QuickStart Guide Technology Integration

Self-Assessment & Recommendations

Author:

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Quick-Start Guide

1. Review Content Overview.
2. Determine how "programs" will be defined at your institution (e.g., all imaging programs together or each program separately).
3. Determine which optional components, if any, will be included.
4. Identify a lead for each type of input: student, faculty/program chair, curriculum review, barriers and resources, industry input, and input from other stakeholders. The leads will determine who should be surveyed/interviewed and they will analyze the input.
5. Determine who will establish timelines for all involved and who will execute the self-assessment tasks.
   a. Student input via surveys and/or interviews
   b. Alumni input via surveys and/or interviews
   c. Program faculty/chair input via surveys and/or interviews
   d. Curriculum review via surveys and/or interviews
   e. Input from industry via surveys and/or interviews (optional, but strongly recommended)
   f. Input from other campus/general stakeholders (optional)
   g. Identification of barriers and resources via surveys and/or interviews
6. Arrange faculty/staff release time, as needed.
7. Begin self-assessment process, which will continue for about one month.
8. Establish timelines and instructions for SMEs and others involved in the surveys and interviews.
9. Complete interviews and surveys.

Next Steps After All of the Input Is Gathered and Analyzed

1. Compile findings from the interviews and surveys.
2. Discuss next steps for the department.

Technology Self-Assessment Planning Aid

Task	Individual(s) responsible	Estimated # of hours of effort
Student (current) surveys: create, disseminate, aggregate findings		
Student (current) interviews: organize, conduct, and document findings		
Student (alumni) surveys: create, disseminate, aggregate findings		
Student (alumni) interviews: organize, conduct, and document findings		
Faculty/program director or chair interviews: plan, conduct, and document findings		
Faculty/program director or chair surveys: create, disseminate, and analyze findings		
Curriculum review: create and disseminate surveys to faculty to determine the current state of technology and informatics content compared with what is needed--as defined by students and industry. [Note: this task can be handled by one individual, or surveys of different courses can be parsed out to multiple faculty.]		
Identification of barriers and resources: organize discussion and document findings and/or conduct a survey and aggregate findings		
Industry input: organize discussion and document findings and/or conduct a survey and aggregate findings		
Analyze and present feedback from students		
Analyze and present feedback from faculty and program chair		
Analyze and present to curriculum review findings		

Task	Individual(s) responsible	Estimated # of hours of effort
Analyze and present feedback from employers (optional)		
Analyze and present input from other stakeholders (optional)		
Analyze and present summary of barriers and resources		
Analyze and present summary of industry input (if available)		
Analyze and present summary of input from other stakeholders (if relevant)		

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Table of Contents

Executive Summary

Nursing and Allied Health educators are under increasing pressure to provide students with skills and knowledge in health information technology. This program self-assessment tool was developed to help educators assess their readiness to integrate health IT content into their specific programs.

In the next few years, every American will have an electronic medical record (EMR) that the individual and their healthcare providers can access online. The American Recovery and Reinvestment Act of 2009 (ARRA) provided needed incentives to encourage deployment of electronic medical records and to establish technical and other industry standards. The industry is moving forward with plans to digitize, store and share data electronically.

Skilled nurses and Allied Health professionals play a key role in the future of healthcare, with technology as a key enabler to provide safe, evidenced-based, efficient and coordinated care. Healthcare Informatics is the intersection of patient care and information technology and will be increasingly important to both experienced professionals and new nurses entering the workforce.

As the Institute of Medicine (IOM) has emphasized in its quality reports, utilizing informatics is a core competency required of all health care professions. Yet today much of the workforce lacks the skills they need as professionals to integrate IT seamlessly into their practice. Core informatics competencies are being identified and defined. Now they must be incorporated into education at every level and into daily practice through such means as accreditation standards, clinical practice guidelines and performance appraisals.

Currently, Nursing and Allied Health programs provide some use and exposure to information technology and informatics as part of their curriculum. However, given the rapid changes occurring in healthcare, including adoption of electronic medical records, graduates will require increased knowledge and experience in this area. As they enter the workforce, their comfort level with both technology itself and informatics concepts will become increasingly essential. This self-assessment was developed to help educators assess their readiness for infusion of health IT into a particular program.

Introduction

"There is no aspect of our profession that will be untouched by the informatics revolution in progress. "To help us achieve what has been our hoped-for practice, IT is not just an enabler. It's a critical component."

Angela Barron McBride

Advances in information systems, telecommunications and life sciences have set the stage for more proactive, personalized health care. As baby boomers age into retirement, a convergence of consumerism and technology will enable a shift in care management and even services themselves away from formal institutions and into the home. Public pressure is mounting for dramatic improvement in healthcare, and efficient exchange of information to integrate complex clinical workflows with the business processes of healthcare organizations will spell success in the future.

Healthcare Informatics is the intersection of patient care and information technology. A new and evolving field, healthcare informatics encompasses all aspects of patient care: data generated, collected, retained, transmitted and manipulated for patients, healthcare providers, researchers and payers. It involves understanding, evaluating, and implementing technology from a healthcare perspective.

Skilled professional staff will play a role in the future of healthcare, with technology as a key enabler. As the industry works toward the widespread adoption of electronic health records, Nursing and Allied Health fields in particular must transform themselves in order to make full use of EMR capabilities. This will require changes in education and clinical practice to make informatics competencies part of every worker's skill set. Above all, it will demand that these professionals be actively involved in advancing the national health care vision of patient-centered, knowledge based care.

