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covid-project

Örebro University, Sweden

Leading towards a knowledge-driven society



Medical Education development and research



- ▼ University Centre for Academic Development
 - ▼ Supporting teachers at all university in teaching and assessment
 - ▼ Supporting digital assessment in courses
 - ▼ Efforts to support educational environments – flexible rooms, active learning
- ▼ Vice-dean for Educational development
 - ▼ Committee for local Scholarship in HPE. Chair + 2 teachers from each department
 - ▼ Supporting Scholarship for teaching and learning. Supporting local educational projects, arrange seminars.
- ▼ ORU researchers publish in the field and enhancing national and international collaborations.
- ▼ Some research groups in the HPE field

Processing of content for learning



Learning new concepts needs processing

Concepts can never be presented to me merely, they must be knitted into the structure of my being, and this can be done only through my own activity.

(Mary Parker Follett, 1924, Creative experience.)



technology enhanced learning

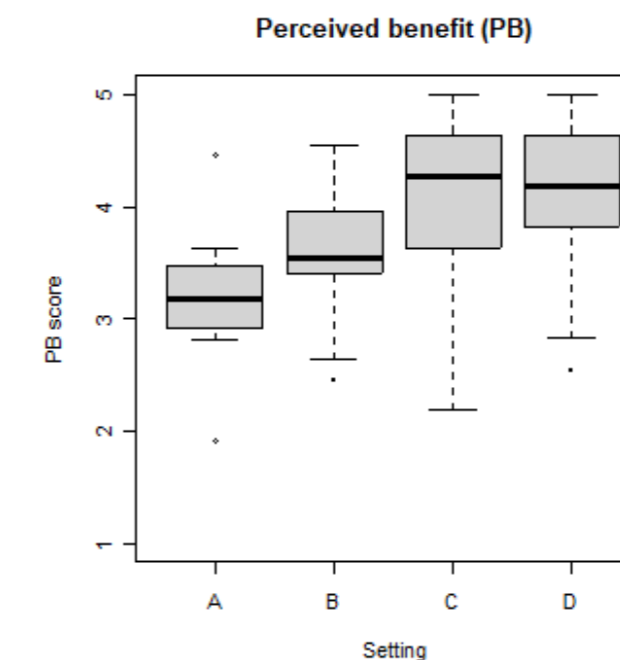
Integrating virtual patients into courses: follow-up seminars and perceived benefit

Samuel Edelbring,¹ Olle Broström,² Peter Henriksson,³ Daphne Vassiliou,² Jonas Spaak,³
Lars Owe Dahlgren,^{4†} Uno Fors⁵ & Nabil Zary¹

Medical education, 2012

Table 1 Characteristics of the virtual patient (VP) follow-up seminars

Aspects	Setting			
	A (n = 57)	B (n = 48)	C (n = 72)	D (n = 70)
Group size, n	–	≈ 48	≈ 12	≈ 12
Clinicians present per session, n	–	3	1	2
Requested of the students	Be acquainted with cases	Know the cases	Know the cases	Be able to present cases
Sessions, n/length	–	1/1.5 hours	4/1 hour	1/1.5 hours
VP cases followed up, n	–	2	4	2
Related non-VP sessions, n	5	4	–	6
Overall case processing intensity	Low	Medium	High	High



