:

- Medical School Foyer and 2nd Floor Small Meeting Rooms
- Medical School Labs
- The Auditorium, and Lecture Theatres A, B and D
- The Medical Student Lounge
- HS Library and surrounding common areas
- HSC Cafeteria

*Please refer to Computing and Communications (C&C) for more detailed information about wireless access for the Health Sciences Centre and for other buildings on campus: [http://www.mun.ca/cc/wireless_access/](http://www.mun.ca/cc/wireless_access/); Wireless Service Areas [http://www.mun.ca/cc/projects/serviceareas/](http://www.mun.ca/cc/projects/serviceareas/).*

**Limitations of wireless access:**

- Wireless accessibility does not extend into the Eastern Health portion of the HSC.
- The existing wireless access, listed above, is not accessible to handheld devices such as PDAs (Palm Pilot, iPaq, etc).

Clerks and Residents may most be affected by these two issues. While doing clinical rotations, they would be more likely than Preclerks to be utilizing handheld devices throughout the HSC.

Wireless accessibility is currently not utilized as a formal approach to curriculum delivery in the Undergraduate Program. In light of the availability of this technology in the majority of teaching spaces, particularly for the Preclerkship Program, there are many teaching and learning opportunities to consider. Many of these opportunities would directly affect students, faculty and staff (i.e. computer requirements, teaching strategies, equipment, support, etc.).

### Learning Management System

**WebCT** (Web Course Tools – [http://www.webct.com](http://www.webct.com)): is a web-based software program allowing for the creation of on-line learning environments. WebCT provides tools for four types of functions, including:
In the Faculty of Medicine, WebCT is primarily used to provide students with access to resources supporting face-to-face instructional sessions. Through these course sites, students typically have access to the following types of resources:

- **Administrative resources**
  - Schedules
  - Course Contacts
  - Pass/Fail criteria
  - Student Group Information
- **Course/Session Objectives**
- **Lecture Presentation and Handouts**
- **Small Group Sessions/Tutorials**
- **Labs (where applicable)**
- **List of Recommended Resources**

To a lesser extent, students are also provided with:

- **Formative and Summative Assessment** (typically MCQ type questions)
- **Multimedia Resources** such as Image Databases and Video Clips

See [Appendix I](#) for a listing of curriculum course sites in the Undergraduate Program.

**People Involved:**

Many people are involved in the development and distribution of online curricular and administrative resources:

- Program Directors
- Course Chairs
- Subject Chairs
- Lecturers
- Program Coordinators
- Administrative Assistants
- HSIMS
- DELT

WebCT recently merged with Blackboard. Blackboard, the controlling company plans to continue support for the existing WebCT platforms, with plans to eventually develop one unified platform from the Blackboard and WebCT technologies.

At Memorial, WebCT is supported through central funding. The Faculty of Medicine pays no user fees for this service. All upgrades to the software and to the server are also coordinated through Distance Education and Learning Technologies (DELT). While MUN is currently using Campus Edition 4.0, the current release is Campus Edition 6.0. WebCT also has a more sophisticated
learning management system called WebCT Vista. It is based on a relational database. WebCT is integrated with the Banner System, giving students access to many student services and resources through a single sign on. DELT provides some support for WebCT users. For more information, please see the following DELT site: https://webct.mun.ca/.

In the Faculty of Medicine, HSIMS supports the development of course sites for the Undergraduate Medical Education Program, as well as facilitating the use of WebCT for Residency Programs and the Interprofessional Health Education Programs. There are two full time personnel, who split their time between various projects (photography, ePresence, web development, etc) and one full time instructional designer working on the development of course sites for the UGME Program.

The development of curricular websites began as an ad-hoc effort with no official mandate or strategic plan for long term direction or development goals. While progress has been made there is still much room for ongoing improvement and more thorough representation of the program. Currently web-based curricular resources are primarily supporting face-to-face learning activities. There are many missed opportunities to promote active, self directed learning and to provide students with opportunities for self assessment.

Students representatives from the Web Education Committee (WEC) have been keenly interested in the ongoing development of the curriculum sites, and have contributed much feedback and suggestions about policies relating the posting of resources as well as (and which affects) the reliability and accuracy of these materials. For example, students have recommended the development of policies around the online distribution of course materials. In light of extensive printing costs being incurred directly by students, they have also asked for some consideration to be taken to alleviate or reduce these costs. Students have also asked for a review of the site archiving strategies, and have proposed PowerPoint guidelines for faculty.

