

Beyond problem-based learning (PBL) in the classroom - Perceived impact of preclinical PBL on subsequent learning in the clinical context

A qualitative study of former PBL students' and their current supervisors' perspectives

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*Research project carried out in the framework of the Master in Health Professions' Education,
Maastricht University*

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Outline



Context and problem



Study design and methodological approach



Findings



Discussion



Perspectives

Problem-based learning to foster deep and lifelong learning

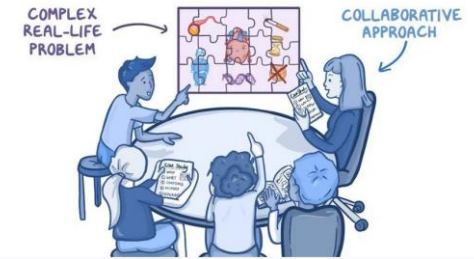
Aim of undergraduate medical education

- Deep learning transferred to clinical practice
- Develop self-directed and lifelong learning skills

PBL creates favorable learning conditions to develop these skills

- ✓ *Learning principles* : student-centeredness
 - Collaborative, contextual, constructive and self-directed learning
- ✓ *Instructional principles* : tutors, group work, clinical problems
- ✓ *Educational processes* : 3 phases and 8 steps, integration within a curriculum

PROBLEM-BASED LEARNING (PBL)



→ Meaningful engagement of students with their learning

PBL *in practice*: what do we know ?

PBL in the classroom : mixed, incomplete findings

- **Justification/comparative studies “Does PBL work ?”**
 - Possible positive effect on SDL, critical thinking, improved collaboration & communication
 - No effect on knowledge retention
 - Mixed findings regarding effectiveness (Dolmans 2003, Hamdy 2008)
 - Lack of studies beyond classroom
- **Clarification studies “How, under what circumstances, for whom and why does PBL work ?”**
 - Group size and dynamics (Lohman & Finkelstein, 2000)
 - Problem types (Jonassen & Hung, 2015)
 - Tutor training (Gijbels et al., 2005)
 - “Manipulation of single variables” → do not capture the impact of systemic effects on student learning (Hak & Maguire, 2000; Svinicki, 2007; Hung, 2011)

PBL *in practice*: what is missing ?

Comprehensive, theoretically-grounded analysis of how and why PBL impacts learning beyond “the classroom”

→ Thesis project: understand how PBL-based formal learning impacts student engagement with their learning once in the clinical context

Approach

- **Research question**

How and why does PBL, as implemented at the University of Geneva's Faculty of medicine's preclinical Bachelor years two and three, impact the learning of medical students during the clinical part of their training, from students' and clinical supervisors' points of view?

