Effective Healthcare Informatics Teaching Strategies: Finding the Right Road

AMCIS 2012: Health-IS Professional Workshop

Panel presentation and discussion by:

Gary Hackbarth, Northern Kentucky University
Monica Chiarini Tremblay, Florida International University
Ann Fruhling, University of Nebraska-Omaha
Ashish Gupta, Minnesota State University Moorhead and Arizona State University

Workshop Format

- 8:30-9:45 AM followed by break
- 3 ten minute presentations
  - Gary Hackbarth
  - Monica Chiarini Tremblay
  - Ann Fruhling
  - Ashish Gupta (Scribe and note taker)
- Moderated Questions and Answers

Gary Hackbarth

Teaching HealthCare Informatics

- Subset of what IS has done all along.
- Programs should focus first on the IS/IT.
- Teaching materials tend to be the same.
  - How are they the same?
  - How are they different?
  - Textbooks?
  - Case Studies?
  - Are better materials available?
- Building your syllabi
  - “Online” versus “In Class” versus “Hybrid”
  - Undergrad versus Graduate Student

Teaching Project Management & Healthcare Project Management

- Know your students (see background slides)
  - Different from business students
- Textbooks same on the inside
  - Terminology same and different
- Use a lot of practitioner examples/materials
  - Need/like real-world examples
- Weak Excel/Access skills
  - Excel boot camps work
- Detailed Syllabi
  - Multiple Communication Channels
- Use simulation software/Any software/Hands-on important
- Exams
  - Open book versus closed book (timed tests)
  - Essay's
  - Writing research papers
  - PowerPoint assignments

Nurse Informatics Certificate

- Nurse Informatics Field
  - Must have RN Credential
  - Nursing Informatics mean salary $96,000
  - 40% growth/40,000 new positions
  - 40-50 hour workweek
  - Wide range of jobs
    - Hospitals, Clinics, Ambulatory Physicians Offices
    - Homecare support
    - Academia/research
    - Software Development
    - Consultant Role
    - Telemedicine
  - http://www.alliedhealthworld.com/

What professional organizations exist for professionals in this field?

- CARING Nursing Informatics Organization – This organization is for nursing informatics professionals and its mission is to increase the quality of healthcare through the implementation of technology.
- American Nursing Informatics Association – This is a group started in Southern California, that is dedicated to the advancement and networking of the profession of informatics nurses.
- **American Nurses Credentialing Center – This organization credentials nurses and has a nursing informatics specific certification.**
- **Healthcare Information Management and Information Systems Society (HIMSS) – This organization is focused on providing global leadership to use healthcare IT in the most optimal manner. (recommended membership) (http://www.himss.org/asp/index.asp)**
- American Medical Informatics Association – is known as the professional home for informatics and is devoted to better incorporating technology to improve healthcare and nursing processes.

- http://www.alliedhealthworld.com/

Nurse Informatics Certificate

- The American Nursing Informatics Association (ANCC) Informatics Nursing Certification (approximately 35-45% seeking this certification)
- Those who pass this exam are able to put RN-BC (board certified) after their name since they specialize in an area (nursing informatics).
  - http://www.nursecredentialing.org/NurseSpecialties/Informatics.aspx
  - **Eligibility Criteria**
    - Hold a current, active RN license within a state or territory of the United States or the professional, legally recognized equivalent in another country.
    - Hold a bachelor's or higher degree in nursing or a bachelor's degree in a relevant field.
    - Have practiced the equivalent of 2 years full-time as a registered nurse.
    - Have completed 30 hours of continuing education in informatics within the last 3 years.
    - Meet one of the following practice hour requirements:
      - Have practiced a minimum of 2,000 hours in informatics nursing within the last 3 years.
      - Have practiced a minimum of 1,000 hours in informatics nursing in the last 3 years and completed a minimum of 12 semester hours of academic credit in informatics courses that are part of a graduate-level informatics nursing program.
      - Have completed a graduate program in nursing informatics containing a minimum of 200 hours of faculty-supervised practicum in informatics.
- http://www.alliedhealthworld.com/

