Medical Education Journal Club

Friday, April 25, 2014

AHC2 170

FIU | Herbert Wertheim College of Medicine

Medical Education Journal Club

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Disclosure Information

Activity Directors / Planners / Reviewers / Faculty

Name	Role	Disclosure / Resolution
Fauzia Nausheen, MD	Speaker	Reports no relevant financial relationships.
Tracey Weiler, PhD	Speaker	Reports no relevant financial relationships.

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Learning Objectives

- Be able to list the search results for one medical education database consulted in the design of a course or teaching session.
- Conduct a critical appraisal of an article in the medical education research.
- Identify the applicability of research results to one's own course or teaching session.

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Medical Education Journal Club

- Establish a forum for faculty to share and discuss recent literature in medical education
- Use best evidence in medical education literature to evaluate and advance current practices in our educational program
- Establish a culture that promotes curricular innovation and change in an evidence-based manner
- Stimulate educational scholarship

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Cognition Before Curriculum: Rethinking the Integration of Basic Science and Clinical Learning

Kulamakan Mahan Kulasegaram, Maria Athina Martimianakis, PhD,
Maria Mylopoulos, PhD, Cynthia R. Whitehead, MD, PhD, and Nicole N. Woods, PhD

Academic Medicine, Vol. 88, No. 10 / October 2013

http://www.polleverywhere.com/tweiler

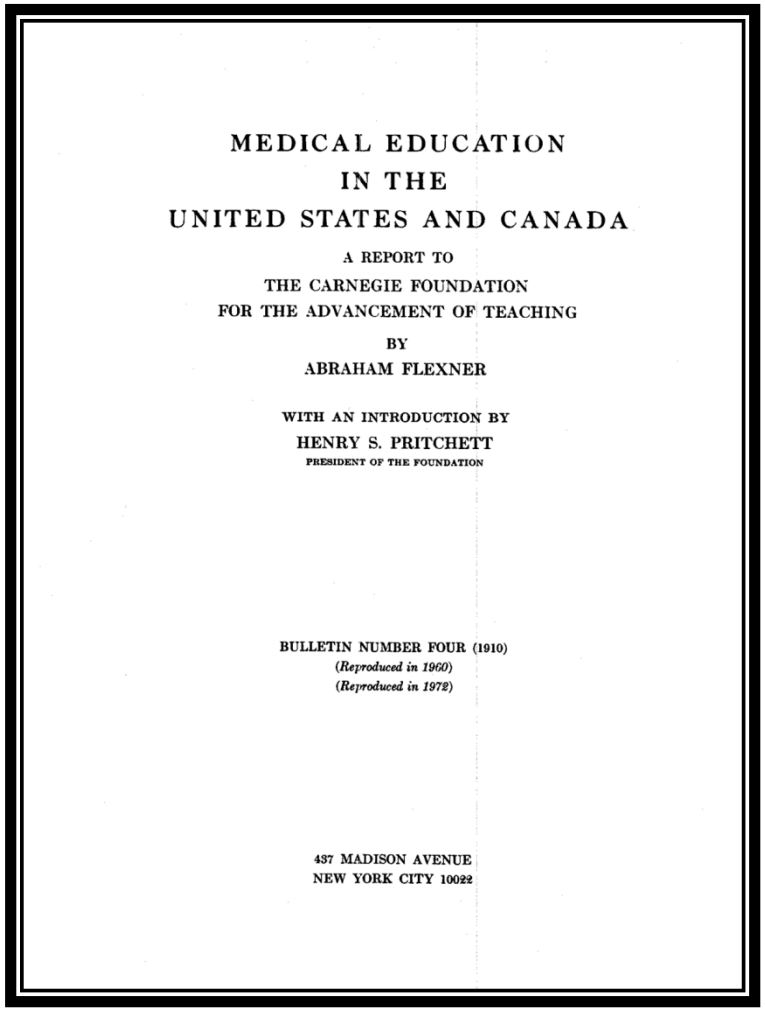
Tracey Weiler

Fauzia Nausheen

Learning Outcomes for Today

- Describe continuum of program, course and session level integration
- Summarize techniques and approaches for integration at the level of program / course / session
- Apply integration framework to the FIU HWCOM curriculum
- Propose a mechanism for integrative assessment and writing of exam questions