Four settings of the same course using the same tools: virtual patients

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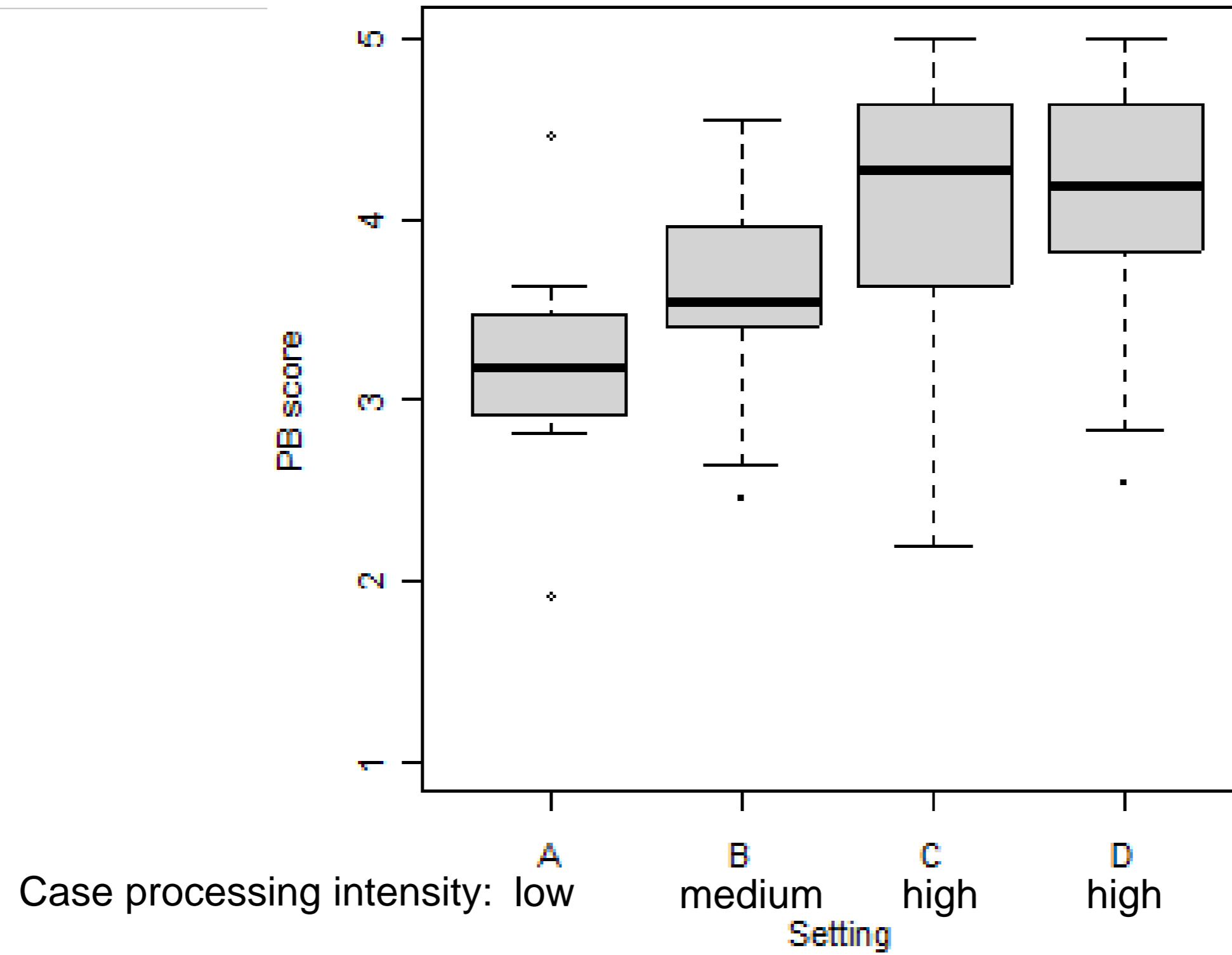
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Measure: perceived benefit

- ▼ Sumscore from a rating scale on "perceived benefit" comprised of graded responses to 11 statements like:
- ▼ Does it help you to perform better on the examination?
- ▼ Is it something that is beneficial for your future professional practice?
- ▼ Does it train your ability to reach diagnoses?
- ▼ Does it connect the topics you study to reality?

Perceived benefit (PB)