While the use of WebCT and the internet is certainly nearing a strategic stage of technology employment in the Faculty of Medicine, further review and careful consideration of our current learning management system, and the strategies to most effectively use this tool to support the curriculum objectives, program goals and mission of the Faculty of Medicine is warranted. The technology exists to support student-centered learning activities, self-directed learning, and formative and summative assessments.

Limitations of WebCT (Campus Edition):
- Reporting functionality is very limited.
- Tracking of students use of resources is limited
- Not a true database infrastructure
- Scheduling functionality if very limited

Patient

“T-Res is a PDA and web-enabled application that allows medical residents,
### Encounter Logs

Medical students and staff physicians to quickly and easily document their activities in order to enhance the effectiveness of medical education. T-Res runs on PDA (handheld) computers to make data entry fast and convenient. Data is transferred via a desktop computer and the web to a secure central server. Residents, program directors and national co-ordinators can access different views of the information to meet their individual needs.” ([http://www.t-res.net/](http://www.t-res.net/))

T-Res is set to be implemented in the Clinical Clerkship component of the Undergraduate Medical Education Program for the 2006 – 2007 academic year. This new technology will provide students with an opportunity to quickly record their patient encounters (patient logs), and provides clerkship directors with data on each students and the range of experiences they have or have not had in a particular program.

### Learning Objects and International Consortiums

**IVIMEDS – The International Virtual Medical School** is a consortium of nearly 40 medical schools across 14 countries ([www.ivimed.org](http://www.ivimed.org)) with aims to provide comprehensive medical education resources to teachers and learners worldwide. Curriculum materials from IVIMEDS will be available for use in existing and new medical schools. IVIMEDS will also offer undergraduate medical students an alternative track curriculum for the early years of their program with the opportunity to complete clinical stages at partnered institutions.

The Faculty of Medicine at Memorial University of Newfoundland has budgeted funds to participate in this consortium. As a partner in this international collaboration, the Faculty of Medicine would contribute educational resources to a bank of reusable learning objects (RLOs), and in return have access to the full set of RLOs as well as a virtual practice with virtual patients, and a bank of learning design objects (learning activities to which you could insert content).

### Web-Casting

**ePresence Interactive Media:** [http://epresence.tv/](http://epresence.tv/)

ePresence is a webcasting service that includes support for video, audio, slide broadcasting; slide browsing and review; submitting questions, integrated moderated chat, live software demos and the automated creation of event archives. Users may view previously held sessions (archived) online at any time. ePresence Interactive Media represents the efforts of a the ePresence Open Source Consortium. The Faculty of Medicine is a member of that consortium.

ePresence is currently being used in the Faculty of Medicine to primarily support Academic Half Days and Ground Rounds. It can support learners/participants in the classroom, down the hall or across the world. The archiving features of the system make for a useful record of events and curricular content.

For more information about ePresence here in the Faculty of Medicine, see [http://www.med.mun.ca/med/medEducation2/eLearning.htm](http://www.med.mun.ca/med/medEducation2/eLearning.htm)

To view previously held (archived) sessions, go to: [http://auricle.med.mun.ca/](http://auricle.med.mun.ca/)
**People involved:**
- Program Directors/Course Chairs
- Program Coordinators/Administrative Assistants
- HSIMS

**Limitations of ePresence:**
Because the development of ePresence is ongoing, it may not include a fully developed interactive feature-set, like those seen in web-conferencing solutions such as WebEx Web Conferencing. The current use of ePresence is limited to didactic teaching sessions. While two-way interactions are now possible, there are some delays which might make for a disjointed experience for participants at the distant locations. ePresence would not meet the needs of small group meetings, tutorial sessions or case studies where some participants are accessing remotely.

**Video-conferencing**
The new office of Professional Development and Conferencing Solutions (PDCS) is the sole provider of video-conferencing opportunities for the Undergraduate Medical Education Program. Video-conferencing is live 2-way (or 3-way, etc) communications where participants can see, hear and talk to each other. Video conferencing is under utilized in the delivery of the Undergraduate Program, but could play an increasing role in the facilitation of interactive sessions in the Clerkship.

