

The EHR Project: Linking Curricular Components

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Abstract

This article explains how a baccalaureate-level academic program's health information systems project and its specific project activities can be linked throughout the health informatics and information management (HIIM) curriculum. Using information technology applications as the theme, it demonstrates how professional-level courses and their subsequent activities can be coordinated throughout the HIIM program. It highlights the development of course assignments designed to meet entry-level competencies according to a progression of Bloom's taxonomic levels. A model for team-oriented, multidisciplinary collaboration with other campus majors is revealed.

Keywords: health informatics (HI); health information management (HIM); information technology; HI/HIM curriculum; health information systems; health information systems (HIS) project; curriculum components; HI/HIM/HIS curriculum coordination; Bloom's taxonomic level progression; HI/HIM/HIS curriculum progression

Introduction

The challenge for health information management (HIM) faculty is to provide students with real-world contemporary knowledge and exposure to information technology applications, methods, issues, and vendors in a cohesive and progressive manner. Students can become overwhelmed by the amount and complexity of data they must absorb and comprehend. Instructors may become frustrated and experience burnout when envisioning and delivering the amount of material, assignments, and experiences they should provide for students to meet entry-level competencies in the rapidly changing HIM field. However, by enhancing currently utilized assignments and methods already within the curriculum, instructors can alleviate many of these issues.

A project used in the teaching of electronic health record (EHR) implementation at our university offers a valuable example of this strategy. The Hybrid EHR Health Information Systems Management Project (commonly referred to as the EHR Project), was developed on the basis of recommendations from various clinical site supervisors several years ago. As these clinical organizations implemented EHRs, the HIM professionals felt it important that the students be prepared to meet the technological and organizational challenges they would encounter immediately upon graduation. Senior students returning from their management internship described participating in many of these activities at their respective healthcare facilities.

Healthcare delivery and administration is, by its very nature, a collaborative process. The EHR Project is an excellent opportunity to show students that multidisciplinary teamwork is essential in the delivery of healthcare. Group dynamics, both positive and negative, are valuable learning experiences.

HIM Courses Linked by the EHR Project Activities

The Health Informatics and Information Management (HIIM) program at our university has two specific courses directly related to health informatics (HI) and health information systems (HIS). The first of these, the Healthcare Informatics course, introduces the fundamental concepts and applications of technology in the arena of healthcare delivery. The second is the Health Information Systems course, which is designed specifically to address the selection, implementation, and utilization of the EHR in healthcare facilities. These courses build on the foundation provided by three additional information technology classes encompassing computer literacy, database management, and information systems theory and design. As the HIIM faculty was developing the various assignments for each class, Bloom's taxonomic levels were addressed to ensure that the students had appropriate exposure and activities at each of the progressing levels.

Reflecting the contemporary environment of healthcare, a strong collaboration links the HIIM program and the university's College of Science and Technology (CST). Certain HIIM courses are offered to CST students who are interested in healthcare applications of information technology. A concentration in health informatics was developed to encourage an alliance with information technology and computer science students. It encompasses three classes (the two HIM courses mentioned above, plus the Legal Aspects of Health Information class) totaling nine semester credit hours. The CST offers minors in computer science, information systems, and information technology that are available to the HIIM students.

In all, five courses are connected to the EHR Project. The first class, Quality Management in Health Services, is offered in the spring semester of the junior year, and most of the quality/performance improvement applications and tools are introduced in this class. The decision matrix exercise (Bloom's taxonomy level 3) from LaTour et al. (fourth edition, 2013) is presented to help students determine significant criteria and priorities.¹ Several criteria are listed in the matrix, but students are also required to provide additional pertinent measures. (Unfortunately, this particular exercise was not included in the fifth edition of this textbook.) This exercise paves the way for the creation of the Product Rating Matrix (Bloom's taxonomy level 6) in the EHR Project, discussed in more detail below.