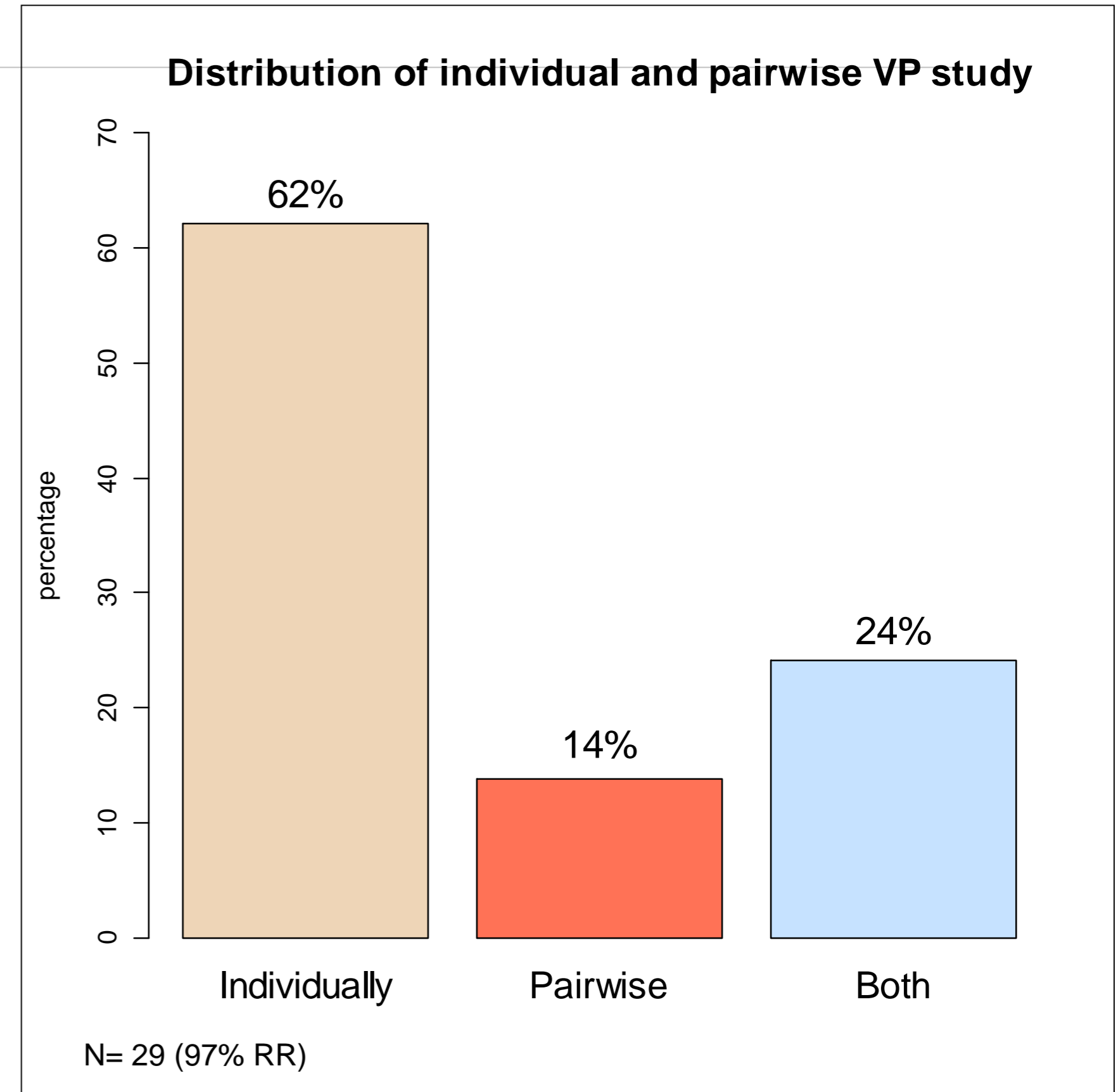


Collaborative learning

- ▼ Supports processing of content
- ▼ Elaboration of what is otherwise tacit
- ▼ Verbal reasoning is a way to increase and deepen reflection (Kolb, 1984)
- ▼ To prepare for future collaborative practice in healthcare

Benefits and reasons for pair-wise work

▼ 3rd year medical students in clinical clerkship where virtual patients was part of the assignments



Reasons for working individually

▼ 94% **practical reasons**

- ▼ It takes no effort to organise
- ▼ It just happened to be that way - by coincidence

▼ One person (0,5%) **learning reasons**

- ▼ *"I think that I learn better on my own"*

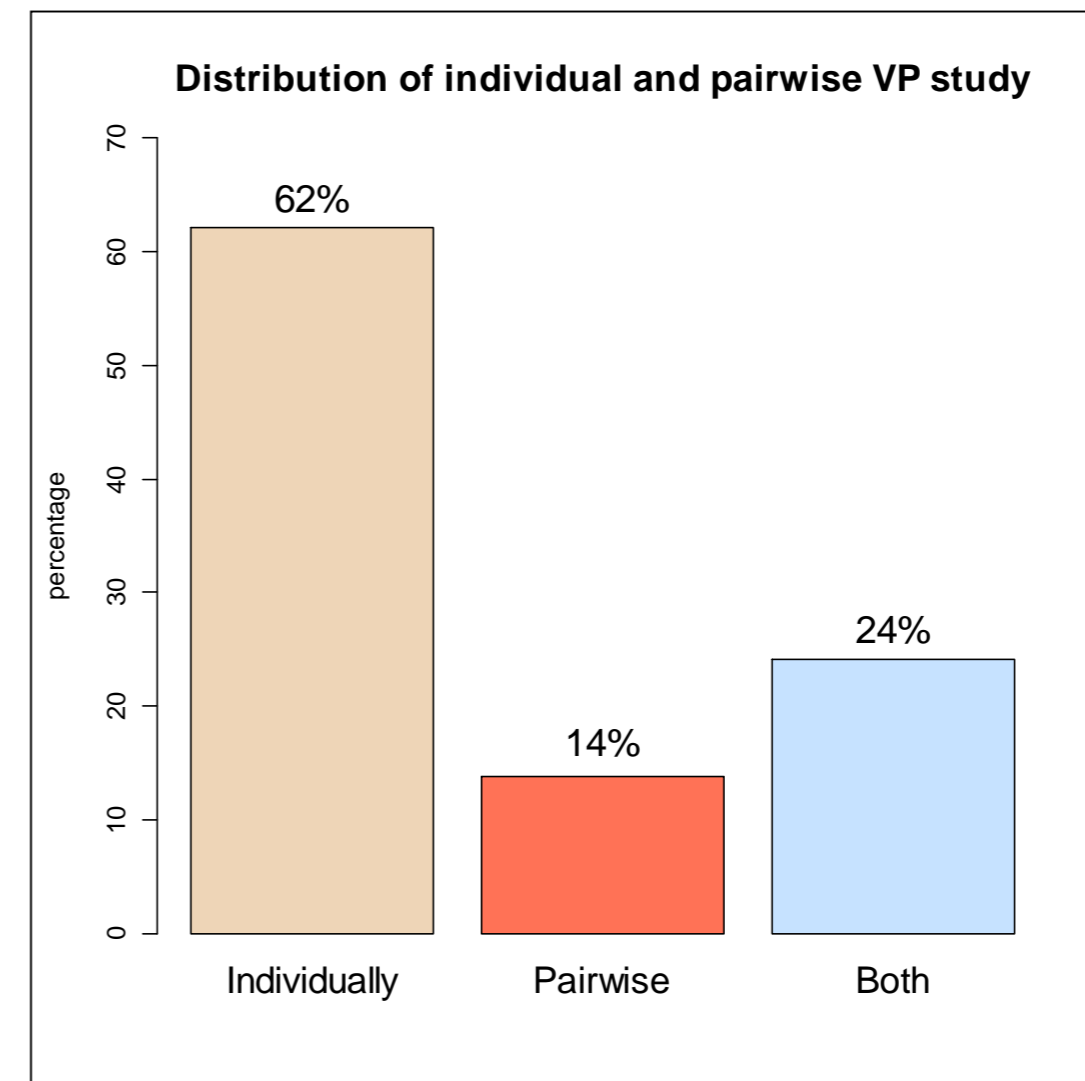
Reasons for pair-wise work

Learning reasons

- It gives possibility to discuss
- It is more motivating

*You learn from each other
and you probably also learn more,
even though it probably takes more time*

