OLLE TEN CATE

Chaiyapruk Kusumaphanyo MD, MMEd, SFHEA

OLLE TEN CATE

MD PhD from U of Amsterdam

Fulltime Professor, Utrecht U

Adjunct Professor, UCSF

Program director, undergrad ME, UMCU

Director, Center for Research and Development of Education, UMCU

President, Netherlands Associations for Medical Education (NVMO)

OLLE TEN CATE

Publications : 350+

Editorial boards : *Med Teach, J Grad Med Educ*

Awards : John P. Hubbard Award, NVMO *Han Moll Penning* life-time award, Ian R. Hart Award

Interest : curriculum development, peer teaching, competency-based education

Special interest : entrustable professional activities

EPAs

EPA

commentaries

Entrustability of professional activities and competency-based training

Olle ten Cate

The idea of competency-based training (CBT) seems to have entered medical education with a speed and impact that has outperformed problem-based learning in the 1980s and 1990s. Within less than 10 years, the CanMEDS competencies in Canada, the ACGME competencies in the United States and similar frameworks in other countries have been introduced for postgraduate medical training countrywide, and examples of competency-based undergraduate medical training have now begun to emerge.[1–3] The growing number and impact of medical education journals and (medical education

fields other than medical education.[4,5] The way in which we succeed in defining competencies, implement competency-based education and – most crucially – assess competencies will be critical.

> *2000–10 could be remembered as a decade of CBT in medical education*

The literature suggests that competencies should be (a) specific, (b) comprehensive (i.e. include knowledge, attitude and skill), (c) durable, (d) trainable, (e) measurable, (f) related to professional

respect, trust is essential. Every day, supervisors consider whether or not to delegate professional activities to trainees. They must trust them to perform these with reasonable chances of success. The information to guide these decisions is often implicit. New residents 'may be assumed' to have enough knowledge and skill, based on their MD diploma, to begin walking the ward, to carry out full physical examinations and to take systematic histories. In more delicate situations, trust must be earned by demonstrating specific skills and performances with an attending supervisor present. In addition, colleagues or nursing staff

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Emerging Competency-based training

Difficulty in translating competency domains into training practices and monitoring and assessing trainees

EPAs

… designed to link competencies to clinical practices and make them feasible …

Olle Ten Cate. Entrustability of professional activities and competency-based training. Med Educ 2005 Nov; 39(12):1176-7

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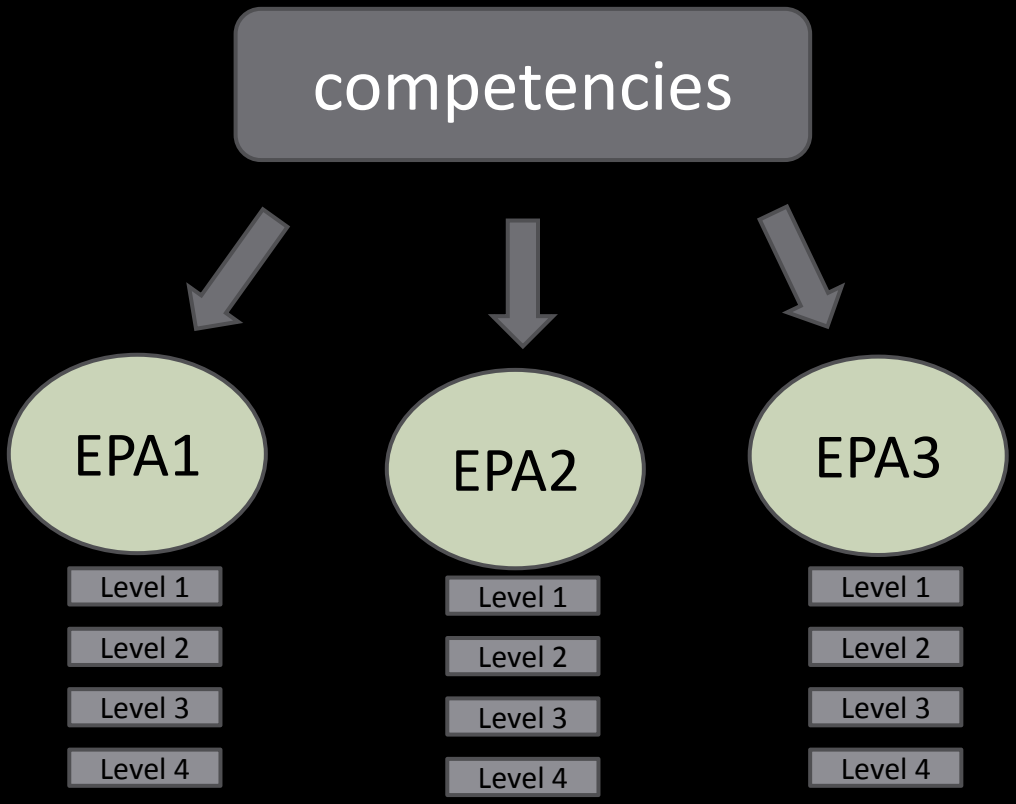