Healthcare Information and Management Systems Society (HIMSS)

- In addition to the ANCC certification, the Healthcare Information and Management Systems Society (HIMSS) also offers a Certified Professional in Healthcare Information and Management Systems (CPHIMS) certification. (3-5% nurses seeking)
- This certification has more of a project management/IT emphasis whereas the ANCC test focuses specifically on nursing informatics and how that relates to nursing in general.
- Most people choose the certification that best matches the area they work under. If they are in an IT department, they tend to prefer the CPHIMS certification. If they work under Clinical Informatics directorship they may prefer the ANCC certification.
- Also, the CPHIMS exam is open to all healthcare IT professionals, including the CIO, programmers, informatics specialists and consultants.

Monica Chiarini Tremblay

My Background

- Mostly work on external funded HIT research
- Have taught HIT as part of MSMIS program
- Developed (with a colleague) the HIT degree starting this fall (see http://business.fiu.edu/chapman/mshims)
- Contact me at Monica Chiarini Tremblay tremblay@fiu.edu

Healthcare is Different!
Important Subtle Differences

- Health informatics is as much about computers as cardiology is about stethoscopes
- Rather than drugs, X-ray machines or surgical instruments, the tools of informatics are more likely to be clinical guidelines, formal health languages, information systems, or communication systems, like the Internet.
- These tools, however, are only a means to an end, which is the delivery of the best possible healthcare.

Health Informatics

Health informatics - study of information and communication systems in healthcare, focused on:

1. Understanding the fundamental nature of health information and communication systems, and describing the principles which shape them.
2. Developing interventions which can improve upon existing information and communication systems.
3. Developing methods and principles which allow such interventions to be designed.
4. Evaluating the impact of these interventions on the way individuals or organizations work and live or on the outcome of the effort.


The
Dysfunctional World
of Healthcare
Patients
Medical Staff
Hospitals
Payers
Physicians
Pharmacies
Diagnostic Centers
Accountants
Labs

Health Information Today

- Scattered Records
  - Each person's records are scattered at whatever locations care has been given
  - Mostly paper
- Information sharing not effective
  - Cumbersome, expensive, time-consuming, and fallible
  - No mechanism to collect patient information from disparate sources
- No responsible institution
  - Each patient's complete records (from all sources) are not available for care
  - Need to create these institutions