(student quote from questionnaire)



Extra practical work to collaborate

- ▼ Students find the **collaborative setting more beneficial** for learning because it provides new perspectives and allows for peer discussion about the cases
- ▼ Students often choose to work individually with VPs because of practical reasons
- ▼ Teachers need to highlight the benefits and arrange for collaborative learning opportunities

Adv in Health Sci Educ (2011) 16:331–345
DOI 10.1007/s10459-010-9265-0

Experiencing virtual patients in clinical learning: a phenomenological study

Samuel Edelbring · Maryam Dastmalchi · Håkan Hult ·
Ingrid E. Lundberg · Lars Owe Dahlgren

Student voices from a pairwise virtual patient setting

"You get so much more from the situation when you discuss things with someone else, than if you would be working alone" (Camilla)

"You grasp the facts in another way when you discuss things with others around you than if you were to sit there yourself." (Sandra)

From facts to clinical reasoning

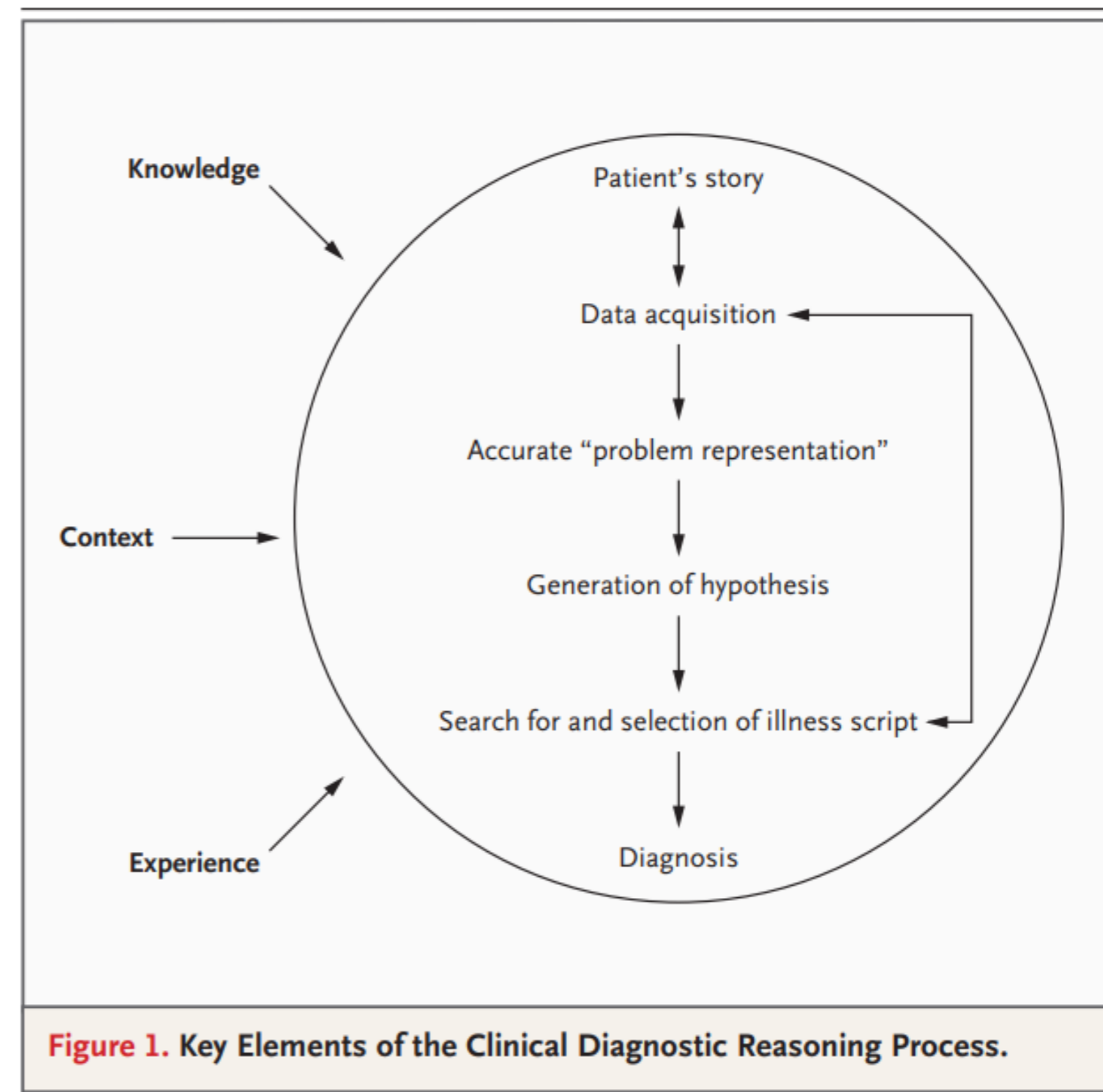
▼ *in the clinical setting, the student's recall of basic science knowledge from the classroom is often slow, awkward, or absent. (Julia Bowen)*

Bowen, J. L. (2006). Educational strategies to promote clinical diagnostic reasoning. *New England Journal of Medicine*

Data acquisition is a crucial part of clinical reasoning

- ▼ can be elements of the history
- ▼ findings on physical examination
- ▼ results of laboratory testing and imaging

▼ These data form parts –
but not a whole of the reasoning process.