Flexner Report - 1910



MEDICAL EDUCATION
IN THE
UNITED STATES AND CANADA

A REPORT TO
THE CARNEGIE FOUNDATION
FOR THE ADVANCEMENT OF TEACHING

BY
ABRAHAM FLEXNER

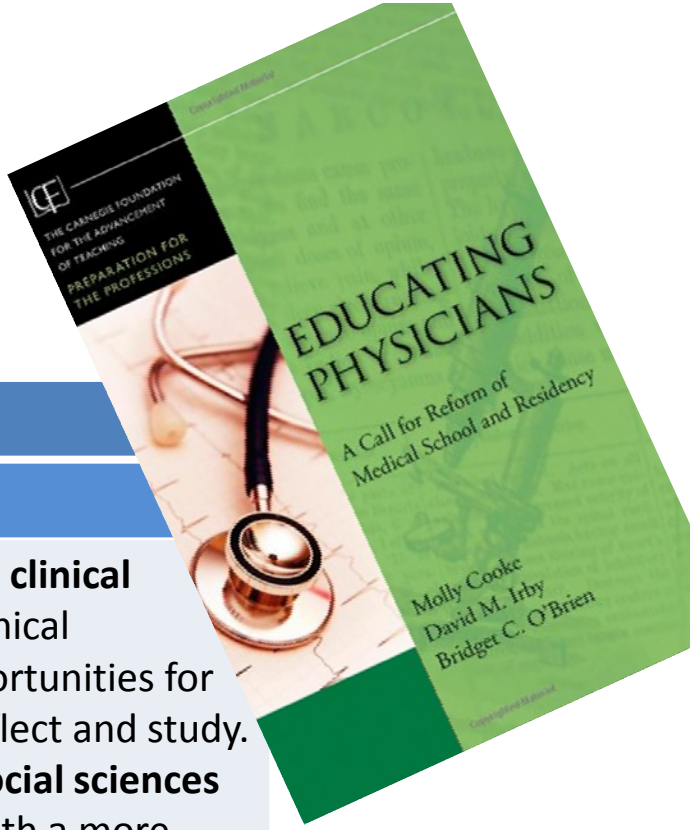
WITH AN INTRODUCTION BY
HENRY S. PRITCHETT
PRESIDENT OF THE FOUNDATION

BULLETIN NUMBER FOUR (1910)
(*Reproduced in 1960*)
(*Reproduced in 1972*)

437 MADISON AVENUE
NEW YORK CITY 10022

Goal: Integration	
Challenge	Recommendation
• Limited science in the curriculum • No connection between practice and science	• **Integrate advances in the laboratory with practice at the bedside** • Provide clinical training in university teaching hospitals

Carnegie Report - 2010



Goal: Integration	
Challenge	Recommendation
• **Poor connections** between formal knowledge and experiential learning • **Fragmented understanding** of patient experience • Poor understanding of **non-clinical and civic roles** of physicians • Inadequate attention to the skills required for **effective team-delivered care** in a complex health care system	• **Connect formal knowledge to clinical experience**, including early clinical immersion and adequate opportunities for more advanced learners to reflect and study. • **Integrate basic, clinical and social sciences** • Engage learners at all levels with a more comprehensive perspective on patients' experience of illness and care, including more **longitudinal connections with patients**. • Provide opportunities for learners to experience the **broader professional roles of physicians, including educator, advocate, investigator** • Incorporate **inter-professional education and teamwork** into the curriculum

What is Integration?

- Definition - Wikipedia
  - Connecting skills and knowledge from multiple sources and experiences
  - Applying skills and practices in various settings
  - Utilizing diverse and even contradictory points of view

Is it a Goal? Is it a Strategy?