Sample Intro HIT Course

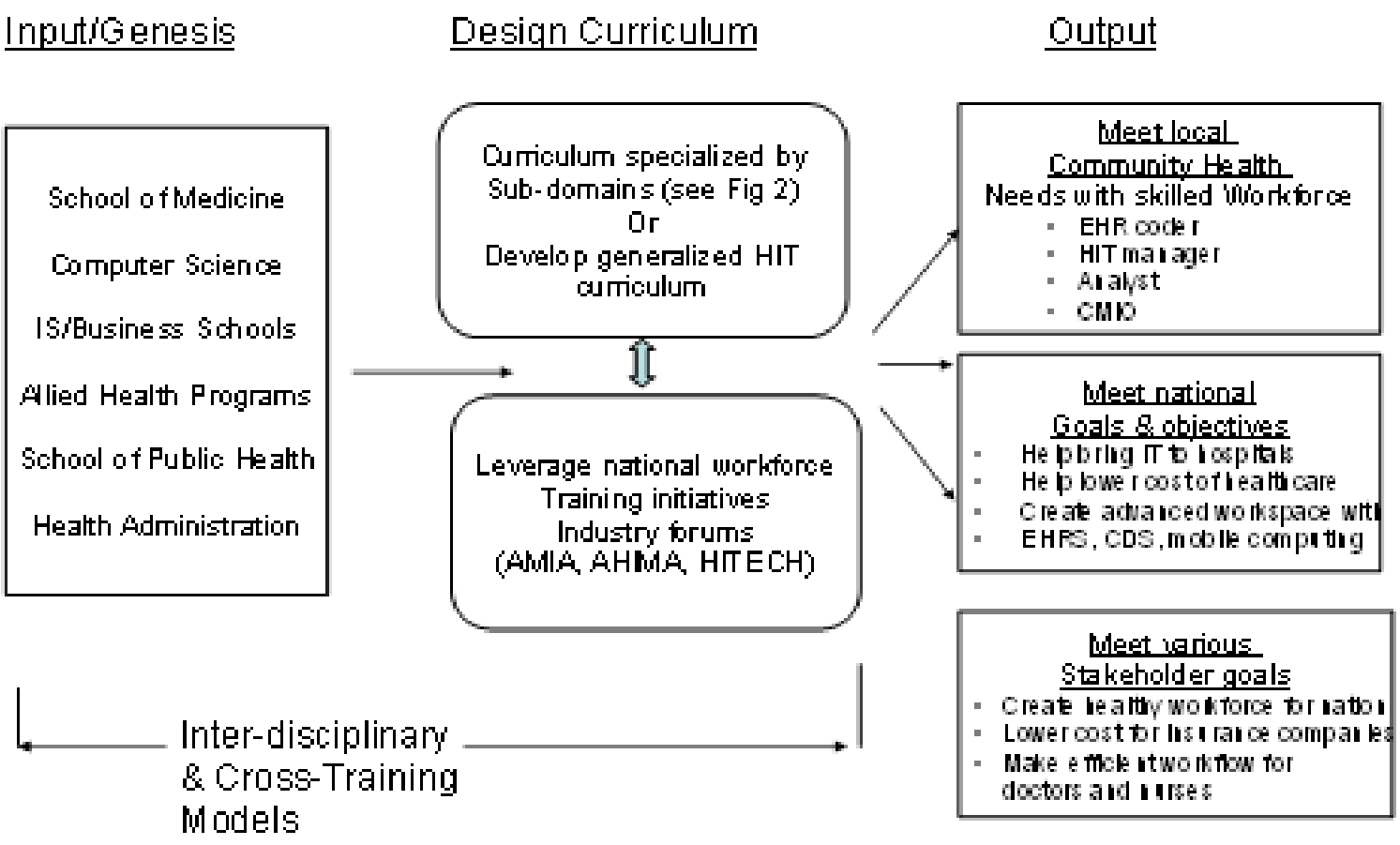
Week	Topic
1	Introduction History and Evolution of Healthcare Information Systems
2	What is a Health Informatician? Secondary Use of Healthcare Data
3	Interoperability and Standards in Healthcare
4	Implementing an EHR Telemedicine
5	Computerized Physician/Provider Order Entry Clinical Decision Support and Data Quality
6	Confidentiality, Privacy and Security in Healthcare Information Systems Data Quality
7	PHR/HIE IT Governance and Management in Healthcare

Educating Students in Healthcare Information Technology: IS Community Barriers, Challenges, and Paths Forward: Some important questions

1. Does IS have a role in HIT education?
2. Where does an IS educator look to begin in HIT education?
3. How do we shape the vision for HIT curricula leveraging the IS discipline's strengths?

- Forthcoming in CAIS (Chatterjee, LeRouge, Tremblay)

Health IT Education Framework



Does Information Systems Have a Role in HIT Education?

- Information draws its problems and issues from the intersection of technology, organization, and society.
- HIT - develop and assess methods and systems for the acquisition, processing, managing, and interpretation of patient data with the help of findings from scientific research.
  - Applying information systems skills and concepts to the healthcare setting would seem to be a perfect fit, given the current model of the healthcare process which is patient-centered, with healthcare organizations controlling the processes and technology enabling the exchange of information.
  - Challenge: There are subtle but important differences between healthcare and other industries.

What are some of the challenges?

