SCS Forum on GME Issues: Webinar Series
March 8, 2011
Synchronous Distance Education:
Educational Effectiveness for Students at Local vs Remote Sites
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At the completion of this presentation the participants will be able to:
- List the definitional criteria for Distance Education (DE)
- Describe the DE background history and research at MSUCOM
- Review the preliminary DE study findings for MSUCOM pre-clinical medical education
- Identify resources to provide guidance for DE application in Graduate Medical Education

This presentation will offer participants the definitional criteria for distance education (DE); preliminary research outcome data of academic performance and student perceptions based on synchronous DE experiences at MSUCOM; and a review of literature using synchronous DE in the graduate medical education setting.

Select References:
2. Callas PW et al: Medical Student Evaluations of Lectures Attended in Person or From Rural Sites via Interactive Videoconferencing Teaching and Learning in Medicine, 2004 16: 1, 46 — 50
3. Oz HH: Synchronous Distance Interactive Classroom Conferencing Teaching and Learning in Medicine, 2005 17(3), 269–273
6. Bertsch tf et al: Applied research: effectiveness of Lectures attended via Interactive Videoconferencing vs In-Person in Preparing Third-Year Internal Medicine Clerkship Students for Clinical Practice Examinations Teaching and Learning in Medicine 2007; 19:1, 4-8
MSUCOM
Synchronous Distance Education:
Educational effectiveness for students at local vs remote sites

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Synchronous Distance Education
Presentation Overview
• Definition of Distance Education (DE)
• DE history and research at MSUCOM
• Review the preliminary DE study findings UME
• Lit review/suggestions for DE application in GME

Distance Education (DE)*
• The quasi-permanent separation of teacher and learner
• Provision of technical media to facilitate two-way communication between instructor and students
• The influence of an educational organization in planning, preparation, and provision of student support

*Keegan 1996, Bernard 2004

DE History at MSUCOM
• September 2007: MSUCOM expansion to SE Michigan announced:
  – Detroit medical Center (DMC)
  – Macomb University Center (MUC)
• January-March 2008: Synchronous Distance Ed Pilot
• Went “live” synchronous delivery of curriculum to 3 sites July 2009.

MSU-COM SE-Michigan Expansion Campus Sites

What is HD Video Conferencing?
• Two-way, real-time transmission of high-definition video and audio between two or more points. Can include content separate from video
• MSUCOM is currently multi-point conferencing between three (or more) locations
Faculty Preparation

Instructional Design Support

- Practical Application Workshops
  - PowerPoint design: More legible in broadcast mode
  - i-Clicker workshops
  - Using live-chat tools
- "Veteran" faculty presentations
- Technology cart orientation sessions
  - Proactive sessions
- Shared ANGEL website
  - Some will access tutorials, some want the one-on-one
- Technology cart orientation sessions:
  - Just in time sessions...

What it takes to Deliver the Curriculum

Curricular Activities

- Help Sessions
- Exam Reviews
- Faculty Pre-lab sessions
- Advising
- Administrative meetings

MSUCOM

Pre-clerkship Curriculum 2009-2010

Year One: 3 semesters of basic science courses
Year Two: 4 semesters of systems courses

Curricular Delivery Method:
- Year One: Lecture and Labs
- Year Two: Lecture and small group case studies

~95% of lectures delivered synchronous video broadcast from the EL campus to the two Southeast Michigan Campuses

Synchronous Distance Education

Presentation Overview

- Definition of Distance Education (DE)
- DE background history and DE research at MSUCOM
- Review the preliminary DE study findings preclinical yrs
- Lit review/suggestions for DE application in GME
2010 MSUCOM Distance Ed Research:
A descriptive study of medical student perceptions and academic performance to determine:

- If the predominant method of lecture delivery to/from each site is associated with student academic performance.
- If student perceptions of the videoconferencing experience at the three sites is different.
- Whether student satisfaction with the predominant lecture delivery method differs across sites.

**Methods:**

- 15 question i-clicker survey tool:
  - Likert scale administered to the Class of 2013:
    - Fall 2009 (basic science courses)
    - Fall 2010 (systems courses)
- Three question open-ended survey

**Example Questions**

- **Seeing the presenter on the video display**
  - How important is this for your learning?
    - A. Not Important
    - B. Slightly Important
    - C. Important
    - D. Extremely Important
  - How well can you usually see the presenter on the video display?
    - Not at all
    - Fairly well
    - Good
    - Excellent

- **How efficient is your learning via live lecture presentations?**
  - A. Not at all
  - B. Fairly well
  - C. Good
  - D. Excellent

- **Having a faculty moderator attend the broadcast lecture with you**
  - How important is this for your learning?
    - A. Not Important
    - B. Slightly Important
    - C. Important
    - D. Extremely Important
  - How efficient is your learning via videoconferenced lecture presentations?
  - Considering the overall experience, how satisfied are you with the delivery of lectures by videoconferencing?

**Survey Monkey Questionnaire**

**Admission Statistics for Class 2013**

(1-way ANOVA)

- Mean Undergraduate GPA’s and MCATs are the same across all three sites:
  - GPA: $p = 0.170$ (NS)
  - MCAT: $p = 0.215$ (NS)
Academic Performance (1-way ANOVA)

Mean grades for the yr 1 courses are the same across all three sites.