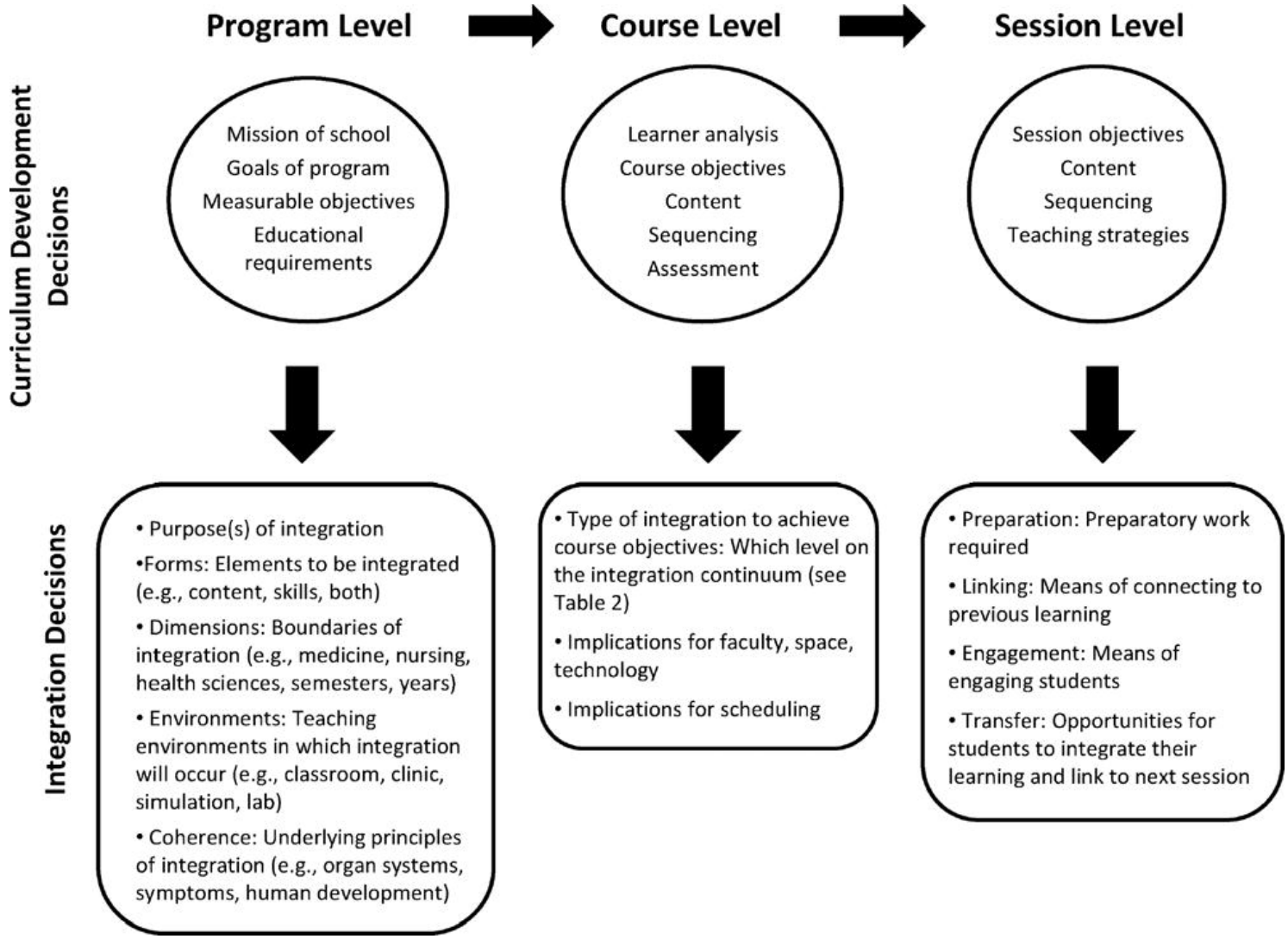
Perspective: **Deconstructing Integration: A Framework for the Rational Application of Integration as a Guiding Curricular Strategy**

Ellen Goldman, EdD, and W. Scott Schroth, MD, MPH

Academic Medicine, Vol. 87, No. 6 / June 2012

- *"Deliberate unification of separate areas of knowledge"*
- Goal or **strategy**?
  - "often no clear distinction is made between the aims and objectives of education provision and the strategies adopted for their achievement; educational concepts may become ends in themselves, and the overall aim becomes lost" Spenser & Jordan 1999
- Needed an organizational framework for the operational concept of integration

Organizing Framework



Cognition before Curriculum… University of Toronto

Cognition Before Curriculum: Rethinking the Integration of Basic Science and Clinical Learning

Kulamakan Mahan Kulasegaram, Maria Athina Martimianakis, PhD,
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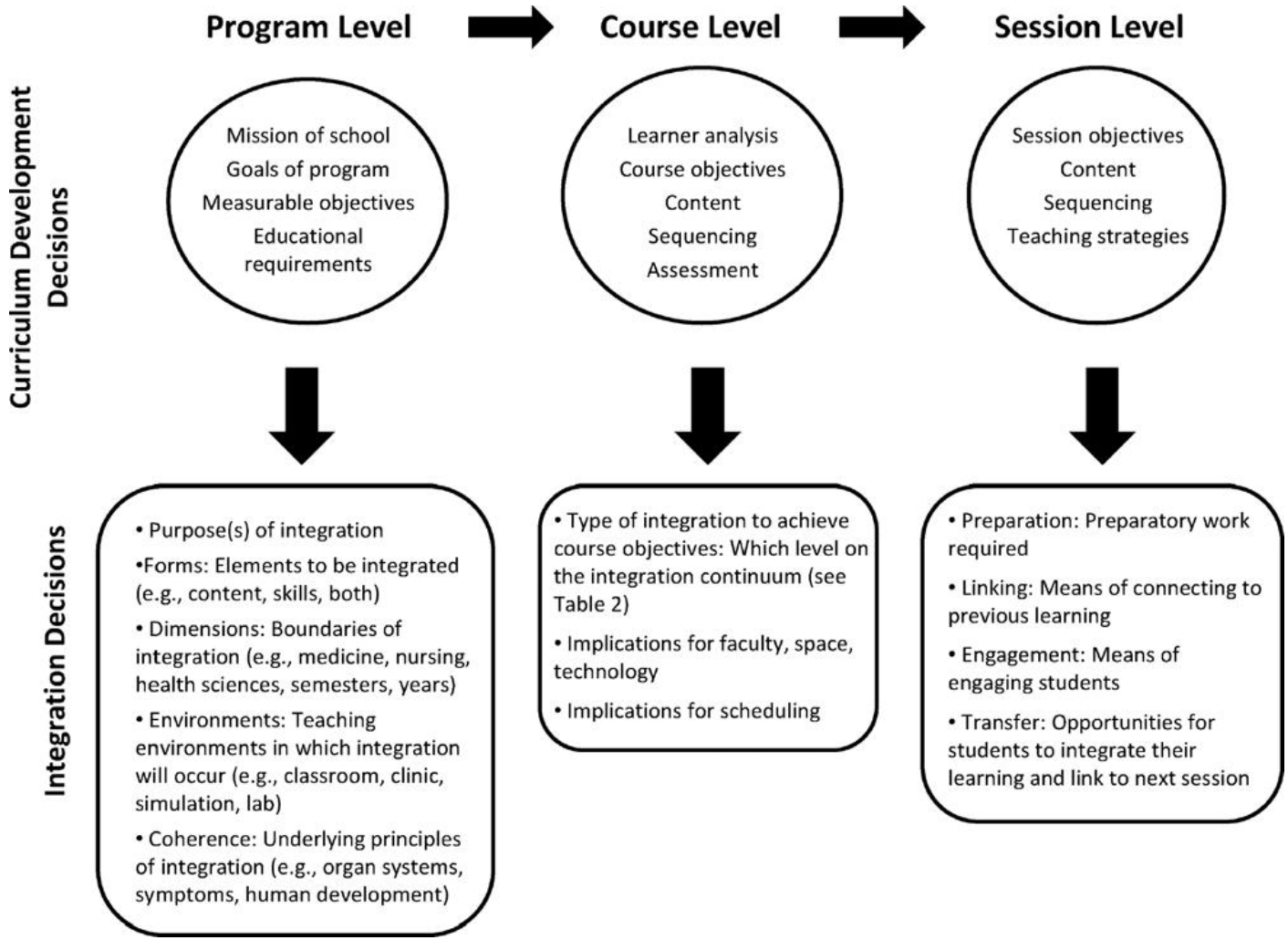
METHODS

- Relevant literature related to integration
  - 30 yrs (1982-2012)
  - Biomedical science (medical) and clinical science
  - papers that aimed to improve learning outcomes or skills
- Papers organized as per Integration Framework (Goldman and Schroth)
  - Programs (superstructure)
  - Courses (focused on specific unit of knowledge)
  - Teaching Sessions
- Articles evaluated for each of three characteristics
  - Method /approach for integration
  - Support for methods
  - Evidence for success of integration