Olle Ten Cate. Entrustability of professional activities and competency-based training. Med Educ 2005 Nov; 39(12):1176-7

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	EPA1	EPA2	EPA3	EPA4	EPA5	EPA6
Competency 1	•		•	•	•	
Competency 2		•	•	•		
Competency 3		•	•	•		•
Competency 4	•	•				
Competency 5	•	•	•		•	•
Competency 6			•			
Competency 7		•	•			•

Figure 1. EPAs-competencies matrix.

Olle Ten Cate et al. Curriculum development for the workplace using Entrustable Professional Activities (EPAs): AMEE Guide No. 99. Med Teach. 2015;37(11):983-1002.

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AMEE GUIDE

Curriculum development for the workplace using Entrustable Professional Activities (EPAs): AMEE Guide No. 99

OLLE TEN CATE[1], HUIJU CARRIE CHEN[2], REINIER G. HOFF[1], HARM PETERS[3], HAROLD BOK[4], & MARIEKE VAN DER SCHAAF[4]

[1]University Medical Center Utrecht, The Netherlands, [2]University of California San Francisco, USA, [3]Charité University, Germany [4]Utrecht University, The Netherlands

Abstract

This Guide was written to support educators interested in building a competency-based workplace curriculum. It aims to provide an up-to-date overview of the literature on Entrustable Professional Activities (EPAs), supplemented with suggestions for practical application to curriculum construction, assessment and educational technology.

The Guide first introduces concepts and definitions related to EPAs and then guidance for their identification, elaboration and validation, while clarifying common misunderstandings about EPAs. A matrix-mapping approach of combining EPAs with competencies is discussed, and related to existing concepts such as competency milestones. A specific section is devoted to entrustment decision-making as an inextricable part of working with EPAs. In using EPAs, assessment in the workplace is translated to entrustment decision-making for designated levels of permitted autonomy, ranging from acting under full supervision to providing supervision to a junior learner. A final section is devoted to the use of technology, including mobile devices and electronic portfolios to support feedback to trainees about their progress and to support entrustment decision-making by

Ten Cate O et al. Curriculum development for the workplace using Entrustable Professional Activities (EPAs): AMEE Guide No. 99. Med Teach. 2015; 37(11):983-1002.

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EDITORIAL

Competency-Based Education, Entrustable Professional Activities, and the Power of Language

OLLE TEN CATE, PHD

Editing a journal is all about language. Authors' thoughts and experiences—their message—must be translated into text, revised, and edited to convey to the readers the concepts intended by the authors. Some concepts are complex and need powerful language to be expressed.

A competency-based education movement is dominating graduate medical education reform around the world in the 21st century. This movement can be viewed as a struggle to formulate the values of the medical profession in words that enable a new perspective on curricula, training, and assessment. Without new language, this innovation would not have been possible. The 7 roles of the CanMEDS competency framework (medical expert, communicator, collaborator, health advocate, manager, scholar, and professional), now prevalent around the world, represent detailed descriptions that can be too long or too theoretical to be practical.

As far back as the 1950s, Miller[5] argued that human working memory is limited and cannot contain more than 7 (±2) independent elements at a time. To use an elaborate framework of competencies, subcompetencies, and milestones while observing trainees may cause cognitive overload. If clinical educators cannot comprehend the competency concept and all of its new language, they may not be able to effectively assess trainee competencies.