Healthcare Informatics, the second class linked to the EHR Project, is offered during the summer semester of the junior year. Entry-level healthcare informatics applications and broadly scoped information technology functions are presented. The EHR is introduced, and assignments stress the difference in usage between physician practice management systems and hospital-based EHR systems. Many of the course assignments expand upon the certified health technology specialist (CHTS) activities developed with Health Information Technology for Economic and Clinical Health (HITECH) Act funding from the Office of the National Coordinator for Health Information Technology (ONC). Both HIIM and CST students are encouraged to choose a specific CHTS role and prepare for the CHTS credential using the additional training available.

The EHR implementation project itself is completed as a requirement for the third course, Health Information Systems, which is offered in the fall semester of the senior year. This group project expands on hospital EHR applications and functions, implementation-related matters, staffing and training, and vendors. Again, several aspects of the project's 12 individual deliverables stem from the CHTS coursework activities.

The fourth course linked to the EHR Project, Human Resource Management, is offered concurrently with the Health Information Systems class during the fall semester of the senior year. Covering all the major mechanisms of the management process, it also encompasses human resource issues. One assignment involves mapping an organizational chart for a hospital HIM department from a provided narrative description (Bloom's taxonomy level 4). This assignment lays the foundation for constructing a new organizational chart after completing the staffing changes resulting from the EHR implementation (Bloom's taxonomy level 6).

The entire process culminates with the fifth course, Leadership in Information Governance, in the spring semester of the senior year. The students use their choice of EHR system and apply it to the Hybrid EHR Health Information Systems Management Departmental Design Project. This project involves the physical design of an HIM department, including determination of personnel and services (Bloom's taxonomy level 6). Unlike the EHR Project, this project is done individually by each HIIM student. This project can be considered a coursework capstone experience and is completed just before the student attends a management internship in the summer semester of the senior year.

The EHR Project

The scope of the EHR Project is specific to a hospital/inpatient-based EHR. The first section of the project includes assignments or deliverables related to selection of an EHR system, including identification of EHR task force members, components/functions and certification, HIPAA privacy and security concerns, and request for proposal (RFP) development. The second section of the project consists of implementation aspects, including personnel and organizational chart updates, training and change management strategies, conversion plans for paper and microfilmed records, time frames for implementation of hardware and software systems, and final implementation evaluation and service maintenance.

This project is designed as a group venture consisting of four to five students per group. Names are drawn at random, and each HIIM student is placed within a specified group. The number of groups depends on the total student enrollment of the class. The CST students are also randomly assigned, but their names are drawn separately to ensure that each group has at least one CST student. Initially, each group must develop a meeting schedule that includes a specified number of both in-person and electronic sessions, address strengths and weaknesses of group members, and establish conflict resolution strategies. At the beginning of the semester, the schedule of assignments/deliverables throughout the semester is discussed. Each group is required to make an oral presentation involving all members and submit an EHR portfolio at the completion of the project.

The entire EHR Project packet is posted electronically on the university's Blackboard Learning Management System at the beginning of the semester. This packet includes a fictitious scenario describing an acute care facility, pertinent hospital statistics, and HIM departmental data (workload, personnel, amount of paper and microfilm records, etc.). Another segment of the packet includes all deliverables with their respective detailed instructions. Each deliverable typically starts as an in-class laboratory activity and then is continued and completed by the group outside of class within a designated time frame. Feedback is provided when the grades are posted so that the group can make any necessary corrections to each deliverable for the final EHR portfolio submission.

The final portion of the packet is the Evaluation Matrix. It lists the assignments in the sequence addressed throughout the semester, with the point itemization for each section. This matrix is essentially a table of all requirements and assignments abridged into a two-page form. It is an easy reference for the students to ensure that everything is included in their EHR portfolio.

Key Activities within the EHR Project

One of the first linked activities in the EHR Project is a combination of the comparison assignment for the Healthcare Informatics class and the decision matrix assignment (Bloom's taxonomy levels 3 and 4) for the quality management course. It evolves into the Product Rating Matrix assignment (Bloom's taxonomy level 6). This assignment explores popular hospital-based EHR vendors, the various EHR functions, and the importance of certified products. The groups must create a decision matrix and formulate criteria to evaluate EHR products from three different vendors. The assignment requires a designated number of criteria and must include EHR components, certification, and additional aspects that each group determines as essential. Scales for rating the importance of the criteria, in addition to an assessment of how well the product meets each criterion and calculations of the total points earned, are also required.