However, many clinicians are challenged by technology at the point of care. A lack of these skills can endanger patient safety and impede progress in health care transformation. The *Health e-Workforce Consortium (http://hiteducation.org/dol-taa-ccct-health-e-workforce-consortium/)* will devote resources to developing 1) curricula elements for infusion into existing Nursing and Allied Health programs, and 2) a Nursing and Allied Health program self-study process for faculty. This self-study tool will result in specific recommendations for elimination of dated curricula, addition of relevant, consortium-developed Health IT modules, and faculty development resources.

Healthcare workers need the access to evidence-based knowledge that information technology can provide. However, as the IOM studies have shown, such access is often not available, resulting in the "chasm between the health care we have and the care we could have."

"We must teach for the future. This means teaching to find rather than to know, question rather than answer, achieve rather than accomplish, inspire rather than inform."

Patricia Flatley Brennan

Project Overview

Objectives

Currently, Nursing and Allied Health programs provide some use and exposure to information technology as part of their curriculum. However, given the rapid changes occurring in healthcare, including adoption of electronic medical records, graduates will require increased knowledge and experience in this area. As they enter the workforce, their comfort level with both technology itself and informatics concepts will become increasingly essential.

The Technology Informatics Guiding Education Reform (TIGER) initiative has identified key competencies for nursing professionals. These are in most cases applicable for Allied Health professionals as well. Following an extensive review of the literature and survey of nursing informatics education, research, and practice groups, the TIGER competency model consists of three parts, including 1) Basic Computer Competencies, 2) Information Literacy and 3) Information Management.

Information Literacy could be considered one of the most overlooked for practicing professionals, and includes:

- Determine the nature and extent of the information needed
- Access needed information effectively and efficiently
- Evaluate information and its sources critically and incorporate selected information into his or her knowledge base and value system
- Individually or as a member of a group, use information effectively to accomplish a specific purpose
- Evaluate outcomes of the use of information

A comprehensive approach was taken to gathering information to develop this self-assessment. Various stakeholders (e.g., Allied Health and Nursing program chairs, administrators and deans) across a 9-college grant consortium of colleges were interviewed and surveyed; documents were reviewed and other activities were completed.

This analysis focused on the current state of technology and informatics integration within the existing college Nursing and Allied Health curriculum and how to conduct a self-assessment to identify areas for improvement. The main objectives for this initiative are:

- Based on previous work, create a self-study instrument for nursing and allied health programs to assess readiness for infusion of health IT into a particular program. Self-study will be constructed to require assembly of information and clarification of resources and willingness of program principals to implement.
- Pilot the assessment and revise as needed
- Identify options to further incorporate technology into learning experiences (in the skills lab, classes, clinical rotations, projects and other ways)
- Identify opportunities for further integration of informatics concepts into coursework

Assumptions

The following assumptions guided the development of this self-assessment, along with the plan to implement it and analyze the results:

- The self-assessment is applicable to both Nursing and various Allied Health programs
- This self-assessment includes consideration of the following types of technology:
  - Domain-specific technology (e.g. electronic medical records, linear accelerators, diagnostic imaging machines, use of laboratory equipment, point-of-care technologies and others). Each program completing the self-assessment will define what that includes for their domain.
  - Personal technology (e.g. use of personal technology such as laptops and iPhones, iPad, Blackberry, other devices, use of social media)
  - Classroom and other instructional technology (e.g. Learning Management Systems – LMS, Blackboard, online animations, videotaping capabilities, games and simulations, self-graded testing functionality and others)
- Informatics references and questions in this self-assessment refer to the topics outlined below.

  Informatics (as defined by the American Medical Informatics Association):

  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2649328/

  "Clinical informaticians transform health care by analyzing, designing, implementing, and evaluating information and communication systems that enhance individual and population health outcomes, improve patient care, and strengthen the clinician-patient relationship. Clinical informaticians use their knowledge of patient care combined with their understanding of informatics concepts, methods, and tools to:

  - *Assess information and knowledge needs of health care professionals and patients,*
  - *Characterize, evaluate, and refine clinical processes,*
  - *Develop, implement, and refine clinical decision support systems, and*
  - *Lead or participate in the procurement, customization, development, implementation, management, evaluation, and continuous improvement of clinical information systems."*

These topics could expand the student's knowledge about the bigger picture regarding data integrity and data usage at all points from direct patient care to downstream activities. Informatics includes the following concepts:

- Evidence-based clinical practice guidelines
- E-Health & Consumer Health Informatics
- Standard Nomenclatures & Classifications (SNOMED, NANDA, ICD-10)
- Requirements Definition

- Reporting/Data Mining
- Data Quality
- Alerts/Clinical Decision Support
- Usability/Ergonomics
- Point-of-Care Technology
- System Integration
- Privacy and Security
- Identifiers
- Change Management & Workflow
- Patient Education

The following informatics concepts could be incorporated into classroom didactic sessions, clinical rotations, and project work or simulation/skills lab activities. There could be a particular emphasis on integration of informatics concepts into multidisciplinary Care Planning activities.

Note: "EMR" in this matrix refers to the electronic medical record (EMR) system being used in the patient care setting where the student is completing their clinical rotation. However, if the colleges currently have or plan to obtain student access to other training EMR systems, that system could also be utilized to incorporate informatics concepts.