Original Paper

Increasing Reasoning Awareness: Video Analysis of Students' Two-Party Virtual Patient Interactions

Samuel Edelbring^{1,2}, PhD; Ioannis Parodis³, MD, PhD; Ingrid E Lundberg³, MD, PhD

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²Department of Learning, Informatics, Management and Ethics, Karolinska Institutet, Stockholm, Sweden

³Rheumatology Unit, Department of Medicine, Solna, Karolinska Institutet, Karolinska University Hospital, Stockholm, Sweden



Verbalising a radiology interpretation

-Yes. Here we can see a little better. Now let's see here. Here it is very buckled and here it feels like it starts getting more straight.

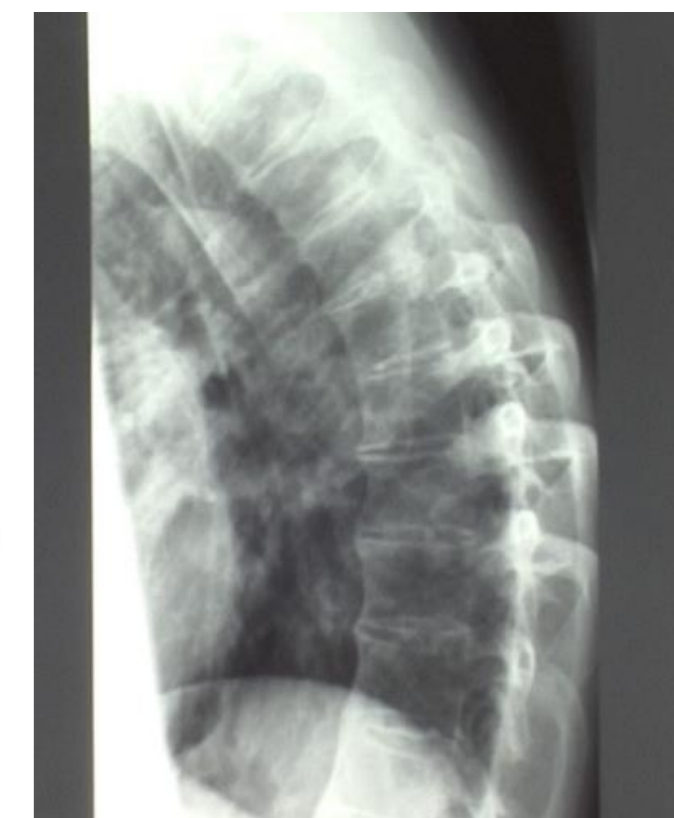
-Mmmm, there they are more flat, they are more smoothed there

-These ones go outward like this

-And there I think it's flattened also

-Yes exactly

-Here, on the other hand, you can see that it's fine



Some 20 minutes into the case:

*Should we think Polymyalgia Reumatica?
(browses in textbook for criteria for
differential diagnoses)*

Yes, but I don't really know...

I'll check up what it's like



*... "symmetrical propagation". So we need to
know if it is symmetrical. "Muscular pain occurs,
but it is not as common as weakness."
Didn't he answer a question whether his pain was
symmetrical? [browses in the VP case]*



The digital tool and the setting structured the reasoning and learning & several resources were used



- ▼ We identified processes that would hardly occur in an individual setting.
- ▼ Questions were posed that contradicted early assumptions. Disagreements that were solved and that forced both students to think deeper and reason. They paused and looked in other sources such as lecture notes, web-pages and resources within the study programme.

Peer interaction student – student
Students – virtual patient software
Students – lecture notes
Students – Internet

*-This is in fact an awesome way to learn!
-It really is
-Especially when you have such a good book!
-Yes, it was in fact really good
-I wish you'd had such a book at every
placement.
-It's awesome to really work more problem-
oriented sometimes*



Theoretical perspectives on collaborative learning

- ▼ Slavin identified four theoretical perspectives on cooperative learning
 - ▼ Motivational
 - ▼ Social Cohesion Perspectives
 - ▼ Cognitive Perspectives
 - ▼ Cognitive Elaboration Perspectives

Slavin, Robert. E. (1996). Research on cooperative learning and achievement: What we know, what we need to know. *Contemporary educational psychology*, 21(1), 43-69.

The Effect of Face-to-Face Collaborative Learning on the Elaboration of Computer-Based Simulated Cases

Bas A. de Leng, MSc;

Arno M. Muijtjens, PhD;

Cees P. van der Vleuten, PhD

Introduction: This study investigates the effects of working face to face in small groups on the processes that occur when students elaborate on computer-based simulated cases.

Methods: We performed a randomized controlled experiment that was designed to measure the effect of “social context” (triads versus individuals) on students’ perceptions of the elaboration process and on the time spent on the different parts of the computer case. We sought students’ perceptions using a questionnaire that was administered to all participating students (N = 47) and we examined the actions of the students working in triads (N = 12) and individually (N = 11) by analyzing the log files of the computer case.