Another linked activity relates to the HIM personnel changes required by the implementation of an EHR system. The activity involves a redesign of the organization chart (Bloom's taxonomy level 4) from the human resource management course and must include specified personnel changes, including the conversion of one assistant director to an EHR coordinator, elimination of one HIM supervisor position, conversion of certain clerical positions to EHR technicians, and elimination of a certain number of clerical positions. The chart must be completely reconstructed while synthesizing all personnel position changes. These proposed personnel changes must be justified in a supplementary written explanation.

The hybridization process required in the conversion of paper and microfilmed records to electronic records is addressed in an additional linked activity. The students use mathematical formulas from the human resource management and quality management courses (Bloom's taxonomy levels 3 and 4) to assess and determine the amount of personnel, costs, and time required for completion of the conversion using paper and microfilm scanners (Bloom's taxonomy level 5). These figures provide a starting point for the discussion of outsourcing certain HIM activities within an EHR implementation.

Evaluation

At the end of the semester, all groups must submit the completed portfolio and give an oral presentation of their project. The portfolio includes all of the corrected assignments/deliverables in their specified sequence. It must be bound and include a title page, table of contents, tabbed sections for each assignment, vendor information, a bibliography, and any other pertinent information the group deems necessary. The oral presentation is essentially the executive summary report of their project. Each group member is required to present a portion of the executive summary.

The EHR Project Evaluation Matrix transforms into the grading rubric. Depending on its complexity, each deliverable is assigned a designated amount of points. Columns in the matrix indicate criteria, allotted and awarded points for each section, and comments. This assignment constitutes 20 percent of the individual student's semester grade for the Health Information Systems course. (See Appendix.)

Peer evaluations are also required and are submitted electronically by the individual students and not included in the EHR portfolio. Each student rates every other member of the group. The HIIM program's Management Internship Evaluation Form is used for this process. This form is employed to familiarize the student with how they will be appraised during their upcoming capstone internship experience. Student comments have proven to be very enlightening and occasionally entertaining.

Conclusion

By linking assignments, classes, and concepts throughout the progression within the HIIM Program, the EHR Project has made the presentation of demanding, dynamic, and ever-changing material more organized, cohesive, and less intimidating. It has enabled the students to learn from each other and develop valuable team-building skills. The faculty have found that by looking at ways where established assignments can be enhanced, magnified, and/or combined, they do not need to "reinvent the wheel" to achieve updated curriculum goals. Building on the varying levels of Bloom's taxonomy as specified by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM) Baccalaureate Degree Curriculum Requirements, each subsequent assignment advances the students' level of knowledge and skills to the appropriate stage.² When developing the various assignments for each class, the HIIM faculty ensured that Bloom's taxonomic levels were addressed to ensure that the EHR Project offered the students appropriate exposure and activities at each of the progressing levels. This assignment is thought-provoking and challenging, but ultimately rewarding, for both students and instructors.

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Notes

1. LaTour, Kathleen M., Shirley Eichenwald-Maki, and Pamela K. Oachs. *Health Information Management: Concepts, Principles and Practices*. 4th ed. Chicago: American Health Information Management Association, 2013, p. 696.
2. Commission on Accreditation of Health Informatics and Information Management Education. "Curriculum Requirements." Available at <http://www.cahim.org/him/curriculumrequirements.html> (accessed December 29, 2016).

Appendix

Evaluation Matrix

Hybrid EHR Health Information Systems Management Project
HIM 4656 FALL 2016

The portfolio must include:

TOTAL POINTS = 100

	SECTIONS	POINTS
A	<p><u>Executive Summary:</u></p> <ol style="list-style-type: none"> 1. Provide a narrative summary of the final decision and recommendation of the vendor chosen to provide the EHR system. 2. Justify why this vendor was selected referring to the Product Rating Matrix. 3. Describe specific highlights of the product &/or process. 	10
B	<p><u>Communication Plan</u></p> <ol style="list-style-type: none"> 1. Follow the steps under #3 in the <i>Project Guidelines/Instructions</i>. Give specific measures for 3.e. 2. Identify the process of who & when each of the following sections will be submitted. 	2
C	<p><u>EHR Task Force Committee:</u></p> <ol style="list-style-type: none"> 1. <u>List and justify</u> the HOSPITAL personnel (by title) who are appropriate to be assigned to the EHR Task Force. 2. What responsibilities would each these members have <u>on the Task Force</u> to help choosing an EHR? 	2
D	<p><u>EHR Components:</u></p> <ol style="list-style-type: none"> 1. List, describe, and justify the specific components/HIM software necessary for an EHR (design a table for responses). 2. For each component, include a screen printout as an example from any hospital EHR vendor. 3. What is the certification status & requirements for the EHR the group has chosen? 	8
E	<p><u>Information Security:</u></p> <p>Describe in detail the security provisions of the chosen system. Address at least the following:</p> <ol style="list-style-type: none"> 1. HIPAA compliance and compatibility issues of the chosen EHR 2. Provide 3 examples of security measures for the three HIPAA security standards: <ul style="list-style-type: none"> • Administrative safeguards • Technical safeguards • Physical safeguards 	10

	<ol style="list-style-type: none"> 3. Employee-level access, HIM release of information 4. Security issues for mobile devices 5. Breached security protocols & investigation 6. Timeframe of security breach prevention activities 	
F	<p><u>Information Privacy:</u> Describe in detail the security and privacy provision of the chosen system. Address at least the following:</p> <ol style="list-style-type: none"> 1. HIPAA compliance and compatibility issues 2. Audit trails, HIM release of information, error corrections &/or amendments 3. Develop a one-hour HIPAA privacy & security training program for all hospital personnel. Provide outline of material, presentation method, visual aids, disciplinary process for infractions, and all of the above info in the Security section. 	10
G	<p><u>Product Rating Matrix:</u></p> <ol style="list-style-type: none"> 1. Develop a decision matrix to evaluate and rate 3 vendors & their EHR product. 2. Using the above information, generate a list of ten (10) criteria to evaluate each vendor. See section .D. <i>Components</i> above 3. See the QI textbook for the format and rating calculations for a decision matrix. 	8
H	<p><u>User Training & Change Management</u></p> <ol style="list-style-type: none"> 1. Change management strategies for all personnel 2. Identify training schedules for <ul style="list-style-type: none"> • Medical staff (all physicians) • Nursing & clinical staff (all levels) • Administrative personnel 3. Levels of training 	10
I	<p><u>Implementation Plan:</u> To include, but not limited to, the following:</p> <ol style="list-style-type: none"> 1. Timeline for installation of EHR system 2. EHR system maintenance and service procedures & schedule 	7
J	<p><u>Personnel</u></p> <ol style="list-style-type: none"> 1. HIM & other staffing changes—what positions in HIM will change; what new positions will be needed 2. Complete an organization chart for the HIM department with the newly created positions 	8
K	<p><u>Conversion Process</u></p> <ol style="list-style-type: none"> 1. Timeline for conversion of current paper and microfilm to digital media 	7

	2. Include calculations for workload & necessary time	
L	<u>Vendor Information</u> Using only the vendor chosen, include all pertinent vendor-based literature: <ol style="list-style-type: none"> 1. annual reports 2. external reviews and/or articles 3. basic info—years in operation, parent company, subsidiaries, etc. 	5
M	<u>Organization of binder:</u> <ol style="list-style-type: none"> 1. including a table of contents 2. bibliography 3. overall creativity 4. professional appearance 	2
N	<u>ORAL PRESENTATION:</u> (at least 10 minutes) should include: <ol style="list-style-type: none"> 1. A review of final recommendation. 2. An overview of staffing, equipment, vendor, and other pertinent information, etc. 3. Ways in which your project is different from others. 4. <u>Note:</u> 10 points will be deducted from the final grade for this project if an oral presentation is not made during class on the assigned date and time and WITH ALL MEMBERS PRESENT. 	10
O	Self & Peer Evaluations (turned in separately to the instructor)	1
	TOTAL SCORE	

COMMENTS:
