

Translating calls for competencies-oriented, evidence-based education into achievable and meaningful curricular reform initiatives

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Introduction

- A Time of Change
- Competence
 - What are our current beliefs and practices regarding competence?
 - What does the literature say about competence?
- Instruction to Competence
- Assessment of Competence
- Building a competencies-oriented curriculum

A Time of Change

- Patient Care arena
 - Adoption of Patient Care Competencies:
 - Outcomes
 - Expectations
 - Compliance
 - Norms
 - Error rates
 - EBM

A Time of Change

- MEDED arena
 - Adoption of Educational Competencies:
 - Medical Knowledge
 - OMM
 - Patient Care
 - Professionalism
 - Interpersonal and Communication Skills
 - Practice based Learning and Improvement
 - Systems based Practice
 - BEME

A Time of Change

- A Time of Convergence
 - Merging patient care and educational competencies
 - EBM literature guides patient care competencies
 - Will 'tradition' guide the development of educational competencies or will evidence?
- What is known about educational competencies?
 - Competence has an evidence base in selected areas
 - When will BEME really happen?

A Time of Change

- A Timetable for Change
 - Major curricular reform initiatives:
 - 1950: Systems-based
 - 1970: Problem-based
 - 1990: Presentation-based
 - 2010: ?
 - Competencies-Oriented,
 - Evidence-Based
 - 2010: ___COEB
 - How will ___COEB curricula be defined/implemented?

A Time of Change

- A Time for Leadership and Commitment
 - Who will define COEB curricular reform?
 - Will Osteopathic Medicine lead or follow?
 - Reality check
 - Lead? (e.g., competencies initiative, standardized patient/skills testing)
 - Follow? (e.g., competencies initiative, standardized patient/skills testing)
 - Internal dialogue of the uncommitted (silent majority/politically correct/astute)
 - Who are we kidding?
 - We're too small, have too few resources, etc, etc, etc
 - Anything you can do (first) I can do better (later) (“me-too syndrome”)
 - Isn't my primary job to keep my job?
 - Was AT Still the first and last Osteopathic leader?
- Is the Osteopathic educational community willing to commit to the task of leading COEB reform?

A Time of Change

- The Time for Leadership and Commitment is now
 - Someone will define and implement COEB reform!
 - Timetable will be around 2010!
 - Will Osteopathic Medicine lead or follow?
- Who wants to commit themselves to the task of leading?
- Osteopathic educators can define and implement the first COEB reform

Competence

- COMPETENCE
 - Beliefs and Practices
 - Evidence

Competence

■ Beliefs and Practices

- Competence happens somewhere along a continuum
 - Naïve - Novice - Intermediate – Expert - Master
- Competence is Intellectual Skills-based (heavily predicated upon development of problem solving skills (PSS))
- Time (length of training) determines competence
- Competence is norm referenced (adequately assessed via traditional exams)

Competence

■ Evidence

■ Competence: “The Don’ts”

- Don’t have to happen
- Don’t have much to do with the development of PSS
- Don’t depend upon length of training time
- Don’t have to norm reference it

Competence

- Evidence:
 - Development of Intellectual Skills (IS) such as PSS in the absence of problem and task-specific knowledge will not lead to competence (IS are merely competency antecedents)
 - Competence is predominately knowledge based
 - Knowledge based competencies are problem/task-specific
 - Develops optimally with deliberate, focused problem/task-specific training and feedback
 - To be properly assessed, competencies must be measured one problem/task at a time

Competence

■ Impediments to COEB

- MEDED is OK the way it is!
 - We've been doing it this way for decades (comfort in traditions)
 - Everyone else does it this way (comfort in numbers)
- Same arguments against the adoption of EBM in practice
 - We've been doing patient care this way for decades
 - Everyone else practices this way

■ COEB Accelerators

- Understanding literature
- Technology/simulations

Competence

- Competence fundamentals
 - Intellectual Skill antecedents
 - Knowledge Base antecedents

Competence

- Bloom's Taxonomy
- A Hierarchy of Intellectual Skills and their development
 - (competence antecedents)
 - Information acquisition
 - Comprehension
 - Application
 - Analysis
 - Synthesis
 - Generation

Competence

- Competence and Bloom's Taxonomy
 - Information acquisition (Naïve student)
 - Comprehension (Novice student)
 - Application
 - Analysis
 - Synthesis
 - Three (Intermediate) Competence antecedents
 - Generation (Expert – Master antecedent)

Competence

	Naive	Novice	Intermediate (Competence)	Expert Master
Info Acquisition	X	X	X	X
Comprehension		X	X	X
Application			X	X
Analysis			X	X
Synthesis			X	X
Generation				X

Competence

- Using Bloom's taxonomy to evaluate curricular reforms
 - What percentage of curricular time is devoted to supporting the development of IS-related competence antecedents?

Competence

	Discipline/ Systems	PBL	Presen	COEB
Info Acquisition				
Comprehension				
Application				
Analysis				
Synthesis				
Generation				

Competence

	Discipline/ Systems	PBL	Presen	COEB
Info Acquisition	85 – 90%			
Comprehension	5-10%			
Application	5%			
Analysis	0%			
Synthesis	0%			
Generation	0%			

Competence

	Discipline/ Systems	PBL	Presen	COEB
Info Acquisition	85 – 90%	80-85%		
Comprehension	5-10%	10-15%		
Application	5%	10%		
Analysis	0%	0%		
Synthesis	0%	0%		
Generation	0%	0%		

Competence

	Discipline/ Systems	PBL	Presen	COEB
Info Acquisition	85 – 90%	80-85%	65-75%	
Comprehension	5-10%	10-15%	15-20%	
Application	5%	10%	15%	
Analysis	0%	0%	2-5%	
Synthesis	0%	0%	0%	
Generation	0%	0%	0%	

Competence

	Discipline/ Systems	PBL	Presen	COEB
Info Acquisition	85 – 90%	80-85%	65-75%	40-50%
Comprehension	5-10%	10-15%	15-20%	20-30%
Application	5%	10%	15%	20-25%
Analysis	0%	0%	2-5%	10-15%
Synthesis	0%	0%	0%	5-10%
Generation	0%	0%	0%	2-5%

Competence

- Knowledge Base antecedents to the development of competence
 - Competence is heavily predicated upon how the knowledge base is organized or structured
 - Knowledge-Based competencies appears to be organized around:
 - Specific Problems
 - Specific tasks associated with the solving of each problem

Competence

- Hundreds of medical problems
 - Chest pain, dyspnea, melena, vertigo, etc
- Three core medical tasks associated with every problem
 - Differential Diagnosis
 - Explanation
 - Treatment

Competence

- Competence-related IS (application, analysis & synthesis) are optimally developed in the context of problem and task - specific learning opportunities
- That is, CASE solving activities are the prerequisite for applying, analyzing and synthesizing their evolving problem and task-specific knowledge bases
- CASES are the catalyst, the grist for the intellectual mill, the context within which IS and problem/task-specific knowledge bases are organized/structure

Competence

- No cases, no IS, no PTSKB
- The more cases, the greater the IS, the better organized the PTSKB
- Cases give birth to competence

Competence

- Antecedents to the development of competence
 - To support the development of both the IS and Knowledge-Based antecedents to competence, you need to have:
 - Problem and task-specific cases sufficient to support the development of competence-related IS antecedents
 - The curricular content (the learners future knowledge base) organized around problems and tasks
 - What percentage of curricular time is devoted to supporting the development of problem and task-specific competence antecedents?

Competence

Application, Analysis and Synthesis	Disc/ Systems	PBL	Pres	COEB
A case in isolation				
A case in the context of a problem				
Multiple cases in the context of a problem				
Multiple cases in the context of multiple problems and tasks				

Competence

Application, Analysis and Synthesis	Disc/ Systems	PBL	Pres	COEB
A case in isolation	5%			
A case in the context of a problem	0%			
Multiple cases in the context of a problem	0%			
Multiple cases in the context of multiple problems and tasks	0%			

Competence

Application, Analysis and Synthesis	Disc/ Systems	PBL	Pres	COEB
A case in isolation	5%	5%		
A case in the context of a problem	0%	5%		
Multiple cases in the context of a problem	0%	0%		
Multiple cases in the context of multiple problems and tasks	0%	0%		

Competence

Application, Analysis and Synthesis	Disc/ Systems	PBL	Pres	COEB
A case in isolation	5%	5%	5%	
A case in the context of a problem	0%	5%	5%	
Multiple cases in the context of a problem	0%	0%	5%	
Multiple cases in the context of multiple problems and tasks	0%	0%	5%	

Competence

Application, Analysis and Synthesis	Disc/ Systems	PBL	Pres	COEB
A case in isolation	5%	5%	5%	0%
A case in the context of a problem	0%	5%	5%	0%
Multiple cases in the context of a problem	0%	0%	5%	15-25%
Multiple cases in the context of multiple problems and tasks	0%	0%	5%	20-30%

Competence

- Constructing a COEB curriculum
 - Significant reduction in time dedicated to information acquisition
 - Significant increase in time dedicated to IS development
 - Application, Analysis, Synthesis opportunities provided via the context of multiple cases representing multiple problems and tasks
 - Course content organized around problems and tasks
 - Problems: 100 – 150 Primary care-oriented (chest pain, dyspnea, melena, etc)
 - Tasks: DDX, explanation, treatment
 - Problem/Task-specific learning modules

Competence

- Result:
 - Problem/Task-specific, competencies-oriented, evidence-based curriculum
 - PTSCOEB curriculum

Instruction to Competence

- Three core Knowledge-Based Competencies
 - DDX
 - Explanation
 - Treatment
- DDX
 - The most difficult and resource intensive competence to train and learn

Instruction to Competence

■ DDX

- The most difficult and resource intensive competence
 - Deliberate practice involving multiple problem and disease-specific case exposures as basis for refinement of requisite IS (application, analysis and synthesis)
 - DDX competence requires development of additional IS (pattern matching and pattern discrimination)
 - Training cases selected at appropriate level of difficulty
 - Case-specific feedback oriented to refining Problem and Disease-specific Knowledge Base and IS
 - Opportunities for correction of errors

Instruction to Competence

- DDX

- Technological Accelerators

- Computer-based simulations

- High fidelity simulations

- High cost/resource intensive/limited training opportunities
 - Demonstrated psychomotor benefits
 - Case availability and appropriateness very limited
 - Significant feedback limitations
 - Faculty have significant limitations in defining learning objectives
 - Problem-specific, Knowledge-Based benefits not documented

Instruction to Competence

■ DDX

■ Technological Accelerators

■ Computer-based simulations

■ Low fidelity simulations

- Low cost/less resources/expanded training opportunities
- Demonstrated problem-specific, knowledge-based benefits
- Case availability and appropriateness virtually limitless
- Feedback virtually unlimited and tailored to specific student errors
- Faculty have few limitations in defining DDX learning objectives
- Psychomotor benefits - none

Instruction to Competence

■ DDX

■ Technological Accelerators

■ KBIT Computer-based, low fidelity DDX simulations provide:

- Faculty the opportunity to define problem and task (DDX)-specific training objectives
- Multiple cases readily available
- Objective and subjective means of selecting appropriate cases
- IS and Knowledge-Based feedback inherent to KBIT training modules
- Student have opportunities to correct and immediately learn from errors

Instruction to Competence

■ KBIT

■ Evidence

■ KBIT training:

- Improves student DDX performance up to 25% greater than faculty trained students
- Effect size-based performance improvements of one standard deviation
- Appears to correlate with, and perhaps support, performance improvements in non-DDX tasks (explanation and treatment) (Dr Dubin)
- Augments traditional coursework leading to increases in student satisfaction indices
- Perceived as significantly contributing to students evolving sense of DDX competence
- Provides instructional approaches and benefits not possible via traditional classroom instruction

Instruction to Competence

- KBIT DDX training simulator
 - Resource allocations
 - Minimal time investment of faculty (5-6 hours per module)
 - Heavily leverages faculty effort / student training ratio (ten to hundreds of times)
 - If one faculty member at one school develops a module (6 hours development time), all students across all osteopathic schools can have access to the module (thousands of hours of individualized instruction occur)
 - Provides opportunity for participating faculty and schools to engage in leading edge educational research
 - Accelerates osteopathic educators opportunity to create and implement COEB curricula

Assessment of Competence

- KBIT

- Evidence

- Provides objective measurement of problem and disease-specific 'performance to competence' (Dr Oglesby)

Building a PTSCOEB curricula

- One problem at a time
 - Small reduction of information acquisition in a given discipline or system course (approximately 2-3 days)
 - Each school inserts one Problem-Specific module
 - Training to:
 - DDX via KBIT
 - Explanation
 - Treatment
 - Defining and assessing competence performance levels in terms of:
 - DDX via KBIT
 - Explanation
 - Treatment
 - Sharing module, methods and results across all schools

A Time of Change

- A Timetable for Change
 - Major curricular reform initiatives:
 - 1950: Systems-based
 - 1970: Problem-based
 - 1990: Presentation-based
 - 2010: PTSCOEB

A Time of Change

- A Time for Leadership and Commitment
 - Who will define COEB curricular reform?
 - Will Osteopathic Medicine lead or follow?
 - Uncommitted / Silent Majority
 - Who are we kidding?
 - We're too small – have too few resources
 - D.O.'s always follow!
 - Isn't my primary job to keep my job?

A Time of Change

- A Time for Leadership and Commitment
- Is the Osteopathic educational community willing to commit to the task of leading COEB reform?

A Time of Change

- COEB initiative
 - One problem module to be developed per school
 - Twenty modules available to all schools after one year
 - 100 modules available to all schools by 2010
 - SOME publishes results of COEB initiative

A Time of Change

- Come to workshop this Friday evening
- Ask questions
- Dream dreams
- Make commitment to create tomorrow's reality
 - Academic Medicine
 - Proceedings of the RIME Conference: November, 2010
 - Creation and Implementation of Competencies-Oriented, Evidence-Based Curricula. Authors – SOME
 - New York Times & Wall Street Journal articles state: Osteopathic educators step forward and create first 21st century curricula; allopathic educators acknowledge preliminary data looks promising