- Internal university politics
- Difficulty in specifying curriculum requirements (particularly if trying to work from existing courses)
- Difficulty finding the right faculty to teach HIT classes or IS classes that will include an HIT student representation
- Accommodating students that may want varying educational formats (distance-based, part-time outside of medical working hours, executive programs, etc.)
- Handling a mixed student audience (e.g., MBA and HIT students)
- Meeting the standards of accreditation boards.

Some suggestions

- Instead of Reinventing the Wheel, Leverage Existing Resources for HIT Curricula (CAHIIM)
- Recognize there are three levels:
  - The associate's degree level (mainly administered by two-year community colleges) focuses on expert technical skills and specialties coupled with introduction to the healthcare industry and work flows.
  - The baccalaureate degree level (four-year institutions) provides general education coupled with health informatics foundations, managerial, and information systems education.
  - Master's degree level (may include post-baccalaureate certificate programs)

Ann Fruhling

Health Informatics Applications and Evaluation Methods

Teaching Strategy
SIG Health Workshop 2012
AMCIS
Ann Fruhling, PhD

Course Overview

- Students will be introduced to information systems and their applications in healthcare settings such as: electronic patient records, personal health records, emergency room information systems, patient care plan information systems for the elderly, tele-mental health delivery systems, and microbiology laboratory diagnostic and consultation system. In addition this course will examine and discuss methods to evaluate these applications (information systems) using focus groups, usability evaluations, surveys, observations, and patient feedback. Several of the commonly used theoretical frameworks are introduced that could be provide the underpinnings for the application/IS evaluations. These include but are not limited to Goodhue and Thompson Task/Technology Fit, Delone and McLean IS Success Model, UTAUT, Technology Adoption Model. Several recent health informatics evaluation studies will be assigned as readings for the course.

Course Overview

- Students will have an opportunity to dialogue with several guest speakers who are users of the applications. The guest lecturers will be asked to discuss the information systems they use and their experiences. The students will conduct a pilot evaluation of a healthcare related information system/application of their choice. Graduate students will be the team leader on the pilot studies. This will be a group project. This course is intended to be interdisciplinary and thus will be a very "rich" learning experience for all students interested in health informatics. This course is appropriate for student majoring Information System, Computer Science, IT Innovation, Public Health Administration, and other health care professional programs.

Grading Criteria

Healthcare Information Systems Critiques (4).	**20%**
Class articles Reflections (3).	15%
Research Paper Outline.	5%
Research Paper – 5 pages.	5%
Research Paper – 10 pages.	10%
Research Paper – 20 pages.	10%
Pilot Study Design.	10%
Pilot Study Write up including results.	10%
Class Presentation(s).	5%
Discussion Board, Participation, Attendance, Other Assignments, Prepared for Class.	10%
Graduate Student Leadership	20%

Weekly Schedule

- Week 1 – Overview of Health Informatics, Presentation Clinical Laboratory Emergency Response System
- Week 2 – Assigned Tele-Psychiatry Reading, Presentation of Tele-mental health counseling, Dr. Carl Greiner, assigned IRB training
- Week 3 – Clinical Health System, EPIC, Dr. James McClay
- Week 4 – UNMC Sorrell Center Demonstration, Dr. Paul Paulson and others, IRB training completed
- Week 5 – TBA
- Week 6 – TBA
- Week 7 – Evaluation Methods
- Week 8 – Evaluation Methods
- Week 9 – Spring Break
- Week 10 – Research Theoretical Frameworks – Theory or Reasoned Behavior, UTAUT, Task-Technology Fit
- Week 11 – Research Theoretical Frameworks – TBA, form teams
- Week 12 – Project Identification, Research Paper Topic, Article Reflection Presentations
- Week 13 – Project Design, Research Paper Outline, Research Paper – one article presentation
- Week 14 – Project Pilot, Research Paper 5 pages, Project Pilot Discussion
- Week 15 – Project Results, Research Paper 10 pages
- Week 16 – Project Presentations
- Week 17 – Project Write up with Results, Research Paper 20 pages.