Here, is where the *entrustable professional activity* (EPA) concept emerges. The EPAs were designed to link competencies to clinical practice and make them feasible.[6] The EPAs—tasks or responsibilities that can be entrusted to a trainee once sufficient, specific competence is reached to

Olle ten Cate. Competency-Based Education, Entrustable Professional Activities, and the Power of Language
J Grad Med Educ. 2013 Mar; 5(1): 6–7.

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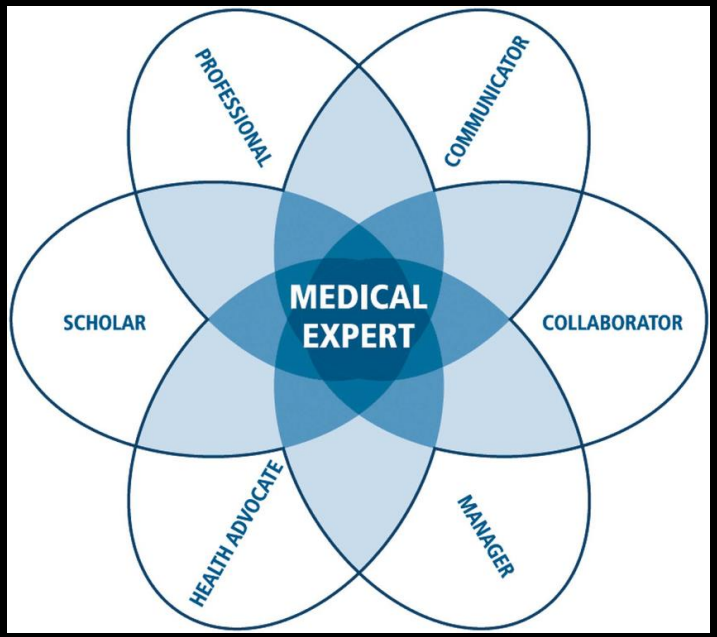
The power of language



Olle ten Cate. Competency-Based Education, Entrustable Professional Activities, and the Power of Language J Grad Med Educ. 2013 Mar; 5(1): 6–7.

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The power of language

"… if competencies, milestones, and EPAs are to become the language in postgraduate curricula, it will be of utmost importance to use common definitions and have a common understanding of what the terminology means …"

Olle ten Cate. Competency-Based Education, Entrustable Professional Activities, and the Power of Language J Grad Med Educ. 2013 Mar; 5(1): 6–7.

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REVIEW ARTICLE

KJME

A primer on entrustable professional activities

Olle ten Cate

Center for Research and Development of Education, University Medical Center Utrecht, Utrecht, The Netherlands

Entrustable professional activities (EPAs) have become a popular topic within competency-based medical education programs in many countries and hundreds of publications within only a few years. This paper was written to introduce the ins and outs of EPAs. After a brief historical overview, the rational of EPAs, as a bridge between a competency framework and daily clinical practice, is explained. Next, entrustment decision-making as a form of assessment is elaborated and framework of levels of supervision is presented. For readers interested to apply the concept in practice a stepwise approach to curriculum development is proposed. The paper concludes with an overview of the state of the art of working with EPAs in across disciplines, professions and countries.

Key Words: Clinical practice, Competency, Curriculum, Medical education, Entrustable professional activities

Olle ten Cate. A primer on entrustable professional activities. Korean J Med Ed. 2018 Mar; 30(1): 1-10.

TIME-VARIABLE TRAINING

1960-70s John Carroll

"… the degree of learning that occurs is a function of the time *spent* by the learner and the time *needed* by the same learner to attain an educational objective …"

Ten Cate O et al. Time-Variable Training in Medicine: Theoretical Considerations. Acad Med. 2018 Mar; 93:S6-S11.

TIME-VARIABLE TRAINING

But NOT in the clinical workplace

Success in clinical training needs

- self-regulation/motivation
- neurocognitive perspectives of time and learning
- professional identity formation
- entrustment as an objective of learning

TIME

Ten Cate O et al. Time-Variable Training in Medicine: Theoretical Considerations. Acad Med. 2018 Mar; 93:S6-S11.