Topic	Description
Evidence-based clinical practice guidelines	Identify relevant guidelines from national standards organizations, professional organizations, government agencies (e.g. AHRQ) and other professional sources.
E-Health & Consumer Health Informatics	Analyze content utilizing validity of evidence criteria
Standard Nomenclatures & Classifications (SNOMED, NANDA, ICD-10)	Explore some of the leading systems: - Standardized Nomenclature of Medicine (SNOMED) - North American Nursing Diagnosis Association (NANDA) - International Classification of Diseases (ICD-10)
Requirements Definition	Define what an automated system needs to support the nursing process
Reporting/Data Mining	Identify some of the primary uses for electronic patient data

Topic	Description
Data Quality	Determine data quality characteristics of clinical systems
Alerts/Clinical Decision Support	Determine decision support characteristics of clinical systems
Usability/Ergonomics	Evaluate the design and ease of use for the system, input devices and related technology
Point-of-Care Technology	Explore emerging products and impact on patient care, especially with older adults.
System Integration	Analyze the handoffs internally and externally, both electronically and hybrid (part digital & part paper-based)
Privacy and Security	Consider HIPAA and other regulations aimed at safeguarding patient information.
Identifiers	Examine continuity of patient records
Change Management & Workflow	Investigate how the organization was originally affected by the EMR deployment and is currently affected by changes in availability
Patient Education	Examine potential for EMR systems and other technology to support all modes of patient education (visual, auditory, kinesthetic)

Additional assumptions

- Further incorporation of technology provides an opportunity for the program to standardize some business processes, training and policies and procedures, while reducing rework and further assisting students.
- The time needed to coordinate data gathering and complete this online self-assessment will likely involve faculty release time.
- The number of courses in the Nursing and Allied Health curriculum have little to no room for additional classes or credit hours. Thus, new technology and informatics content would optimally be worked into existing classes and learning activities.
- Few, if any, of the current faculty have formally taught informatics or technology classes or modules in their current role or past work.

- Faculty will need further assistance (e.g. work study assistance, mentoring, formal training) to help them become more comfortable with technology and informatics concepts.
- The time to incorporate new technology into the program (to evaluate it, deploy it and train faculty/students/staff) will likely involve faculty release time.
- Implementation of technology components into the curriculum should be leveraged across Nursing and Allied Health programs whenever possible.
- There are other campus resources that could be further leveraged in the short term (e.g. Medical Informatics faculty, HIM faculty and medical librarians).
- The recommended time frame to complete the program enhancements recommended here will be within the next 2-3 academic years.

Self-Assessment Components

The self-assessment includes both CORE (required) and OPTIONAL (voluntary) components). Each program participating in the self-assessment process should complete the CORE components as they provide the most comprehensive review and provide the greatest opportunity to identify challenges as well as best practices.

Content Overview

The technology integration self-assessment consists of seven (7) components. They are summarized below and described in detail in this section:

CORE Components

> Student Survey
> Faculty/Program Directory Survey
> Document Review
> Barriers and Resources
> Comment/Feedback on Self-Assessment

OPTIONAL Components

> Employment Related Stakeholder Survey

> Other Campus/General Stakeholder Survey

The following table summarizes the components in the tool. Each is described more fully in the appendices sections of this document. The goal is that CORE components take no longer than 35 hours per program to complete, while the OPTIONAL components would take no longer than 20 hours to complete. These latter elements could also be flexible in terms of how extensively they are pursued.

Component	Estimated Hours	Comments
CORE Components		
Student Survey	10	Includes current students and recent graduates
Faculty/ Program Director Survey	10	Includes Chair, various faculty and other staff
Document Review	12	Related to the curriculum, faculty performance, evaluations and accreditation
Barriers and Resources	2	Identifying forces hindering and accelerating changes
Comment/Feedback on Self-Assessment	1	To provide lessons learned for future initiatives
TOTAL CORE	**35**	
OPTIONAL Components		
Employment Related Stakeholder Survey	8	Includes employers and other external stakeholders
Other Campus/General Stakeholder Survey	8	Includes other college stakeholders
TOTAL OPTIONAL	**16**	
GRAND TOTAL	**51 Hours**	

Appendices

Appendix A - Student Survey

College:

Program Name:

Program Self-Assessment Lead:

Suggested interview subjects (these could be group interviews if preferred):

- Program graduates (4-5 people)
- Current first year students (4-5 people)
- Current second year students (4-5 people)

People (with status as current student or graduate identified) providing input to this survey:

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Objective: The objective is to analyze the current state of technology and informatics content integration within the curriculum and propose additional opportunities to enhance both student and faculty educational experiences.

Estimated time to complete: 10 hours

For current students:

#	Question	Response
1	What are your 3-4 biggest challenges with managing workload and the amount of curriculum content? - Lack of access to technology - Access to reference materials during class and clinical rotations - Amount of content to cover between classes, clinical rotations, projects and clinical skills labs - Not enough time in clinical skills lab - Other (with space for text answer)	Criticality scale: - Major challenge - Minor challenge - NA