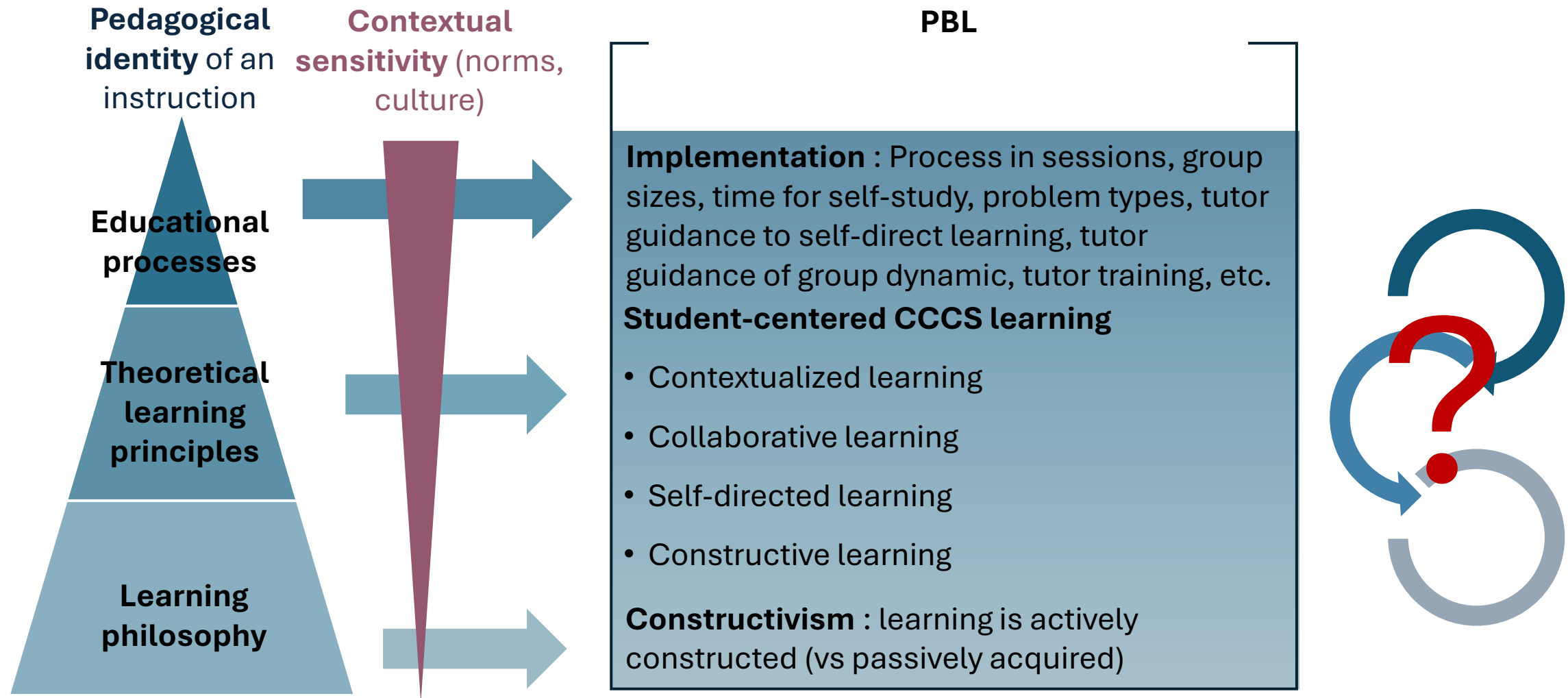
- **Conceptual framework**

- Layered analysis : an instruction's pedagogical identity (Ciancolo & Regehr, 2010)

- **Research paradigm**

- Socio-constructivism : gain understanding through shared reflecting
- Design
 - Interpretative phenomenology : explore and interpret participants' lived experiences
 - Pragmatism : participant recruitment/data collection

Conceptual framework: pedagogical identity



Study design

Sampling
Recruitment
Data collection

Purposeful, snowball:
Internal medicine, PBL

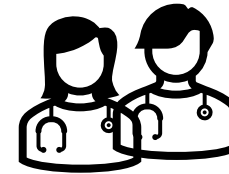
Privileged 1st contact,
subsequent wave

Interviews

**Clinical
supervisors**



**Medical
students**



Purposeful :
1-2MA students (AMC1&2)