Readings/Assignments	Assignment Due Dates
Complete Research/Evaluation Methods presentation <u>Research Theoretical Frameworks</u> READ: The Influence of Affect, Attitude and Influence in the Acceptance of Telemedicine Systems. (DISCUSS in class) READ: Understanding User Evaluations of Information Systems (Goodhue, 1995) (DISCUSS in class.)	Bring 5 papers selected for topic research to class and post on Discussion board Due at the beginning of class. 1 page write-up on your topic. Include what you topic you plan to research, how it relates to the class, and why this is something that should be researched in more depth. Post your one page write-up on the discussion board.
<u>Research Theoretical Frameworks</u> READ: The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. (DISCUSS in class.) READ: Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology (Davis, 1989) (DISCUSS in class.) READ: Investigating Evaluation Frameworks for Health Information Systems (Yusof et al., 2008) (DISCUSS in class.) Pilot Project Identification	Outline of topic paper due. Three page introduction of your topic is due. Article Summary on DeLone and McLean paper is due. Pilot Project Identification – one page write-up
READ: User Acceptance of Information Technology: Toward a Unified View (Venkatesh et.al, 2003) (DISCUSS in class.) READ: Just What the Doctor Ordered: A Revised UTAUT for EMR System Adoption and Use for Doctors (Venkatesh, et al., 2011) (DISCUSS in class.) Pilot – Research Question, pilot theory selected, pilot methodology selected (e.g. survey, interviews, cognitive walkthroughs, etc.)	Article Summary on Venkatesh et al., 2003 paper is due. Seven page draft of your topic paper is due. Pilot Project Design Draft 6 or more pages

Readings/Assignments	Assignment Due Dates
READ: The Role of Personality Traits under Online Stocking (Yang, et al.) (DISCUSS in class.) Discuss Pilot Project Design	Bring 5 additional papers selected for your topic research to class and post on discussion board by the beginning on class. Discuss one of your papers.
READ: Beyond Meaningful Use: A Model for Evaluating Electronic Health Record Success (Wills et. al, 2011) (DISCUSS in class.) Pilot Project Discussion	Draft of research paper is due – 15 pages Pilot project design – finalized – 10 pages due.
Lisa Research Presentation on Diffusion of Innovation READ: Note on Innovation Diffusion : Roger's Five Factors" (Gourville) (DISCUSS in class.) Conduct Pilot Project Evaluation	Discuss an article or two that you cited in your topic paper.
Topic Paper presentation discussions Pilot Project Discussion	Complete 20 page topic paper due. Present topic to class – post power point on discussion board. Presentation should be about 10 minutes.
	Pilot Project Report due Pilot Study presentations

Pilot Study Outline

1. The purpose of this study is to _____(understand, describe, develop, discover) the _____(central concept being studied) for _____(the unit of analysis: a person? Processes? Groups? Site? Using a _____(method of inquiry: Case study design? Observation? Survey? Experiment?, etc.) resulting in a _____ (cultural picture? Grounded theory? Case study? Phenomenological description of themes or patterns?). At this stage in the research the _____ (central concept being studied) will be defined generally as _____(provide a general definition of the central concept.) Specifically, our research question is _____ . The problems that we are addressing in this study are_____.
2. Include definitions of important concepts in your study.
3. Include why your research study is significant.
4. Include a three page literature review on current understanding of the topic.
5. Describe what theoretical framework that supports your research question and study.
6. Describe what type of research study you plan to conduct and why. (Survey, interview, observations, cognitive walkthrough, experiment, etc.)
7. Describe your subjects.
8. Report your results, interpret your results, what is your contribution?

Onsite visits

- UNMC Sorrell Center
- One World
- EPIC
- BHECN
- STATPack

Topic Papers

- Health Information Exchange
- Computerized Surveillance Systems and Patient Safety
- Robotic Telesurgery: the future of invasive medicine
- Virtual Reality and Physical Activity Behavior Change
- Medical Training and Evaluation System Based On SimMan Human Patient Simulator