#	Question	Response
2	Overall, how comfortable are you with personal technology (e.g. using laptop, iPad, iPod, Blackberry, etc.) and use of social media? What are you most uncomfortable with?	Rating 1-5 (I = low and 5 = high) Also, add a comment field
3	What would assist you more in your classroom work and clinical rotations? - More access to portable devices (laptops, iPad, etc.) - More time in clinical skills lab - More online reference material - Better ability to communicate with instructor (e.g. text) - Enhanced access to teaching tools (e.g. streaming lecture videos, animations, simulations) - Teleconferencing - Collaborative web-based documentation tools (e.g.Google) - Other (with space for text answer)	Benefit scale: - Major benefit - Minor benefit - NA
4	What additional technology tools, applications and/or multimedia resources could be used by the program to support your learning (during clinical rotations, in the classroom, when completing projects and in the skills lab)? - Smart boards - Lecture capture systems - Web-based simulations - Webcams - Teleconferencing - eTexts/eBooks - Mobile applications - Video-based lectures - Collaborative web-based documentation tools (e.g.Google docs, wikis) - Discussion boards - Other (with space for text answer)	Benefit scale: - Major benefit - Minor benefit - NA

#	Question	Response
5	How could the skills lab be enhanced? - More devices overall to access an EMR - More uses of portable devices - Use of a more intuitive EMR - More interdisciplinary drills with student from other programs - More practice with equipment from my discipline/program (e.g. pumps, diagnostic equipment, point-of-care devices) - Other (with space for text answer)	Benefit scale: - Major benefit - Minor benefit - NA
6	How helpful was the experience of using an electronic medical record in your clinical experience (work experience or during clinical rotations)? What comments do you have about that experience?	Rating 1-5 (I = not helpful and 5 = very helpful) Also, add a comment field
7	Regarding other domain-specific technology utilized in your program (e.g. imaging equipment, EMR, point-of-care devices), how could those skills be taught more effectively? - Spend more time in the clinical skills lab - Spend more time in clinical rotations - Utilize simulations more - Working more closely with instructor/staff at clinical rotation sites - Multimedia instructional tools - Other (with space for text answer)	Rating 1-5 (I = not helpful and 5 = very helpful)
8	How would you rate your understanding of the "big picture" use of clinical data – e.g. for billing, quality improvement, coordination of care? What specific questions do you have about that?	Rating 1-5 (I = low and 5 = high) Also, add a comment field

#	Question	Response
9	What do you think are the main challenges that the faculty have around use of technology in your program? - Discomfort with computer use overall - Lack of comfort using the Internet - Lack of experience with social media - -Lack of knowledge of/experience with EMRs - Lack of hands-on EMR experience with the system used at your clinical rotation site - Difficulty incorporating EMR use into their lesson plans/clinical rotation planning - Difficulty identifying helpful online reference content for you to use - Difficulty conducting online office hours - Difficulty blogging/conducting online discussions - Lack of comfort using portable devices (e.g. iPad, smartphones) - Other (with space for text answer)	Criticality scale: - Major challenge - Minor challenge - NA
10	What other ways would you suggest to further integrate technology into your curriculum?	Text field

For program graduates:

#	Question	Response
1	What technical skill gaps did you feel you had when you started working in your field? - Lack of skill with domain-specific technology (e.g. pumps, imaging equipment, monitoring equipment, point-of-care devices) - Lack of general computer literacy - Lack of comfort using the Internet overall - Lack of experience with social media - Lack of hands-on EMR experience overall - Lack of hands-on EMR experience with certain vendors/products - Difficulty incorporating EMR use into their workflow - No experience with virtual visits (e-mail, Skype, others) - No familiarity working with a patient's PHR - No familiarity with telemedicine - Lack of comfort using portable devices (e.g. iPad, smartphones) - Lack of comfort using Point-of-Care technologies - Lack of knowledge about privacy and security regulations - Lack of familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	Criticality scale: - Major gap - Minor gap - NA
2	Overall, how comfortable are you with personal technology (e.g. using laptop, iPad, iPod, Blackberry, etc.) and use of social media? What are you most uncomfortable with?	Rating 1-5 (I = low and 5 = high) Also, add a comment field

#	Question	Response
3	What use of technology (if any) would have helped prepare you better for your current job role/responsibilities? - More access to portable devices (laptops, iPad, etc.) - More time in clinical skills lab - More online reference material - Better ability to communicate with instructor (e.g. text) - Enhanced access to teaching tools (e.g. streaming lecture videos, animations, simulations) - Teleconferencing - Collaborative web-based documentation tools (e.g.Google) - Other (with space for text answer)	Benefit scale: - Major benefit - Minor benefit - NA
4	What additional technology tools, applications and/or multimedia resources could have been used by the program to support your learning (during clinical rotations, in the classroom, when completing projects and in the skills lab)? - Smart boards - Lecture capture systems - Web-based simulations - Webcams - Teleconferencing - eTexts/eBooks - Mobile applications - Video-based lectures - Collaborative web-based documentation tools (e.g.Google docs, wikis) - Discussion boards Other (with space for text answer)	Benefit scale: - Major benefit - Minor benefit - NA

#	Question	Response
5	How could the skills lab have been enhanced? - More devices overall to access an EMR - More uses of portable devices - Use of a more intuitive EMR - More interdisciplinary drills with student from other programs - More practice with equipment from my discipline/program (e.g. pumps, diagnostic equipment, point-of-care devices) - Greater use of simulations - Other (with space for text answer)	Benefit scale: - Major benefit - Minor benefit - NA
6	How helpful was the experience of using an electronic medical record in your clinical experience (work experience or during clinical rotations)? What comments do you have about that experience?	Rating 1-5 (I = not helpful and 5 = very helpful) Also, add a comment field
7	Regarding other domain-specific technology utilized in your program (e.g. imaging equipment, EMR, point-of-care devices), how could those skills be taught more effectively? - Spend more time in the clinical skills lab - Spend more time in clinical rotations - Utilize simulations more - Working more closely with instructor/staff at clinical rotation sites - Utilize more multimedia instructional tools - Other (with space for text answer)	Rating 1-5 (I = not helpful and 5 = very helpful)
8	How would you rate your understanding of the "big picture" use of clinical data – e.g. for billing, quality improvement, coordination of care? Are there any specific challenges in your current job related to these areas?	Rating 1-5 (I = low and 5 = high) Also, add a comment field