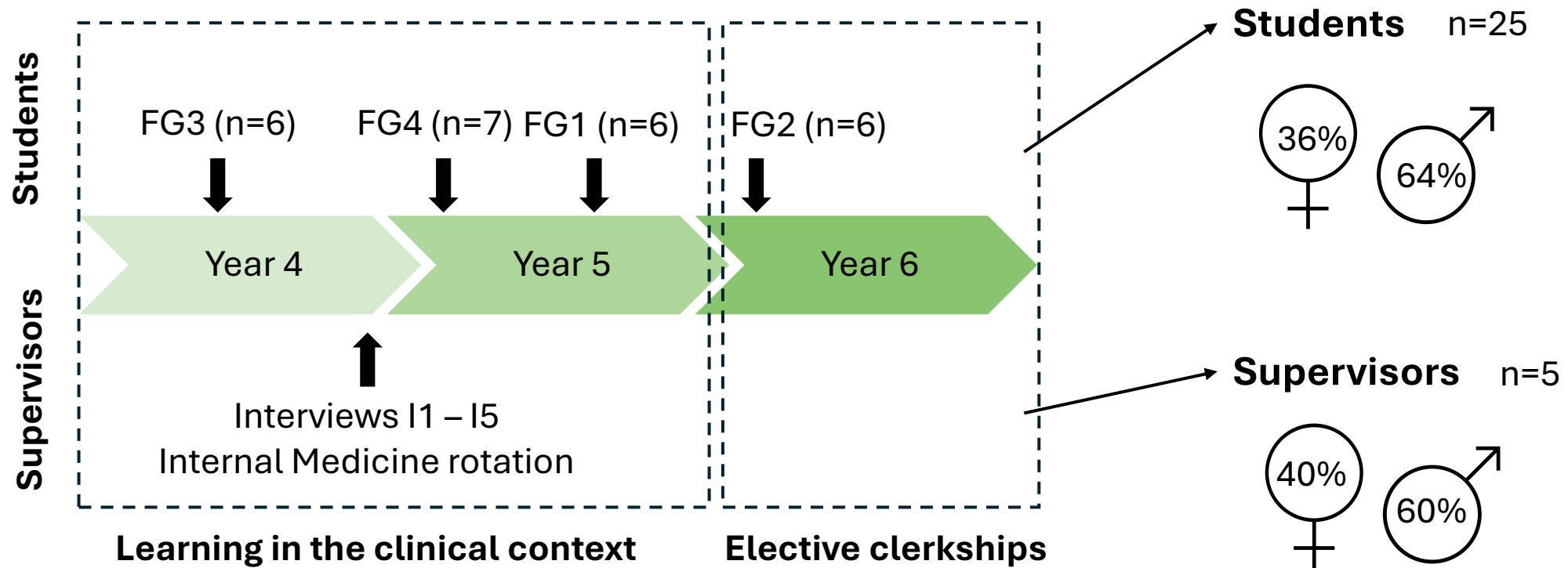
E-mail invitation to all,
follow up through RA

Focus group discussions

- **Discussion guides**
 - ✓ Description of current learning in the clinical context
 - ✓ Explicit prompting about collaborative, constructive and self-directed learning
 - ✓ Exploration of links with PBL-experience during the Bachelor
- **Reflexive thematic analysis** Reflexive journal, self-awareness during data collection and analysis, regular discussions with collaborators (RA, JS) (Braun, Clarke, et al., 2023)

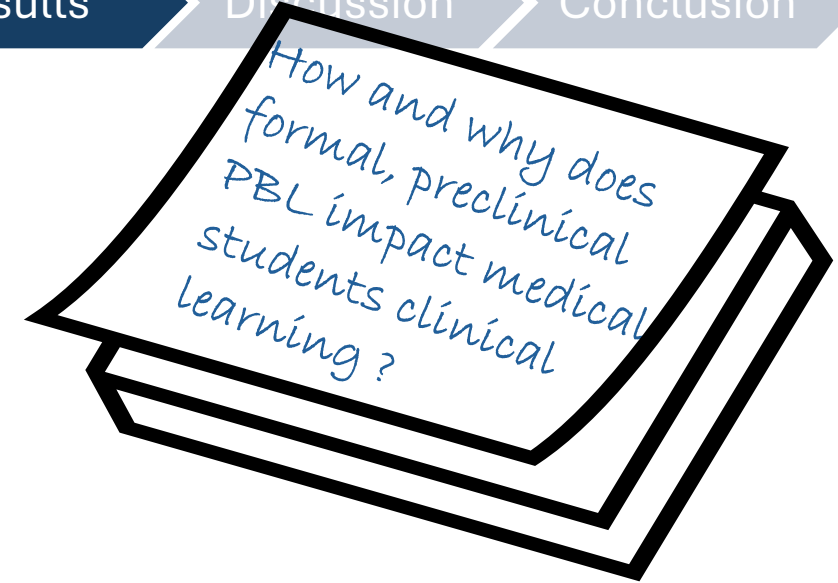
Results - participants

Master of medicine, UNIGE



Results - Thematic analysis

1. Collaborative learning principles of PBL **can positively impact students' workplace learning** through
 - a. social competence development
 - b. collaborative learning skill development
- ✓ Discussion and scientific debate