RESULTS


Program Level
Course Level
Session Level
Curriculum Development Decisions
Mission of school
Goals of program
Measurable objectives
Educational requirements
Learner analysis
Course objectives
Content
Sequencing
Assessment
Session objectives
Content
Sequencing
Teaching strategies
Integration Decisions
• Purpose(s) of integration
•Forms: Elements to be integrated (e.g., content, skills, both)
• Dimensions: Boundaries of integration (e.g., medicine, nursing, health sciences, semesters, years)
• Environments: Teaching environments in which integration will occur (e.g., classroom, clinic, simulation, lab)
• Coherence: Underlying principles of integration (e.g., organ systems, symptoms, human development)
• Type of integration to achieve course objectives: Which level on the integration continuum (see Table 2)
• Implications for faculty, space, technology
• Implications for scheduling
• Preparation: Preparatory work required
• Linking: Means of connecting to previous learning
• Engagement: Means of engaging students
• Transfer: Opportunities for students to integrate their learning and link to next session

Program Level Integration Strategy

Considerations (framing question)	Decisions required	Examples
Purpose(s) (Why?)	What is the integration trying to achieve?	• Help students deal with complex problems • Enhance functional competency • Foster higher-order thinking
Forms (What?)	Which elements are to be integrated?	• Content knowledge • Skill development
Dimensions (When?)	What are the boundaries of the integration activity?	• Horizontal integration (semester or year) • Vertical integration (multiple years) • Both horizontal and vertical • Interprofessional
Environments (Where?)	In what teaching environments should integration take place?	• Classroom • Simulation center • Clinic/bedside
Coherence (How?)	What underlying principle or principles unify the integration activity and provide it with integrity?	• Organ systems • Stages of human development • Disease or symptom • Competencies

Goldman, E., and Schroth, W.S. (2012). Perspective: Deconstructing Integration: A Framework for the Rational Application of Integration as a Guiding Curricular Strategy. [Miscellaneous Article]. Academic Medicine June 2012 *87*, 729–734.

Program Level Results

Model
Back to Basic Sciences Clerkship Model
Basic Science to guide learning of clinical concepts *students thought the basic sciences more relevant through this approach*
Increase proximity of basic and clinical teaching *Invite basic scientist in clinical settings and clinical faculty early in the curriculum* *Best practices in redeploying the teaching personnel are unclear*
PBL (traditional or hybrid) *Depends on content, setting and tutors*

Kulasegaram, et al. (2013). Cognition Before Curriculum: Rethinking the Integration of Basic Science and Clinical Learning. Academic Medicine *88*, 1578–1585.

Program Level Results

1. Poor transfer of content from one context to other
2. Students training to form advance schema for clinical reasoning may not appreciate relevance of basic science
3. Review of basic science is an extra cognitive load with extensive demands of clinical learning
4. More useful to have experiential learning in the early years of training
5. Teacher-led integrated curriculum around specific organ systems outperformed the PBL and traditional teaching

Program Integration @ FIU

Results

http://www.polleverywhere.com/tweiler

Program Integration @ FIU

patient-centered curriculum , cultural competence

Model	FIU	Comment
Back to Basic Sciences Clerkship Model	Neuro clerkship	Neuroanatomical review in TBL
Basic Science to guide learning of Clinical concepts	Clinical skill 2nd year	Integrative Case based learning, and clinical skills
Increase proximity of Basic and Clinical teaching	Neighborhood HELP program	Integrative clinical skills and N-help
PBL (traditional or hybrid)	Osler Friday	Integrated Clerkship PBL