#	Question	Response
9	What do you think were the main challenges that the faculty have around use of technology in your program? - Discomfort with computer use overall - Lack of comfort using the Internet - Lack of experience with social media - -Lack of knowledge of/experience with EMRs - Lack of hands-on EMR experience with the system used at your clinical rotation site - Difficulty incorporating EMR use into their lesson plans/clinical rotation planning - Difficulty identifying helpful online reference content for you to use - Difficulty conducting online office hours - Difficulty blogging/conducting online discussions - Lack of comfort using portable devices (e.g. iPad, smartphones) - Other (with space for text answer)	Criticality scale: - Major challenge - Minor challenge - NA
10	What other ways would you suggest to further integrate technology into your training?	Text field

Appendix B - Faculty/Program Director Survey

College:

Program Name:

Program Self-Assessment Lead:

Suggested interview subjects (these could be group interviews if preferred):

- Program Chair
- Faculty (4-5 people, preferably across years of tenure at the college)
- Teaching Assistant/Lecturer (2-3 people, if applicable)
- Skills Lab Coordinator/Other support staff (2-3 people, if applicable)

People (with positions identified) providing input to this survey:

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Objective: The objective is to analyze the current state of technology and informatics content integration within the curriculum and propose additional opportunities to enhance both student and faculty educational experiences.

Estimated time to complete: 10 hours

#	Question	Response
1	What are your greatest biggest challenges with managing workload and the amount of curriculum content? - Lack of access to technology - Access to reference materials during class and clinical rotations - Amount of content to cover between classes, clinical rotations, projects and clinical skills labs - Not enough time in clinical skills lab - Other (with space for text answer)	Criticality scale: - Major challenge - Minor challenge - NA

#	Question	Response
2	Overall, how comfortable are you with personal technology (e.g. using laptop, iPad, iPod, Blackberry, etc.) and use of social media? What are you most uncomfortable with?	Rating 1-5 (I = low and 5 = high) Also, add a comment field
3	Do you have your own dedicated PC or laptop?	Yes/No
4	What do you think were the main challenges that the faculty have around use of technology in your program? - Discomfort with computer use overall - Lack of comfort using the Internet - Lack of experience with social media - -Lack of knowledge of/experience with EMRs - Lack of hands-on EMR experience with the system used at your clinical rotation site - Difficulty incorporating EMR use into their lesson plans/clinical rotation planning - Difficulty identifying helpful online reference content for you to use - Difficulty conducting online office hours - Difficulty blogging/conducting online discussions - Lack of comfort using portable devices (e.g. iPad, smartphones) Other (with space for text answer)	Criticality scale: - Major challenge - Minor challenge - NA
5	How was the experience of using an electronic medical record in your clinical experience (work experience or during clinical rotations)? What comments do you have about how helpful that was?	Rating 1-5 (I = not helpful and 5 = very helpful) Also, add a comment field
6	If students have access to an EMR in the skills lab, what system (from what vendor) is being used and what has that been like as a teaching tool?	Vendor name System name Comment field

#	Question	Response
7	How would you rate your understanding of the "big picture" use of clinical data – e.g. for billing, quality improvement, coordination of care? What specific questions do you have about that?	Rating 1-5 (I = low and 5 = high) Also, add a comment field
8	Regarding other domain-specific technology utilized in your program (e.g. imaging equipment, EMR, point-of-care devices), how could those skills be taught more effectively? - Spend more time in the clinical skills lab - Spend more time in clinical rotations - Utilize simulations more - Working more closely with instructor/staff at clinical rotation sites - Utilize more multimedia instructional tools Other (with space for text answer)	Rating 1-5 (I = not helpful and 5 = very helpful)
9	What additional technology tools, applications and/or multimedia resources could be used by the program to support student learning (during clinical rotations, in the classroom, when completing projects and in the skills lab)? - Smart boards - Lecture capture systems - Web-based simulations - Webcams - Teleconferencing - eTexts/eBooks - Mobile applications - Video-based lectures - Collaborative web-based documentation tools (e.g.Google docs, wikis) - Discussion boards - Other (with space for text answer)	Benefit scale: - Major benefit - Minor benefit - NA

#	Question	Response
10	What technology or informatics related campus resources are you aware of that could be utilized further and how might they assist you? - Health information management (HIM) faculty/staff - Medical informatics faculty/staff - Faculty/staff from other technology programs - Campus recruiters - Faculty development specialists - Other (with space for text answer)	Awareness scale: - Familiar with - Not familiar with For each, have a comment filed so they can state how each of these resources might be able to help them.
11	What community resources/partnerships do you see helping and how? - Working with another community college in the area - Working with a four year university in the area - Distance collaboration with another college/university - Working with a professional association national office - Working with a professional association chapter - Working with a Regional Extension Center (REC) - Working with specific community provider(s) - Working with a specific healthcare technology vendor - Working with/support from a general technology vendor - Other (with space for text answer)	Awareness scale: - Familiar with - Not familiar with For each, have a comment filed so they can state how each of these resources might be able to help them.
12	What best practices or facilities are you aware of from your peer programs that might be helpful to emulate?	Text field
13	What is the level of faculty enthusiasm around increased use of technology and informatics concepts? What comments do you have about that?	Rating 1-5 (I = low and 5 = high) Also, add a comment
14	What feedback are you hearing from students with regard to the use of technology as part of their studies?	Text field
15	Any last thoughts on technology planning and integration for your program?	Text field

Appendix C - Document Review

College:

Program Name:

Program Self-Assessment Lead:

Suggested documents to review:

- Program prerequisites
- Program curriculum (syllabus /assignments/projects/concept maps/ other course materials)
- Textbooks
- Online resources/teaching materials
- Job descriptions/job postings from potential employers (2-3)
- Job descriptions for program faculty
- Faculty performance evaluation templates
- Student evaluations and other course materials
- Program accreditation/certification requirements
-

Documents reviewed (and who reviewed each):

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Objective: The objective is to analyze the current state of technology and informatics content integration within the curriculum versus what the students say they need versus what the industry is asking for. Faculty performance expectations will also be analyzed.

Estimated time to complete: 12 hours

#	Question	Response
1	What personal technology competence is a pre-requisite for students to enter the program?	Text field

#	Question	Response
2	What specific technologies (if any) are explicitly cited that the students be able to use and master during their time in the program?	Text field
3	What informatics and/or information technology content is included in the program curriculum (syllabus /assignments/projects/concept maps/other course materials)? Evidence-based clinical practice guidelines E-Health & Consumer Health Informatics Standard Nomenclatures & Classifications (SNOMED, NANDA, ICD-10) Requirements Definition Reporting/Data Mining Data Quality Alerts/Clinical Decision Support Usability/Ergonomics Point-of-Care Technology System Integration Privacy and Security Identifiers Change Management & Workflow Patient Education	List items and have yes/no field & comment field for each one
4	What informatics content is included in the program online resources, textbooks and standardized teaching materials? Evidence-based clinical practice guidelines E-Health & Consumer Health Informatics Standard Nomenclatures & Classifications (SNOMED, NANDA, ICD-10) Requirements Definition Reporting/Data Mining Data Quality Alerts/Clinical Decision Support Usability/Ergonomics Point-of-Care Technology System Integration Privacy and Security Identifiers Change Management & Workflow Patient Education	List items and have yes/no field & comment field for each one

#	Question	Response
5	What are the common top types of domain specific technology, personal technology and informatics competencies named in job descriptions posted by potential employers for your program graduates? Are they generally mandatory/required or simply preferred/ optional? - Domain-specific technology (e.g. pumps, imaging equipment, monitoring equipment, point-of-care devices) - General computer literacy - Overall ability to use standard office applications (e.g. Word, Excel, Outlook) - Overall ability to use the Internet - Overall ability to use social media - Overall ability to use an EMR experience - Hands-on EMR experience with certain vendors/products - Experience with virtual visits (e-mail, Skype, others) - Familiarity working with a patient's PHR - Familiarity with telemedicine - Familiarity with web-based disease management tools - Overall ability to use portable devices (e.g. iPad, smartphones) - Overall ability to use Point-of-Care technologies - Knowledge about privacy and security regulations/HIPAA - Familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	Frequency scale: - Very common - Somewhat common - Rarely Necessity scale: - Mandatory - Preferred

#	Question	Response
6	What are specific gaps between what is seen in job descriptions versus what is in the program curriculum? - Domain-specific technology (e.g. pumps, imaging equipment, monitoring equipment, point-of-care devices) - General computer literacy - Overall ability to use standard office applications (e.g. Word, Excel, Outlook) - Overall ability to use the Internet - Overall ability to use social media - Overall ability to use an EMR experience - Hands-on EMR experience with certain vendors/products - Experience with virtual visits (e-mail, Skype, others) - Familiarity working with a patient's PHR - Familiarity with telemedicine - Familiarity with web-based disease management tools - Overall ability to use portable devices (e.g. iPad, smartphones) - Overall ability to use Point-of-Care technologies - Knowledge about privacy and security regulations/HIPAA - Familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	Criticality scale: - Major gap - Minor gap - NA

#	Question	Response
7	What are the top 3-4 types of domain specific technology, personal technology, classroom/instructional technology and informatics competencies named in faculty job descriptions? Are they generally mandatory/required or simply preferred/ optional? - Domain-specific technology (e.g. pumps, imaging equipment, monitoring equipment, point-of-care devices) - General computer literacy - Overall ability to use standard office applications (e.g. Word, Excel, Outlook) - Overall ability to use the Internet - Overall ability to use social media - Overall ability to use an EMR experience - Hands-on EMR experience with certain vendors/products - Experience with virtual visits (e-mail, Skype, others) - Familiarity working with a patient's PHR - Familiarity with telemedicine - Familiarity with web-based disease management tools - Overall ability to use portable devices (e.g. iPad, smartphones) - Overall ability to use Point-of-Care technologies - Knowledge about privacy and security regulations/HIPAA - Familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	Frequency scale: - Very common - Somewhat common - Rarely Necessity scale: - Mandatory - Preferred