**Limitations of Video-conferencing**
Video-conferencing can only be held between two video conferencing points or facilities. The use of video-conferencing is limited to the locations where facilities and technical capabilities are available.

Currently, there are 83 sites across the province of Newfoundland and Labrador that are videoconference enabled. Different communities have different capabilities. The breakdown is as follows:
- 20 Hospitals/Clinics
- 16 College sites
- 10 Community Sites
- 7 Judicial Sites
- 5 Memorial University of Newfoundland Sites
- 2 Marine Institute Sites
- 24 Provincial Schools

(from [http://www.med.mun.ca/tetra/services/video.asp](http://www.med.mun.ca/tetra/services/video.asp))

**Electronic Communications**
**Email/Listservs** are used as administrative tools to communicate with students about program updates, etc.

**People involved:**
- Undergraduate Office
- Program Coordinators
<table>
<thead>
<tr>
<th><strong>Objectives Database</strong></th>
<th>A web-based objectives database has been developed to present a complete picture of the Undergraduate Program’s learning objectives – program, course, subject and sessions. This process has recently been complimented by a formal review of the Program’s objectives.</th>
</tr>
</thead>
</table>
| **Student Scheduling System** | **One45**: [http://www.one45.com](http://www.one45.com)  
A new web-based software tool has been purchased with plans for implementation in the Fall of 2006. One45 is a “… web-based system for medical schools, GME programs, and clinical training programs that offers ‘one stop shopping’ for evaluation, response tracking, reporting, performance flagging, procedure logging and scheduling for academic curriculum…’”. This implementation of this system will help address problems with the current web-based student schedules made available to students through WebCT. The complexity of students schedules – particularly with respect to the individuality of certain sessions for Clinical Skills courses, and programs in the Clinical Clerkships require a more advance scheduling software than WebCT provides. |
| **Exam Item-banking and Generation** | The current exam question databank and exam generation system, PET, is outdated and in need of update. It operates on an older PC and cannot be updated to new software and operating systems.  
Discussions are under way to establish a project plan for the review, selection and implementation of a new item-banking and exam generation system. Considerations for long term goals such as secure, web-based testing and integration with the LMS (WebCT currently) are important. |
| **Program Evaluation** | **Surveyor** ([http://www.med.mun.ca/surveys](http://www.med.mun.ca/surveys)) is a web-based system that administers surveys. This survey tool is underutilized in the Undergraduate Program and it functionality should be explored for use with various programs in the Faculty of Medicine.  
**One45**: [http://www.one45.com](http://www.one45.com)  
(See also **Student Scheduling System** – above). The One45 Medical Education Administration Suite offers a toolset for the administration, delivery and collection of program evaluation surveys. One45 will be set up for implementation in the Fall of 2006 for student scheduling. The survey functionality should be explored at that time. |
Omissions

An obvious omission from this table discussing technology used in curriculum delivery is the HS Library and its digital resources. The importance of Library resources, the technology making these accessible, and the skills required to efficiently use these resources should not be understated. Informatics skills are important curricular goals for all students in the health sciences. Further consideration and discussion may be required.

Opportunities and Recommendations

Upon review of the current state of information technology use as it relates to curriculum delivery, it is clear that the Faculty of Medicine at Memorial University has had moderate success with technology adoption. In fact, all courses in the Preclerkship Program have online curriculum resources. Administrative and course materials are also being made available online for all Disciplines within the Clerkship Program. Residency Programs are now interested in using technology to support their programs and are beginning to use a combination of WebCT and ePresence. The ad-hoc nature of technology adoption has worked well for early adopters and those with a keen interest. Strategic planning, faculty and student involvement and a clear set of goals will help establish the use of appropriate technologies in the delivery of the Undergraduate Program.

The technology available for use right now, including course management systems, wired and wireless internet access, web-casting technology and communication tools provide many opportunities for continued curriculum delivery enhancements. We are not currently using these technologies to full extent of their capabilities – or in ways that might be considered in-line with the curriculum teaching strategies. However, with more clearly established goals and an understanding of both curriculum and technology, this is obtainable in the short term. Long term strategies must be considered in order to ensure technology is used advantageously to meet the future learning needs of students, teaching needs of faculty, and the goals of the Undergraduate Program and the Faculty of Medicine.