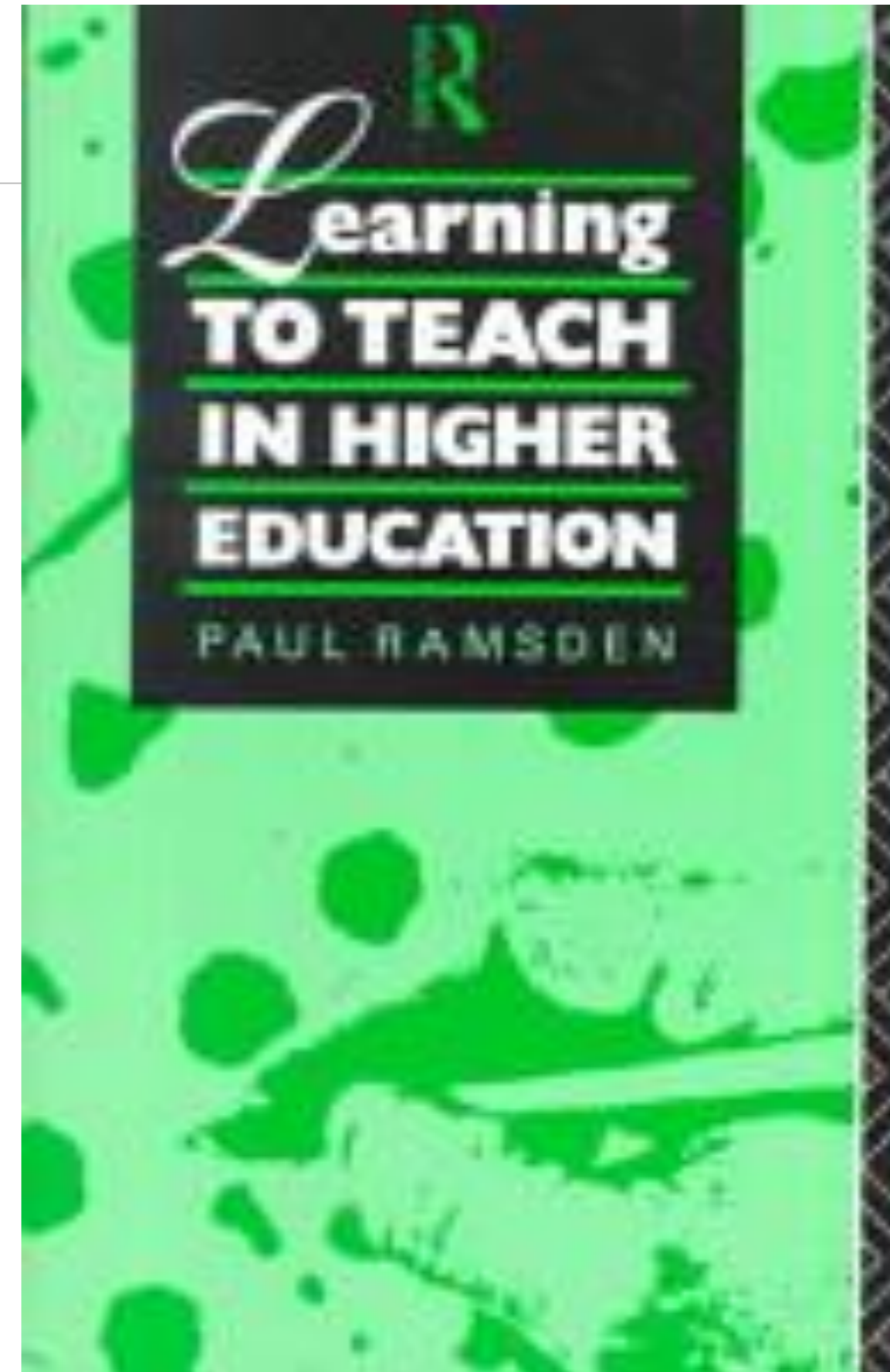
Results: The results demonstrated no significant effect of social context on the degree of elaboration of the computer case.

Conclusions: Working with computer-based simulated cases in small groups as opposed to individually in itself is not enough to increase the scope and depth of the elaboration of computer cases.

(Sim Healthcare 4:217–222, 2009)