SUBJECTIVITY

ACADEMIC MEDICINE
Journal of the Association of American Medical Colleges
AAMC

The Power of Subjectivity in the Assessment of Medical Trainees

ten Cate, Olle, PhD; Regehr, Glenn, PhD

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doi: 10.1097/ACM.0000000000002495
Perspective: PDF Only

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Objectivity in the assessment of students and trainees has been a hallmark of quality since the introduction of multiple-choice items in the 1960s. In medical education, this has extended to the structured examination of clinical skills and workplace-based assessment. Competency-based medical education, a pervasive movement that started roughly around the turn of the century, similarly calls for rigorous, objective assessment to ensure that all medical trainees meet standards to assure quality of health care. At the same time, measures of objectivity,

SUBJECTIVITY

"… workplaces are highly dynamic and ratings by observers are inherently subjective, as they based on expert judgment, and experts do not always agree …"

"… competence must meet standards, but is also context dependent …"

SUBJECTIVITY

"… subjectivity cannot be avoided, but that, in fact, it should be embraced …"

Example: Multi-source feedback

COGNITIVE LOAD THEORY

MEDICAL TEACHER
https://doi.org/10.1080/0142159X.2018.1505034

MEDICAL TEACHER

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BEME GUIDE

Cognitive load theory for training health professionals in the workplace: A BEME review of studies among diverse professions: BEME Guide No. 53

Justin L. Sewell[a], Lauren A. Maggio[b], Olle ten Cate[c,d], Tamara van Gog[e], John Q. Young[f] and Patricia S. O'Sullivan[d]

[a]Department of Medicine, Division of Gastroenterology, University of California San Francisco, San Francisco, CA, USA; [b]Department of Medicine, Uniformed Services University of the Health Sciences, Bethesda, MD, USA; [c]Center for Research and Development of Education, University Medical Center Utrecht, Utrecht, Netherlands; [d]Department of Medicine, Research and Development in Medical Education, University of California San Francisco, San Francisco, CA, USA; [e]Department of Education, Utrecht University, The Netherlands; [f]Department of Psychiatry, Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY, USA

ABSTRACT

Aim: Cognitive load theory (CLT) is of increasing interest to health professions education researchers. CLT has intuitive applicability to workplace settings, yet how CLT should inform teaching, learning, and research in health professions workplaces is unclear.

COGNITIVE LOAD THEORY

CLT focuses on the role of ‘working memory’ in learning.

WM is limited in duration and capacity.

