Learning for Practice: Insights and Opportunities for Education and Research

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Objectives:

- Apply key features of learning sciences and learning theories to professional education in the health professions
- Explore issues that are central to our professional dialogues about the role of competency-based education
- Identify critical, timely questions that are central to learning in health professions education that can be shared by a network of education researchers

Connecting Learning and Education research
Competency-based education: What - really??
Learning Sciences: Essential for education research
Educational research is the hardest science of all....

We do our science under conditions that physical scientists find intolerable....

--David Berliner, 2002

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Educational Research: Common Challenges

Teaching and learning is messy....

- Complexity of the teaching and learning environment
- Concepts from the “hard sciences” do not apply to educational research
- Student/learner outcomes are not necessarily a direct outcome in the teaching/learning environment
- Limited funding - dominant culture focus on hard science
- Lack of career ladders and post-doctoral training and funding
- Educational research needs both RIGOR and REALISM

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Learning environment

- Phenomena, events, problems, people and processes - ALL material for teaching and learning
- Human improvement is the outcome - Just as with patients - we do NOT have a direct effect on the outcome...
Do we agree?

No evidence of learning

No teaching

OUR CHALLENGE...

Need to rethink LEARNING

“Right answer”

Managing Situations of Certainty and Uncertainty

Professional Education

- Declarative Knowledge
  - Course work emphasis
    - Facts and information
  - Theoretical knowledge

Clinical Practice

- Declarative Knowledge
- Procedural Knowledge
  - How to do things
  - Reflective knowledge (thinking)

RIGHT Answers

Clinical Practice

Uncertainty
Key learning concepts

- Learning is a **process not a product** (but takes place in the mind) infer from products or performance.
- Learning involves a change in knowledge, beliefs, behaviors or attitudes. Change evolves over time and needs to have a lasting impact on how students think and act.
- Learning is NOT something done to students, but something students themselves do. How the student interprets and responds to their experiences.

Learning Sciences

- Interdisciplinary field that studies teaching and learning with the goal - better understand the cognitive and social processes that lead to the most effective learning.
- How People Learn (basic facts about learning)
  - Importance of **DEEP conceptual understanding**
  - **Focus on LEARNING** not simply teaching/instruction
  - **Critical importance of the LEARNING environment**
  - Building on learner’s prior knowledge
  - **Centrality of REFLECTION**

Moving beyond “covering the material”

- **TRADITIONAL LEARNING**
  - Treat course material as unrelated to what they already know
  - Courses - disconnected bits of knowledge
  - Memorization without understanding why
  - Cannot make sense of new ideas
  - Facts and procedures are seen as static knowledge - authority driven
  - Memorize without reflection
It is about DEEP learning

- Requires learners link new ideas/concepts to previous knowledge and experience
- Integrate knowledge with CONCEPTUAL systems
- Look for patterns and underlying principles
- Evaluate new ideas - relate to conclusions
- Understand process of DIALOGUE - knowledge is created - examine argument
- Reflect on own understanding and own process of learning

Source: Sawyer RK. The Learning Sciences. 2nd ed. New York, NY; Cambridge University Press. 2014

Theories: Knowledge and Learning

Cognition  Culture

Sociocultural theory

Behavior  Context

Situated cognition


Knowledge ---Thinking ---- Doing

BEING

Declarative
- Facts
- Information

Procedural
- How to do...
- How to be...

What is LEFT out?
- Moral sense
- Self
- Social context

BEING
Cognitive Theories

- Dual process (slow/analytic - fast/non-analytic)
- Cognitive load
- Schema and script (knowledge structure)

Non-cognitive Theories

- Motivational, anxiety, engagement
- Contextual theories (situation awareness)

Cognitive Load

- Schema and script (knowledge structure)

Social Cognitive Theories

- Situativity (social cognitive theories)

Non-cognitive Theories

- Motivational, anxiety, engagement

LEARNING

Learning Theories

- Cognitive
- Non-cognitive

Learner

- Self-directed learning skills
- Self-assessment skills

Influence

Calibrate

Influence

Calibrate

REFLECTION

Reflection in action

Meta-cognition

Reflection on action

Reflection for action


Learning Theories: Cognitive

- Self-concept
- Self-efficacy

Non-cognitive

- Illusory superiority

Influence Calibrate

Inform

Impact


Novice Master

Reflection in action

Reflection on action

Reflection for action
What is professional competence?