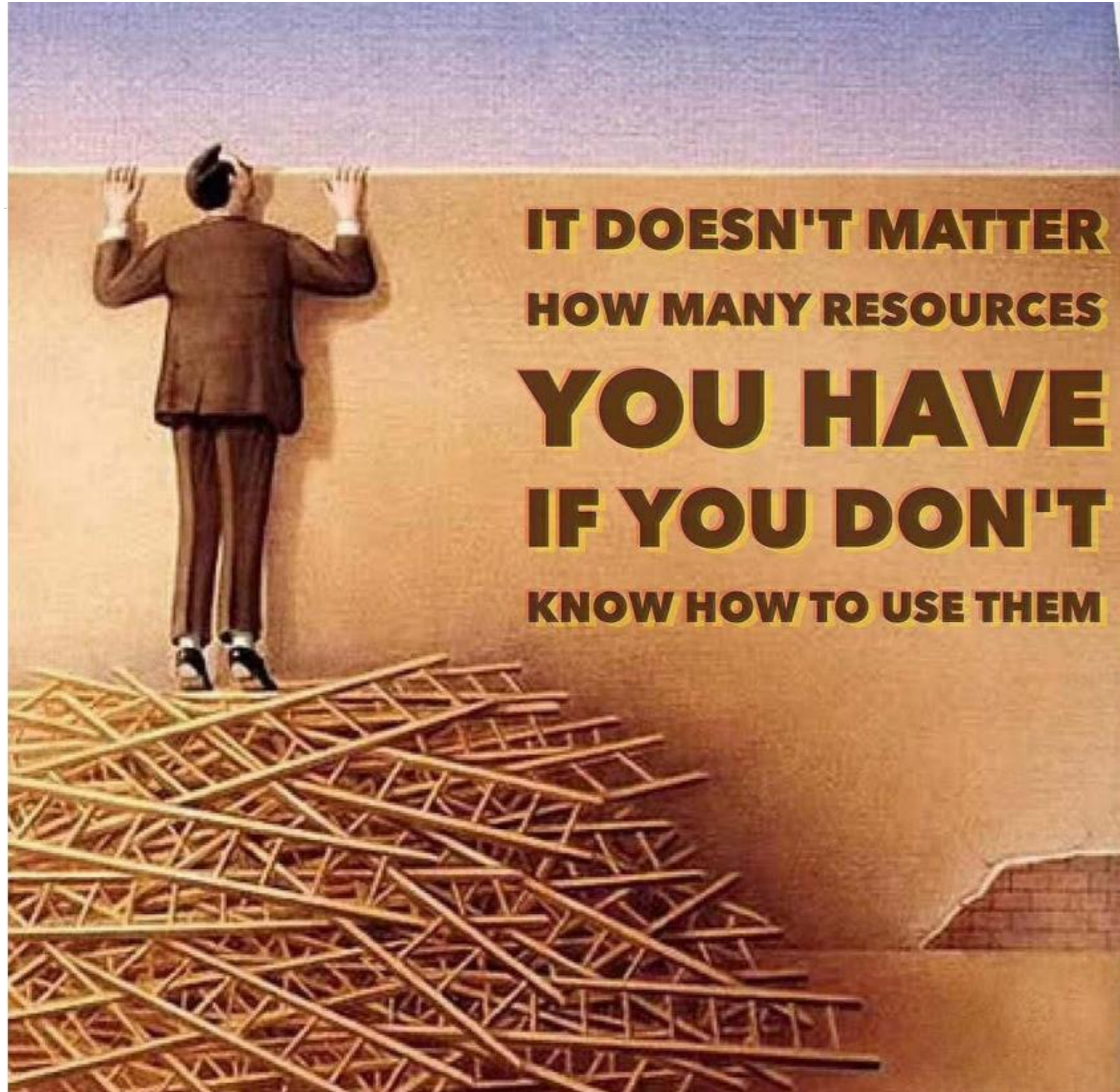
Key Words: Computer-based simulated cases, Collaboration, Undergraduate medical education.

It's not only about the tools It's how you use them



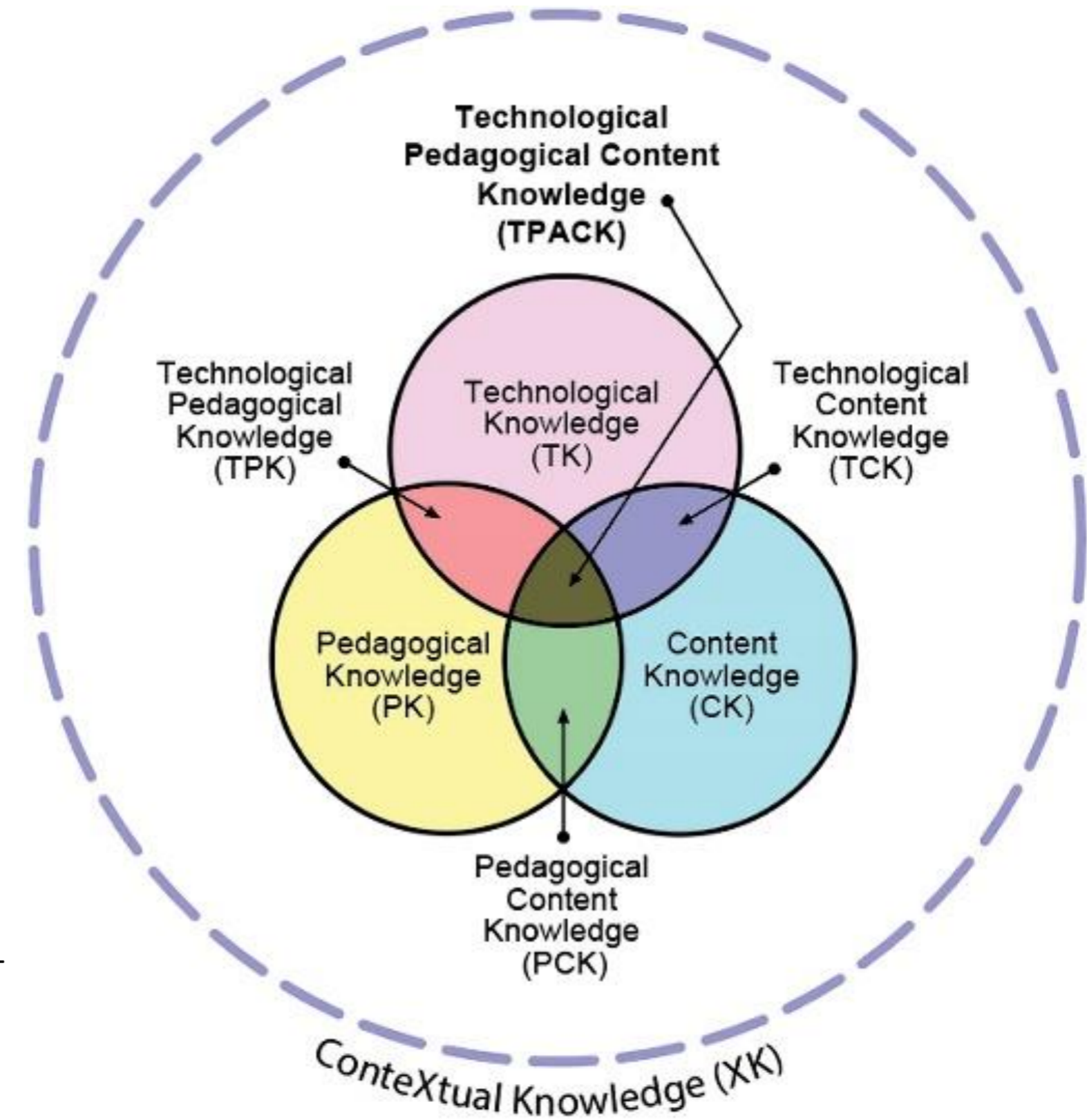
*"no medium, however useful, can solve
fundamental educational problems"*