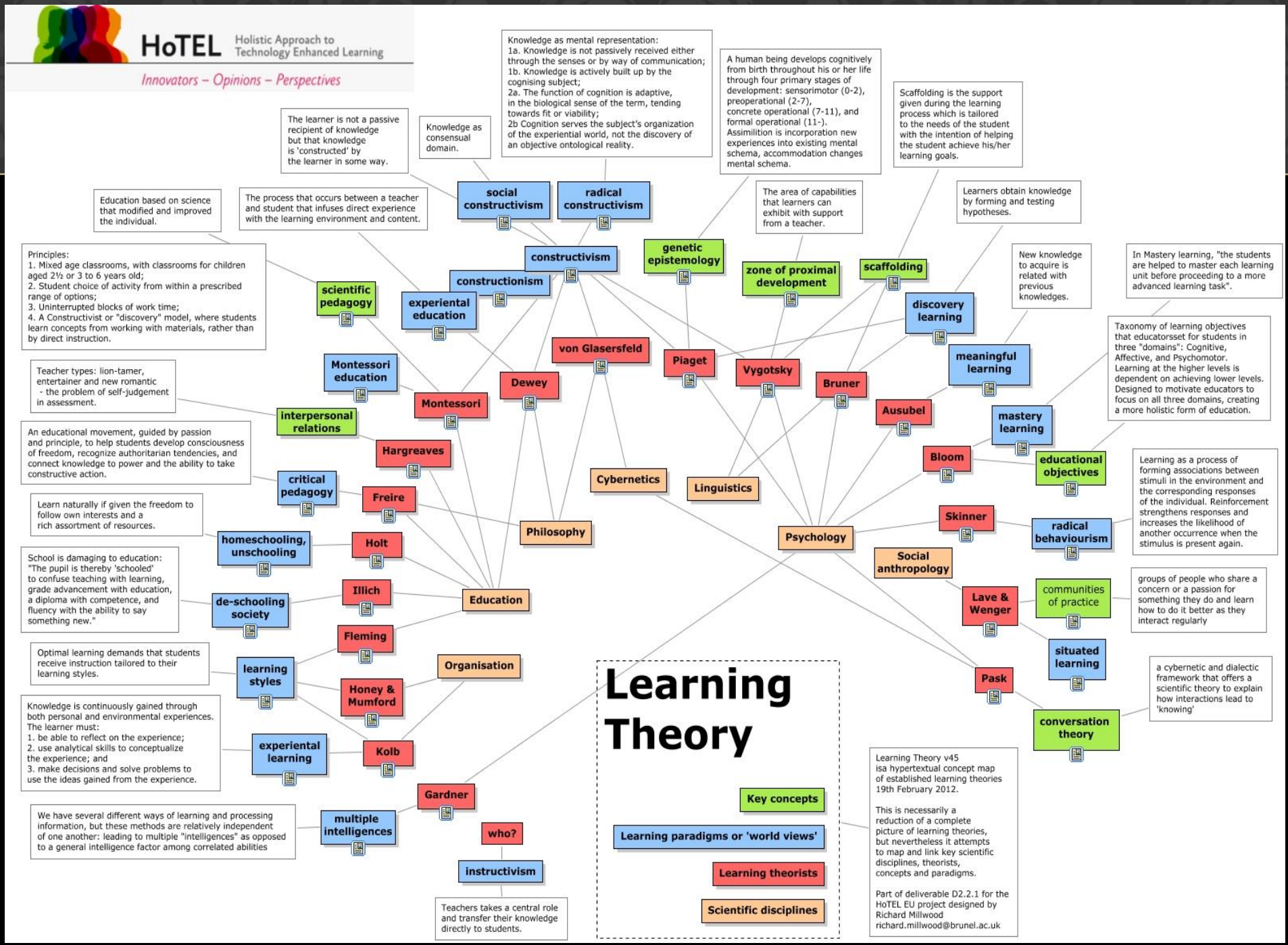
3 types of cognitive load

- intrinsic
- extraneous
- germane

COGNITIVE LOAD THEORY

It is relevant to workplace education.

Provide practical implications to design workplace curricula, teach within workplace and organize workplace environment to optimize learner's cognitive load.


HoTEL
Holistic Approach to Technology Enhanced Learning
Innovators – Opinions – Perspectives
Knowledge as mental representation:
1a. Knowledge is not passively received either through the senses or by way of communication;
1b. Knowledge is actively built up by the cognising subject;
2a. The function of cognition is adaptive, in the biological sense of the term, tending towards fit or viability;
2b Cognition serves the subject's organization of the experiential world, not the discovery of an objective ontological reality.
A human being develops cognitively from birth throughout his or her life through four primary stages of development: sensorimotor (0-2), preoperational (2-7), concrete operational (7-11), and formal operational (11-). Assimilition is incorporation new experiences into existing mental schema, accommodation changes mental schema.
Scaffolding is the support given during the learning process which is tailored to the needs of the student with the intention of helping the student achieve his/her learning goals.
The learner is not a passive recipient of knowledge but that knowledge is 'constructed' by the learner in some way.
Knowledge as consensual domain.
social constructivism
radical constructivism
The area of capabilities that learners can exhibit with support from a teacher.
Learners obtain knowledge by forming and testing hypotheses.
Education based on science that modified and improved the individual.
The process that occurs between a teacher and student that infuses direct experience with the learning environment and content.
Principles:
1. Mixed age classrooms, with classrooms for children aged 2½ or 3 to 6 years old;
2. Student choice of activity from within a prescribed range of options;
3. Uninterrupted blocks of work time;
4. A Constructivist or "discovery" model, where students learn concepts from working with materials, rather than by direct instruction.
constructivism
genetic epistemology
zone of proximal development
scaffolding
New knowledge to acquire is related with previous knowledges.
In Mastery learning, "the students are helped to master each learning unit before proceeding to a more advanced learning task".
scientific pedagogy
constructionism
experiential education
discovery learning
Taxonomy of learning objectives that educatorsset for students in three "domains": Cognitive, Affective, and Psychomotor. Learning at the higher levels is dependent on achieving lower levels. Designed to motivate educators to focus on all three domains, creating a more holistic form of education.
von Glasersfeld
Piaget
Vygotsky
Bruner
meaningful learning
Montessori education
Dewey
Montessori
Ausubel
mastery learning
Teacher types: lion-tamer, entertainer and new romantic - the problem of self-judgement in assessment.
interpersonal relations
An educational movement, guided by passion and principle, to help students develop consciousness of freedom, recognize authoritarian tendencies, and connect knowledge to power and the ability to take constructive action.
Hargreaves
Bloom
educational objectives
Learning as a process of forming associations between stimuli in the environment and the corresponding responses of the individual. Reinforcement strengthens responses and increases the likelihood of another occurrence when the stimulus is present again.
critical pedagogy
Freire
Cybernetics
Linguistics
Learn naturally if given the freedom to follow own interests and a rich assortment of resources.
Philosophy
Psychology
Skinner
radical behaviourism
homeschooling, unschooling
Holt
Social anthropology
School is damaging to education: "The pupil is thereby 'schooled' to confuse teaching with learning, grade advancement with education, a diploma with competence, and fluency with the ability to say something new."
Illich
Education
Lave & Wenger
communities of practice
groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly
de-schooling society
Fleming
Optimal learning demands that students receive instruction tailored to their learning styles.
learning styles
Organisation
Honey & Mumford
situated learning
Pask
Knowledge is continuously gained through both personal and environmental experiences. The learner must:
1. be able to reflect on the experience;
2. use analytical skills to conceptualize the experience; and
3. make decisions and solve problems to use the ideas gained from the experience.
experiential learning
Kolb
conversation theory
a cybernetic and dialectic framework that offers a scientific theory to explain how interactions lead to 'knowing'
Gardner
We have several different ways of learning and processing information, but these methods are relatively independent of one another: leading to multiple "intelligences" as opposed to a general intelligence factor among correlated abilities
multiple intelligences
who?
instructivism
Teachers takes a central role and transfer their knowledge directly to students.
Learning Theory
Key concepts
Learning paradigms or 'world views'
Learning theorists
Scientific disciplines
Learning Theory v45 isa hypertextual concept map of established learning theories 19th February 2012.
This is necessarily a reduction of a complete picture of learning theories, but nevertheless it attempts to map and link key scientific disciplines, theorists, concepts and paradigms.
Part of deliverable D2.2.1 for the HoTEL EU project designed by Richard Millwood
richard.millwood@brunel.ac.uk