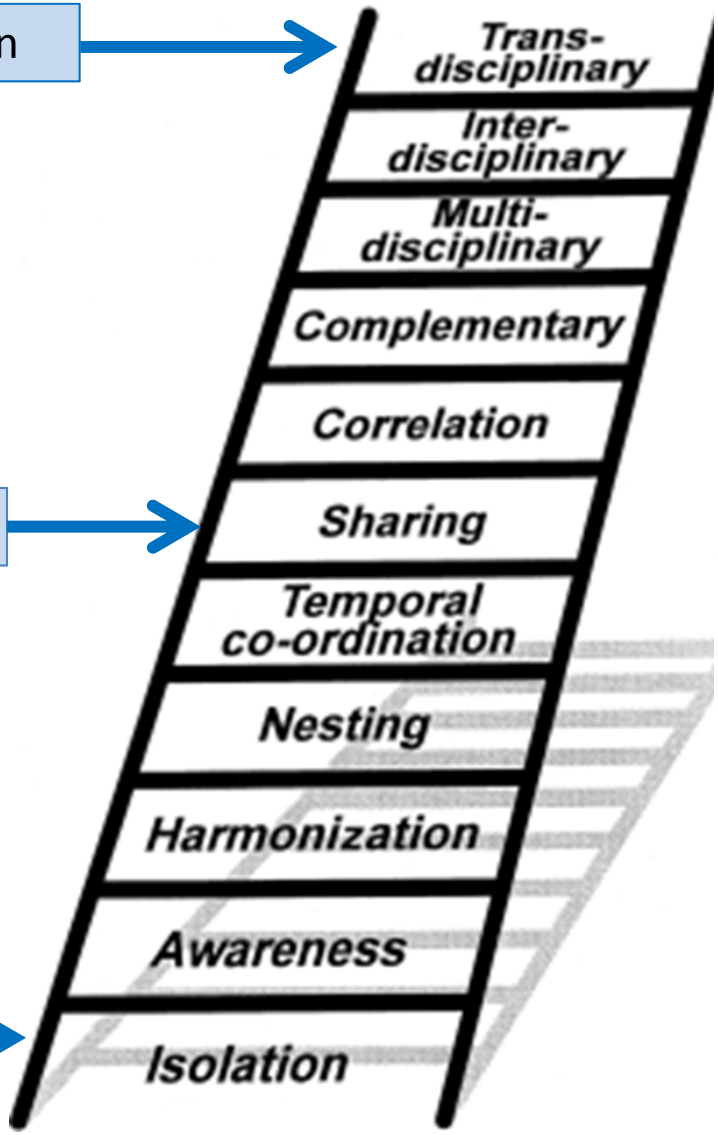
Why?
What?
When?
Where?
How?

- Success of three touch system ?

Course Level Integration Strategy

Completely fused design

Course Level Integration
Harden's 'Integration Ladder'



Jointly plan and deliver content

"What type of integration is needed to achieve the course objectives?"

No Integration

(2000). The integration ladder: a tool for curriculum planning and evaluation. Medical Education *34*, 551–557.

Course Level Results

Model	Comment

Contextualization of basic science concepts
• Basic science concept that is demonstrably applied to clinical knowledge
	• Clinical realm with applied basic science concepts
	• Clinical problem becomes demonstration of a concept in action
	  • Goal can be misdirected
	  • Conceptual errors
	  • Require further refinement

Shared teaching • Personnel based approach • Sequential or simultaneous	Requires: • Synergy of teachers • Depth of content • Quality of exchange between basic scientist and clinicians • Can result in mini 2+2 curriculum

➢ Actual knowledge gain and learning outcomes ?

Course Integration @ FIU

Results

http://www.polleverywhere.com/tweiler

Course Integration @ FIU

Model	FIU	Comment
Contextualization of basic science concepts in clinical teaching	• TBL, CBL (small groups and large groups) • Application exercises • Core cases	Does knowledge learned in one context apply to another?
Shared teaching • Simultaneous? • Sequential?	• Basic science and Clinical science (synergy, depth of knowledge, quality of exchange)	• Linking knowledge • 2+2 miniature ??

Session Level Integration Strategy

Session component	Purpose	Examples
Preparation	• Give the learner needed background information • Set expectations for what is to come	• Assign readings, questions, or problems in advance • Describe clearly how session will run
Linking	• Stimulate the brain: Connect to what the learner already knows and/or has experienced	• Reference/recall specifics from prior session and/or other coursework • Query about recent experiences
Engagement	• Excite: Hook the learner by showing the relevance • Present material and learning guidance • Engage: Have the learner use the material to integrate it with prior knowledge and experience • Foster awareness: Help the learner realize what he or she has gained	• Use alarming statistics, a story of a patient, etc., as a hook • Present a case, problem, project, etc., and the thought/action desired • Assign individuals, pairs, or small groups to solve a problem, develop a plan, formulate a response, etc. • Provide opportunity for reflection and discussion; feedback
Transfer	• Enhance retention of new learning	• Provide cues and strategies for future retrieval • Describe next session