#	Question	Response
8	What are specific gaps between what is seen in faculty job descriptions versus the candidates applying for these positions? - Domain-specific technology (e.g. pumps, imaging equipment, monitoring equipment, point-of-care devices) - General computer literacy - Overall ability to use standard office applications (e.g. Word, Excel, Outlook) - Overall ability to use the Internet - Overall ability to use social media - Overall ability to use an EMR experience - Hands-on EMR experience with certain vendors/products - Experience with virtual visits (e-mail, Skype, others) - Familiarity working with a patient's PHR - Familiarity with telemedicine - Familiarity with web-based disease management tools - Overall ability to use portable devices (e.g. iPad, smartphones) - Overall ability to use Point-of-Care technologies - Knowledge about privacy and security regulations/HIPAA - Familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	Criticality scale: - Major gap - Minor gap - NA

#	Question	Response
9	What specific technology competencies/expectations (if any) are cited in faculty performance evaluations? - Domain-specific technology (e.g. pumps, imaging equipment, monitoring equipment, point-of-care devices) - General computer literacy - Overall ability to use standard office applications (e.g. Word, Excel, Outlook) - Overall ability to use the Internet - Overall ability to use social media - Overall ability to use an EMR experience - Hands-on EMR experience with certain vendors/products - Experience with virtual visits (e-mail, Skype, others) - Familiarity working with a patient's PHR - Familiarity with telemedicine - Familiarity with web-based disease management tools - Overall ability to use portable devices (e.g. iPad, smartphones) - Overall ability to use Point-of-Care technologies - Knowledge about privacy and security regulations/HIPAA - Familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	Frequency scale: Usually included Sometimes included Rarely included
10	What are the top 2-3 suggestions from student evaluations (at the class or overall program level) relevant to the use of technology or informatics content?	Text field
11	What new technology or informatics competencies (if any) are you seeing in accreditation/certification requirements that the program should be better incorporating?	Text field
12	Any other last comments regarding the findings from the document review?	Text field

Appendix D - Barriers and Resources

College:

Program Name:

Program Self-Assessment Lead:

Suggested activities: Program Leads should complete this section. College Project Managers would also be an optional group to complete this section.

Persons contributing this additional feedback:

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Objective: The objective is to provide additional qualitative feedback or suggestions regarding what would help move the programs forward.

Estimated time to complete: 2 hours

#	Question	Response
1	Overall, what are the main barriers to further adoption of informatics content? - Budget constraints - Faculty resistance - Not perceived as important - Feel that this content is covered elsewhere in the curriculum - Perception that this content will be learned once graduates start working in the community - Other (with space for text answer)	Severity scale: High barrier Modest barrier Low barrier
2	What is the overall willingness of the college to fund technology across programs, yours in particular? - High willingness, funding likely - High willingness, but funding unlikely - Moderate willingness, still evaluating - Not willing to at this time - Other (with space for text answer)	No scale here

#	Question	Response
3	What is the overall willingness of the program staff and faculty to make needed changes to utilize additional technology and incorporate more informatics content in the curriculum (e.g. attend training, adapt their teaching materials? - Overall high willingness, changes likely - Overall high willingness, but changes less likely due to time constraints - Overall, high willingness, but changes less likely due to budget constraints - Overall, high willingness, but changes less likely due to lack of access to training - Faculty and staff divided (some enthusiastic & some not) - Not willing to at this time - Other (with space for text answer)	No scale here
4	What community resources/partnerships do you see helping and how? - Working with another community college in the area - Working with a four year university in the area - Distance collaboration with another college/university - Working with a professional association national office - Working with a professional association chapter - Working with a Regional Extension Center (REC) - Working with specific community provider(s) - Working with a specific healthcare technology vendor - Working with/support from a general technology vendor - Other (with space for text answer)	Awareness scale: Familiar with Not familiar with For each, have a comment filed so they can state how each of these resources might be able to help them.
5	Any last comments or suggestions about resources that could be leveraged in this area to move this work forward?	Text field

Appendix E - Employment Related Stakeholder Survey

College:

Program Name:

Program Self-Assessment Lead:

Suggested interview subjects (these could be group interviews if preferred):

- Contacts at clinical rotation facilities/other hiring organizations (3-5 people)
- Nurse and Allied Health recruiters (1-2 people outside of the college)
- Placement staff at the college (1-2 people that focus on health professions)
- Program Advisory Board members

People (with positions identified) providing input to this survey:

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Objective: The objective is to hear from those in the healthcare community what their perceptions, concerns and suggestions are related to the technology related skill level of graduates and how the program can be improved.

Note: if more than one program per college participates in the self-assessment, the leads and the consortium Project Manager for that organization should coordinate this portion of the work. There is no need for each program to contact the campus placement personnel and possibly even outside recruiters that handle various types of clinical placements. Their feedback will likely be consistent across programs. Only one lead should complete and document this component of the assessment.

Estimated time to complete: 8 hours

Response Scale (frequency):

- Often seen

- Sometimes seen

- Rarely seen

Response Scale (criticality):

- Critical

- Not critical

- NA

#	Question	Response
1	What important domain specific technology, personal technology and informatics skills are employers looking for? - Technologies specific to their domain only - General computer literacy - Comfort using the Internet overall - Use of social media - Hands-on EMR experience overall - Hands-on EMR experience with certain vendors/products - Experience with virtual visits (e-mail, Skype, others) - Familiarity working with a patient's personal health record (PHR) - Familiarity with telemedicine - Comfort using portable devices (e.g. iPad, smartphones) - Comfort using Point-of-Care technologies - Knowledge about privacy and security regulations, specifically HIPAA - Familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	See Frequency & Criticality scales above this table