Higher education researcher,
Paul Ramsden, 1992, p. 161



Conceptual model of required knowledge for successful technology enhanced education

- ▼ Content knowledge
- ▼ Pedagogical knowledge
- ▼ Technological knowledge
- ▼ These needs to merge into technological pedagogical content knowledge

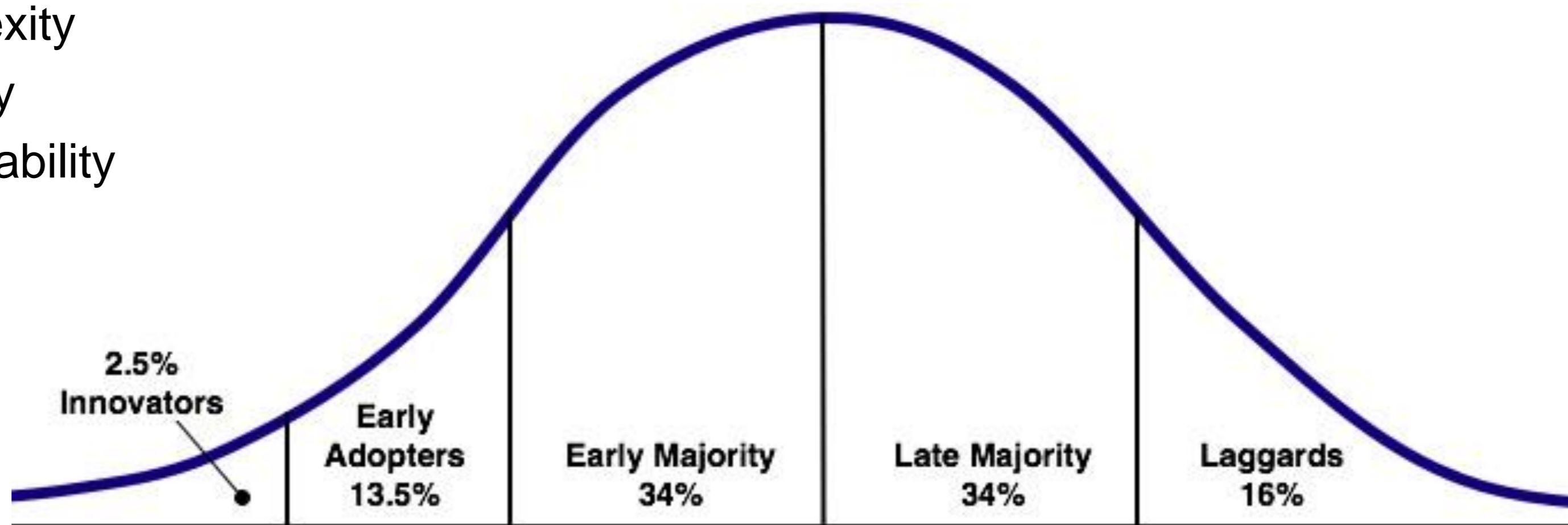


Mishra, p. & Koehler, 2006. Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers college record*, 108, 1017-1054.

How innovations spread

▼ Main factors that influence how innovations are adopted (Everette Rogers)

1. Relative Advantage
2. Compatibility
3. Complexity
4. Triability
5. Observability



Source: Everett Rogers, Diffusion of innovations model

Academic settings

- ▼ Organisational issues
- ▼ Management
- ▼ Often separate teams/units representing the TPACK domains