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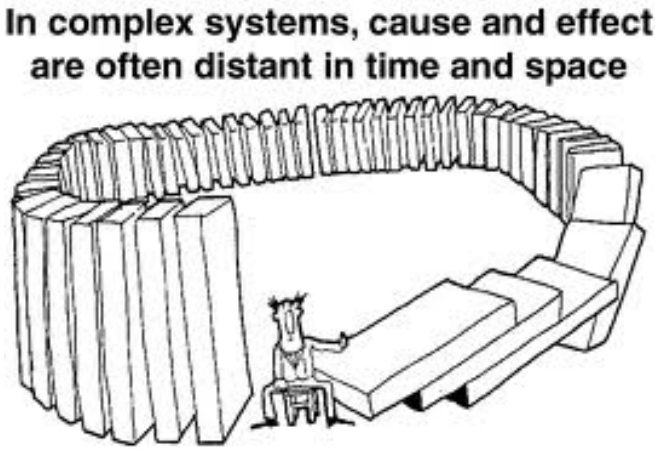
Session Level Results

Model	Comment	Success?
1. Basic and clinical sciences in a causal network	• Causal story ↑ ability to diagnose new cases • Integrated explanations rather than evidence-based clinical algorithms to diagnose and retain information	**YES** • Randomized control trials • Simulations of educational interventions
2. Encapsulation Theory	Expertise is a process that enfolds knowledge into meaningful categories and develops illness scripts	**YES** • Some evidence from small studies with experts



Session Integration at FIU

Results

http://www.polleverywhere.com/tweiler

Session Integration @ FIU

Model	FIU

1. Basic and clinical sciences in a causal network	• Pharmacology, biochemistry, physiology and genetics
	  • Effect of drug is due to interaction with target which causes decrease in …
	• Physiology, biochemistry, genetics
	  • Genetic defect inactivates protein which increases concentration of ions which …

2. Encapsulation Theory	• Second year CBL cases • Third year Osler Friday PBL cases

FIU Session Integration

Component	FIU
Preparation	• Provide readings • Learning Objectives
Linking	• "What do you know about X?" • "Remember when Dr. Who mentioned Y?" • "I talked about Z last week… What did I say?"
Engagement	• Show relevance with clinical perspective • Application exercises where students do something with their new knowledge • PBL/TBL where students need to figure out what they know and don't know and where to find the answers
Transfer	• Apply new knowledge through clicker questions • Physiology – apply principles to clinical case; create a question for further study;

Study Conclusion

- Critical Narrative Review with some anecdotal evidence
- Evaluation of successful integration using learning outcomes is scarce
- Many papers have integration described as goal rather than a process
- Integration needs to have a purpose
  - What are you trying to achieve in the learner?

Discussion

- Planner vs. Learner
  - Integration must happen for the learner, not just the teacher
  - Integration @ top levels of Bloom's taxonomy
    - Synthesis
    - Evaluation
- Systematic approach to integration
  - Program/Course/Session
  - Infrastructure/Faculty/Time Resources
- Program Level: Success of three touch system ?
- Course Level: Actual knowledge gain & learning outcomes?
- Role of integrative assessment and writing of exam questions?

Learning Outcomes for Today

- Describe continuum of program, course and session level integration
- Summarize techniques and approaches for integration at the level of program / course / session
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Acknowledgements

Office of Medical Education

- Carla Lupi
- Chris Castro

Thank You!

Course Level Integration options

Focus on whole field with real problems to get student-initiated integration

≥ 2disciplines are combined; no individual subject area is identifiable

Many subject areas in a single theme, problem, or issues-based course

Integrated courses & subject courses with temporal coordination

An area of common interest to multiple subjects is introduced

Complementary disciplines jointly plan and deliver content

Timing of related subjects aligned across independent courses

Content/skills infused into existing subject course; “clin.corr.”

Isolation, but faculty consult with others to avoid overlap

Isolation, but faculty know content taught by others

Independent teaching by subject matter experts