The following is a list of opportunities and recommendations that will address the appropriate use of technology in the Undergraduate Medical Education Program for both the short term and long term. This list keeps in mind that while we need to address current issues and concerns we also need to consider where we want to be in 5 years. In 5 years, will we be meeting the needs of students and faculty no matter where they are located? Will the Faculty of Medicine be on par with the national average or standard in terms of medical schools use of technology in curriculum delivery and enhancements?

Information/Curricular Resources

- Develop a database of digitally archived resources currently being utilized - including all objectives (currently in progress), all handouts and presentations, all digital media - such as images and video clips. All these digital resources should be appropriately meta-tagged. Some would be considered reusable objects for insertion in examinations, quiz questions, other presentations, learning modules, case studies, etc. This would need to be properly resourced with funds for equipment, staff and for faculty release time for the tagging of curricular resources.
- To prepare for involvement in other reusable object repository projects, such as IVIMEDS, the peer review of content agreed to be shared or submitted to IVIMEDS should occur at a local level. The development of a database of resources (see point above) would facilitate this process.
• Develop of policy around print versus web-based materials and the accessibility of these to students.

Administrative including Committees/Organizational Structures

• Web Education Committee should be established as a formal committee reporting to the UGME Committee or other appropriate committee and charged with assisting the Faculty of Medicine and the UGME in ALL technology projects and decisions. It should be renamed to "Informatics Committee" or "Technology in Education Committee". This committee could function in the evaluation, testing and recommendation of new technologies for curriculum delivery and would involve technology, administrative, resource, educational and content experts as well as members of the student body.

• One member from WEC should sit on all curriculum committees. This member should be an education, resource, or technology expert.

• Evaluate and streamline current work-flow processes, and communication strategies, particularly those involving staff handling curricular and information materials for the undergraduate students.

• Formalize set of roles and responsibilities for all involved in curriculum delivery. For example, a tutor, preceptor, lecturer, subject chair, course chair, program director should be aware of what they have agreed to take on. This also applies to administrative, educational and technology staff.

For a lecturer, the following might be a subset of those responsibilities at they pertain to curricular resources:

<table>
<thead>
<tr>
<th>Lecturers Role and Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. create/update a set of lecture objectives that stem from the core set of course objectives. Send these objectives to the course/subject chair and to HSIMS for posting to the course sites</td>
</tr>
<tr>
<td>2. create/revise 3-5 multiple choice questions for use on course/subject examinations and send to the course/subject chair</td>
</tr>
<tr>
<td>3. prepare or update a handout or provide students with access to your presentation materials by either:</td>
</tr>
<tr>
<td>a. submitting to HSIMS (<a href="mailto:photomed@mun.ca">photomed@mun.ca</a>) for posting to the web site (required 2-3 business days in advance of the session)</td>
</tr>
<tr>
<td>b. submitting to ______ for printing (required _____ business days in advance of the session)</td>
</tr>
<tr>
<td>c. bring along print copies to the class session (printing costs to be personally absorbed)</td>
</tr>
</tbody>
</table>

Teaching Strategies

• Create more user-centered, self-directed online learning experiences such as self-assessment examinations and PBL cases.

• Make better use of the existing LAN connection in the small group teaching rooms (seminar rooms) by incorporating computers with wall-mounted screens that can be used for case-studies, literature searches, etc during the actual tutorial or seminar sessions.

• Use existing technology to assist in the development and delivery of longitudinally integrated course content (e.g. case studies that develop over the course of several weeks or a term).

• Develop a formal informatics curriculum that integrates into existing courses of the Undergraduate Program, with information literacy skills objectives integrated into specific learning activities. For example, an activity involving the research of infectious microorganisms.
could involve the appropriate use of reference books and internet resources such as the World Health Organization. A bedside teaching activity in Clinical Skills or the Clinical Clerkship program could involve a literature search or drug dosing information sources from a handheld device or ward-based computer station.

- Encourage the use of mobile learning technologies, such as laptops in the wirelessly enabled lecture theaters and seminar rooms, and handheld devices in clinical and small group settings.