• YEAR ONE: Basic Science Course Performance
  – BMB 514: \( p = 0.925 \) (NS)
  – BMB 526: \( p = 0.681 \) (NS)
  – PSL 534: \( p = 0.558 \) (NS)

2010 MSUCOM Distance Ed Research:
A descriptive study of medical student perceptions and academic performance to determine:

• If the predominant method of lecture delivery to/from each site is associated with student academic performance.
  No Difference

• If student perceptions of the videoconferencing experience at the three sites is different.
  Yes

• Whether student satisfaction with the predominant lecture delivery method differs across sites.

Student Perceptions
Total N=277
(EL=181; SE-MI = 96)

• 8 questions statistically significant differences in student responses between the East Lansing (EL) and the two Southeast Michigan sites (SE-MI)

• 4 related to site technology

How important is this for your learning?

<table>
<thead>
<tr>
<th></th>
<th>East Lansing</th>
<th>SE Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Not Important</td>
<td>31%</td>
<td>66%</td>
</tr>
<tr>
<td>B. Slightly Important</td>
<td>66%</td>
<td>66%</td>
</tr>
<tr>
<td>C. Important</td>
<td>7%</td>
<td>20%</td>
</tr>
<tr>
<td>D. Extremely Important</td>
<td>20%</td>
<td>66%</td>
</tr>
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</table>

How often did you speak with the faculty moderator during the break?

<table>
<thead>
<tr>
<th></th>
<th>East Lansing</th>
<th>SE Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Never</td>
<td>64%</td>
<td>55%</td>
</tr>
<tr>
<td>B. Sometimes</td>
<td>55%</td>
<td>55%</td>
</tr>
<tr>
<td>C. Usually</td>
<td>55%</td>
<td>55%</td>
</tr>
<tr>
<td>D. Always</td>
<td>55%</td>
<td>55%</td>
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</tbody>
</table>
How efficient is your learning via videoconferenced lecture presentations?**

<table>
<thead>
<tr>
<th></th>
<th>East Lansing</th>
<th>SE Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Not at all</td>
<td>18%*</td>
<td>6%*</td>
</tr>
<tr>
<td>B. Somewhat efficient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Moderately efficient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Extremely efficient</td>
<td></td>
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</tr>
</tbody>
</table>

**Kruskal-Wallis Test p<0.000

2010 MSUCOM Distance Ed Research: A descriptive study of medical student perceptions and academic performance to determine:

- If the predominant method of lecture delivery to/from each site is associated with student academic performance. **No Difference**
- If student perceptions of the videoconferencing experience at the three sites is different. Yes
- Whether student satisfaction with the predominant lecture delivery method differs across sites.

Considering the overall experience, how satisfied are you with the lectures delivered by videoconference?**

<table>
<thead>
<tr>
<th></th>
<th>East Lansing</th>
<th>SE Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Not at all</td>
<td>44%</td>
<td>17%</td>
</tr>
<tr>
<td>B. Somewhat satisfied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Moderately satisfied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Completely satisfied</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Kruskal-Wallis Test p<0.000

Qualitative Findings

What has been most beneficial?

Global:
- Promotes interaction faculty & students “real time” between sites.

SE-Michigan:
- Clarify lecture content with local students without disturbing presenter.
- Experience the technology...drive the future of medicine

Qualitative Findings

What has been most negative?

Global:
- Faculty not repeating questions
- Faculty not familiar with technology
- Occasional technical difficulties

East Lansing:
- Too much time wasted acknowledging sites

SE-Michigan:
- Not being acknowledged by presenter
- Feel disconnected from presenting faculty

Qualitative Findings

Improvement Suggestions

Global:
- More interactive presentations
- Faculty practice DE technology skills
- Staff readily available for technical issues

East Lansing:
- Have presenter only pay attention to local audience

SE-Michigan:
- Text based questions
2010 MSUCOM Distance Ed Research:  
A descriptive study of medical student perceptions and academic performance to determine:

• If the predominant method of lecture delivery to/from each site is associated with student academic performance.  
  No Difference

• If student perceptions of the videoconferencing experience at the three sites is different.  
  Yes

• Whether student satisfaction with the predominant lecture delivery method differs across sites.  
  Yes

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Use of Synchronous Distance Education  
in Clinical UME and GME

Residencies/specialties used SDE  2-11
• FM/IM
• Psychiatry
• Surgical Clerkships
• Pediatrics

Use of Synchronous Distance Education  
in Clinical UME and GME  
General Uses  2-11
• Didactic sessions with geographically dispersed learners
• Tele-supervision
• Surgical experiences

Use of Synchronous Distance Education  
in Clinical UME and GME  
Achievement Outcomes  4-6,9
• Limited number of studies for achievement measurement.
• No difference in achievement when comparing live lecture to interactive videoconferencing

Use of Synchronous Distance Education  
in Clinical UME and GME  
Attitude Outcomes  2-11
• Global trend toward better learner satisfaction with improved technology
• Learners preferred live presentations
• Preferred interactive videoconferencing to avoid prolonged travel time
• Recommend limiting SDE to 2 hrs per day
Use of Synchronous Distance Education in Clinical UME and GME

Principles for Successful SDE:
- Active learner interaction/collaboration
- Individualized curriculum
- Reflective learning
- Competency-based outcomes
- Faculty who are respectful facilitators as well as academic experts

12 Tips for Teaching using Videoconferencing (VC):
- Is VC the right decision?
- Faculty need to know how to use equipment.
- VC is different from F2F teaching
- Teaching material need to be carefully considered
- Continually build links with audience with frequent interaction
- Address remote sites, use names if possible
- Set expectations for students regarding VC
- Continually evaluate and review teaching and performance of the system

Have a Plan B!!

Questions? Comments?