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The EPA-based Utrecht undergraduate clinical curriculum: Development and implementation

Olle ten Cate[a], Lysanne Graafmans[a,b], Indra Posthumus[a,c], Lisanne Welink[d] and Marijke van Dijk[e]

[a]Center for Research and Development of Education, University Medical Center, Utrecht, The Netherlands; [b]Department of Medical Education, Education Center, University Medical Center, Utrecht, The Netherlands; [c]Department of Dermatology, Bravis Hospital, Bergen op Zoom, The Netherlands; [d]Department of General Practice, Julius Center for Health Sciences and Primary Care, University Medical Center, Utrecht, The Netherlands; [e]Department of Pathology, University Medical Center, Utrecht, The Netherlands

ABSTRACT

Aim: As reports of the application of entrustable professional activities (EPAs) increase, not only for postgraduate but also for undergraduate medical education, there is a need for descriptions of what a UME curriculum with EPAs could look like. We provide such a description based on the experiences at University Medical Center Utrecht, the Netherlands, which can be used as an example by other curriculum developers.

Methods: In a three-year process, the UMC Utrecht Curriculum Committee developed a clinical workplace curriculum with an EPA structure, taking into account examples, such as the US Core EPAs for Entering Residency, and recommendations to integrate and increase the length of clerkships.

Results: In the resulting curriculum, operational from 2016, students train to be trusted with indirect supervision before graduation in five broad EPAs: the clinical consultation; general medical procedures; informing, advising and guiding patients and families; communicating and collaborating with colleagues; and extraordinary patient care. Each of these integrates smaller (nested) EPAs that receive focused training attention in integrated clerkships at various moments and must be signed off for entrustment with indirect supervision to complete the clerkship.

Discussion: The framework of EPAs went through many iterations before it was consolidated. Among the issues that

Ten Cate O et al. The EPA-based Utrecht undergraduate clinical curriculum: Development and implementation. Med Teach. 2018; 40(5):506-513.

FURTHER STUDY OF INTEREST

Transformation of clinical competencies into measurable EPAs in undergraduate context among various disciplines.

Fostering ‘trust’ as a as a means to qualify medical students for certain tasks using EPAs.