Three Dimensions of Professional Work

To think

To perform

To conduct

Analytic thinking

Skillful practice

Wise judgment

What is professional competence?

Professional competence is the habitual and judicial use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served. (Epstein, Hundert. JAMA.2002;287:226-235)

Professional competence is complex and contextual.

PROFESSIONAL COMPETENCE

Developmental

Impermanent

Context dependent

Context dependent

Context dependent
OUR CHALLENGE: Academic-Clinical MODELS

Physical Therapy Education
What happens across a career?

Entry-level Degree: DPT

Specialties

Residency or Fellowship Training

Professional competence…Novice development….Adaptive expertise
What is the continuum of learning across a career for physical therapists?

Theory is our Friend.....

Practice-based learning.... has curriculum and structure....

Describing workplaces as being informal, non-formal, or unstructured learning environments is negative, imprecise, and ill-focused

...It is imprecise and misleading to describe individuals engagement in work activities as being unplanned or unstructured, as they are highly Structured and intentional....

(Billett, 2004)
SITUATED LEARNING CONCEPTS
Learning in the Community of Practice

Power of diverse community of learners across students, residents, graduate students, fellows...

Learner moves from legitimate peripheral participant to a CORE participant of the CoP

CoP is a vehicle for KNOWLEDGE Translation and Transformation through meaningful exchange among network members


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Three Apprenticeships of Professional Education

1. Cognitive or Intellectual Apprenticeship
   - Knowledge and way of thinking academic knowledge base habits of mind faculty judge as most important to the profession
   - Habits of head

2. Practical Apprenticeship of Skill, Practice-based learning
   - Practice-based learning clinical reasoning and clinical judgment where students learn habits of hand required for competent practice
   - Habits of hand

3. Apprenticeship of Identity Formation
   - Apprenticeship to ethical standards social roles and professional responsibilities that mark the professional
   - Habits of heart

These cannot be reduced to simply Cognitive, Psycho-motor and Affective Domains

Habits of head
- Habits of heart
- Habits of hand

Three Apprenticeships of Professional Education

Principles for Designing Cognitive Apprenticeship Environments

Content
- Knowledge
- Critical thinking
- Learning strategies

Methods
- Modeling
- Coaching
- Scaffolding
- Reflection

Sociology
- Emotional learning
- Community of practice
- Motivation

Sequencing
- Increase complexity
- Increase diversity

The NEXUS: Where learning happens...

Focus: Primacy of practice

LEARNER AND RESEARCH RESPONSIBILITY: Individual agency and responsibility core of professionalism

Dimensions:
- Intended, experienced, deliberate/ spontaneous, situated

From: Sawyer RK. The Learning Sciences. 2nd ed. Chapter 6; Collins and Kapur – Cognitive apprenticeship; New York, NY; Cambridge University Press. 2014

Higgs J. Education Research: Making the Invisible - Visible. WCPT; 2019
Basic research
Fundamental tools (measurement, skills assessment, evaluation)

Translational research
Linking educational needs with application of basic research including behavioral changes

Applied (clinical) research
Field trials with larger cohorts to investigate benefits of educational interventions

Systems research
Investigate larger questions, when interventions in complex systems in education and health care

Can we learn from our colleagues engaged in clinical research?


Can we learn from our colleagues engaged in clinical research?

What about health professions education? Do we share common issues/problems?
Ideas/Opportunities for scholarship:

- Organize research around a framework
- Collaboration with practitioners/participatory research
- Create scholarly communities - look across settings and professions
- Make a plan for translational research
  - What are the practical steps that are feasible to implement?

Questions......