#	Question	Response
2	What technical skill gaps do you see in students/new program graduates? - Lack of skill with domain-specific technology - Lack of general computer literacy - Lack of comfort using the Internet overall - Lack of experience with social media - Lack of hands-on EMR experience overall - Lack of hands-on EMR experience with certain vendors/products - Difficulty incorporating EMR use into their workflow - No experience with virtual visits (e-mail, Skype, others) - No familiarity working with a patient's PHR - No familiarity with telemedicine - Lack of comfort using portable devices (e.g. iPad, smartphones) - Lack of comfort using Point-of-Care technologies - Lack of knowledge about privacy and security regulations - Lack of familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	See Frequency & Criticality scales above this table
3	What would be your main suggestion to the programs about enhancing technology skills or informatics knowledge? - Focus more on domain specific technologies (e.g. use of pumps, linear accelerators, imaging equipment, etc.) - Provide basic keyboarding/computer use classes - Provide greater EMR use - Offer/require an informatics class - Emphasize privacy and security regulations more - Require use of online reference materials during clinical rotations - Enhance clinical skills labs to provide more practice with patient care equipment and procedures - Other (with space for text answer)	Benefit scale: Very helpful Less helpful Not helpful
4	What best practices or facilities are you aware from peer programs that might be helpful to emulate?	Text field

Appendix F - Other Campus/General Stakeholder Survey

College:

Program Name:

Program Self-Assessment Lead:

Suggested interview subjects (these could be group interviews if preferred):

- Faculty development specialists (1-2 people, from HR or other depts. where they may work)
- Medical Informatics or Health IT Program Chair/faculty member (1-2 people)
- Health Information Management (HIM) Program Chair/faculty member (1-2 people)
-

Note: these stakeholders are external to the program being assessed, although they may still be employees of the college. Advisory Board members, in particular, may be external to the college.

People (with positions identified) providing input to this survey:

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Objective: The objective is to hear from those outside the consortium programs themselves what their perceptions and concerns are related to graduates skills and to identify opportunities for partnerships.

Note: if more than one program per college participates in the self-assessment, the leads and the consortium Project Manager for that organization should coordinate this portion of the work. There is no need for each program to contact these other campus resources individually since their feedback will likely be consistent across programs. Only one lead should complete and document this component of the assessment.

Estimated time to complete: 8 hours

Response Scale (frequency):

- Often seen

- Sometimes seen

- Rarely seen

Response Scale (criticality):

- Critical

- Not critical

- NA

#	Question	Response
1	What specific technology, personal technology and informatics skill gaps that you are aware of for program students? - Lack of skill with domain-specific technology - Lack of general computer literacy - Lack of comfort using the Internet overall - Lack of experience with social media - Lack of hands-on EMR experience overall - Lack of hands-on EMR experience with certain vendors/products - Difficulty incorporating EMR use into their workflow - Lack of comfort using portable devices (e.g. iPad, smartphones) - Lack of comfort using Point-of-Care technologies - Lack of knowledge about privacy and security regulations - Lack of familiarity with clinical vocabularies and taxonomies (NANDA, SNOMED, ICD-10) - Other (with space for text answer)	See Frequency & Criticality scales above this table
2	What emerging technologies do you see that students/graduates will need to be comfortable with? - Use of social media - Use of personal health records (PHR) - Use of telemedicine - Use of virtual visits (e-mail, Skype, others) - Use of personal health monitoring/diagnostic tools (e.g. glucose meters, pumps, other medication self-administration devices) - Use of web-based disease management/assessment tools - Other (with space for text answer)	Scale: - High priority - Medium priority - Low priority

#	Question	Response
3	What emerging technologies do you see that <u>program faculty</u> will need to be comfortable with? - Use of social media - Use of personal health records (PHR) - Use of telemedicine - Use of virtual visits (e-mail, Skype, others) - Use of personal health monitoring/diagnostic tools (e.g. glucose meters, pumps, other medication self-administration devices) - Use of web-based disease management/assessment tools - Other (with space for text answer)	Scale: - High priority - Medium priority - Low priority
4	What additional technology tools, applications and/or multimedia resources could be used by the program to support student learning? - Smart boards - Lecture capture systems - Web-based simulations - Webcams - Teleconferencing - eTexts/eBooks - Mobile applications - Video-based lectures - Collaborative web-based documentation tools (e.g.Google docs, wikis) - Discussion boards - Other (with space for text answer)	Benefit scale: - Major benefit - Minor benefit - NA

#	Question	Response
5	What best practices or resources are you aware that other Nursing and Allied health programs that might be helpful to emulate? - Working with another community college in the area - Working with a four year university in the area - Partnering with another college/university willing for distance learning - Working with a professional association national office - Working with a professional association chapter - Working with a Regional Extension Center (REC) in their area - Working with a community provider(s) - Working with a Healthcare technology vendor - Working with a general technology vendor - Working with another program at their college - Other (with space for text answer)	No scale here Have optional comment field by each one so they can specify which vendor, college, provider or campus program might help
6	What assistance in terms of sharing technology, faculty mentoring/training or other activities could your program provide to Nursing and Allied Health? - Training on classroom technology - Training on personal technologies (iPad, SmartPhones, etc.) - Training one other relevant topics - Sharing of specific equipment - Informatics related training - Assistance connecting students with internships - Other (with space for text answer)	No scale here Have optional comment field by each one so they can specify which vendor, college, provider or campus program might help
7	What other last comments or suggestions would you have for the program regarding their use of technology and incorporation of informatics content?	Text field