**Infrastructure & Technology**

- **Short Term**
  - Review of the current use of WebCT – and make recommendations as to strategic uses that might improve students’ online learning experiences, and the collection of user-data. Review the staffing requirements for ongoing development of electronic media resources and the curriculum websites.
  - Continue to work closely with DELT and Campus Computing during the next few years as they review learning management systems. Represent the Faculty of Medicine unique needs for this type of technology.
  - Review of computer/device requirements for Undergraduate students. Make formal computer/device purchase recommendations (and perhaps eventually – requirements) to all incoming students and to all students entering the Clinical Clerkship Program.
  - Review ePresence and it current use, potential growth, and required support. If needed, plan for additional equipment and staffing to support the growing use of this technology.
  - Review the availability of internet-capable computer stations throughout the Eastern Health Region portion of the Health Sciences – that are available for student use during bed-side teaching.
  - Evaluate the use delivery of the course materials using technology alongside other course, lecture evaluations.
  - Review examinations item-banking and generation software in order to replace the outdated PET software. The replacement system should be chosen based on long-term goals for examination flexibility such as computer-base, web-based and paper-based secure examinations.

- **Long term**
  - Infrastructure - long term plans to incorporate sufficient electrical outlets in lecture theatres where students might spend more then a couple of hours using laptops in class. This is to accommodate battery life limitations and to prepare for students use of laptops and other computing devices in the classroom.
  - Expansion of one or both computer labs to accommodate at least ½ of the medical school class. This expansion will be necessary to accommodate secure examinations or computer-based projects.
  - Engage in talks with the Eastern Health Region and the Health Sciences Centre regarding expansion of wireless access into the hospital portion of the Health Sciences Centre.
  - Engage in talks with Campus Computing to have wireless accessibility for handheld devices – for the academic side of the Health Sciences Centre, with ongoing plans to open these discussions for inclusion of this capability in the hospital portion of the building.

**Faculty Development**

- New and existing faculty members should be oriented to the technologies being used in curriculum delivery as well as advised of any expectations for their participation.
• A regularly scheduled set of Faculty Development Seminars should run annually or biannually, demonstrating the use of technology in the Undergraduate Medical Education Program and showcasing innovative teaching and learning resources.

Student/User Support
• A review of student printing costs in light of increasing use of web-based resources. Changes should be made to alleviate or reduce printing costs for students.
• Orientate all students to technologies used in curriculum delivery. This is particularly important for technologies such as ePresence and video-conferencing where presenters and participants (local and remote) require additional training or clear instructions to be truly effective teachers and learners.
References

Surveys and Reports

Attitudes and Skills in Computer Use: Survey of undergraduate medical students

eMedicine @ MUN Online Course Sites Usage Report

Web Sites

Computing and Communications (C&C): http://www.mun.ca/cc

Distance Education and Learning Technologies: https://webct.mun.ca

ePresence: http://epresence.tv
http://www.med.mun.ca/med/medEducation2/eLearning.htm
http://auricle.med.mun.ca

Faculty of Medicine:
Message from the Dean http://www.med.mun.ca/MED/medATmun1/dean.htm

IVIMEDS – The International Virtual Medical School:
http://www.ivimeds.org

One45 - http://www.one45.com

Surveyor (http://www.med.mun.ca/surveys)

Tetra: http://www.med.mun.ca/tetra


WebCT (Web Course Tools): http://www.webct.com
Appendix I

Undergraduate Program Curriculum Sites

Each highlighted table cell* represents a unique WebCT course shell corresponding to a specific course or program**.

<table>
<thead>
<tr>
<th>Class</th>
<th>Course Shells (WebCT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Yr</td>
<td>BSM I</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Yr</td>
<td>eMed Portal</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; Yr</td>
<td>Clinical Clerkship Program</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt; Yr</td>
<td>Clerkship Electives *</td>
</tr>
</tbody>
</table>

* The 4<sup>th</sup> Year Clerkship Electives site is not a WebCT site; it is publicly accessible on the Faculty of Medicine web site: [http://www.med.mun.ca/clerkship electives/default.htm](http://www.med.mun.ca/clerkship electives/default.htm)

** Each graduating class has their own set of these course sites. For example there are currently 3 BSM I sites: 2007 BSMI, 2008 BSM I, and the current site - 2009 BSM I. There are also currently 3 ISD II sites: 2006 ISD II, 2007 ISD II and the current site – 2008 ISD II.