” I4, Supervisor, ¶119

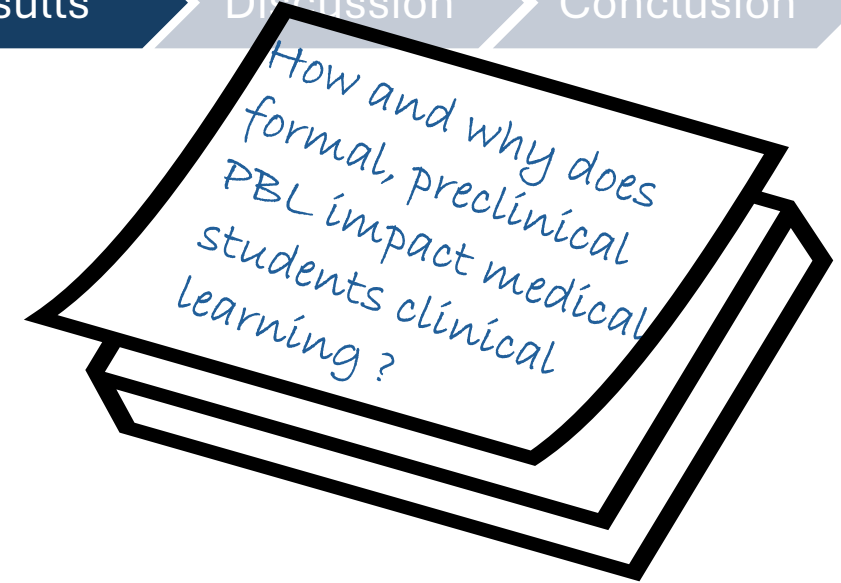
“ PBL, well basically, I think it also helps them not to disappear when facing different opinions or when being questioned. [...] And in terms of relationships and communication in a learning environment, it allows to function in the same way we do in the clinical environment.

FG2, Student 6, ¶ 87

We're rarely in contexts where things are really debated in depth at a scientific level, and that's something you find in the hospital, so perhaps on this point PBL accustomed us to taking a smoother tone, more appropriate to scientific debate.

Results - Thematic analysis

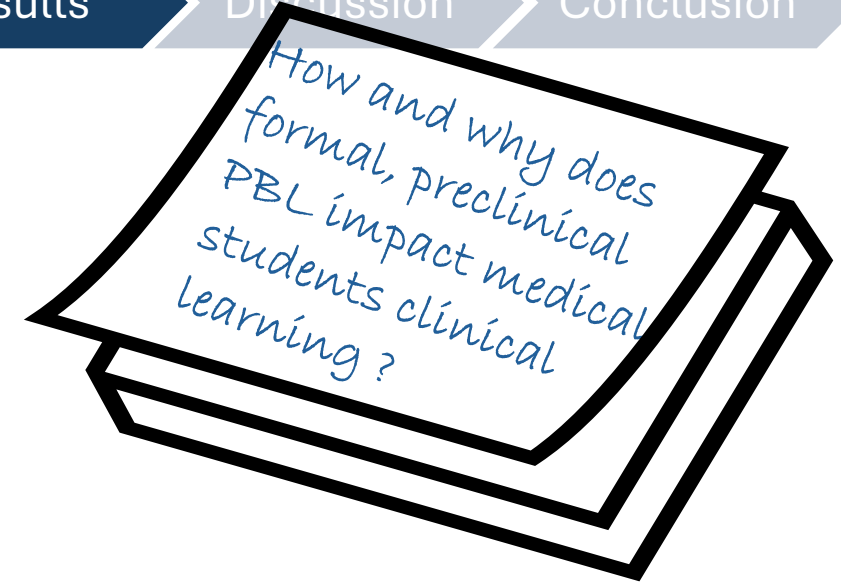
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 - a. social competence development
 - b. collaborative learning skill development
- ✓ Discussion and scientific debate
- ✓ Cohort feeling and sense of belonging



” **FG3, Student 3, ¶ 8249**
“ *And I've noticed that the PBL created a social bond that provides us with valuable support during our studies. [...] we'll be future colleagues [...] and that may help during future practice.*

Results - Thematic analysis

1. Collaborative learning principles of PBL **can positively impact students' workplace learning** through
 - a. social competence development
 - b. collaborative learning skill development
- ✓ Discussion and scientific debate
- ✓ Cohort feeling and sense of belonging
- ✓ Collaborative reasoning

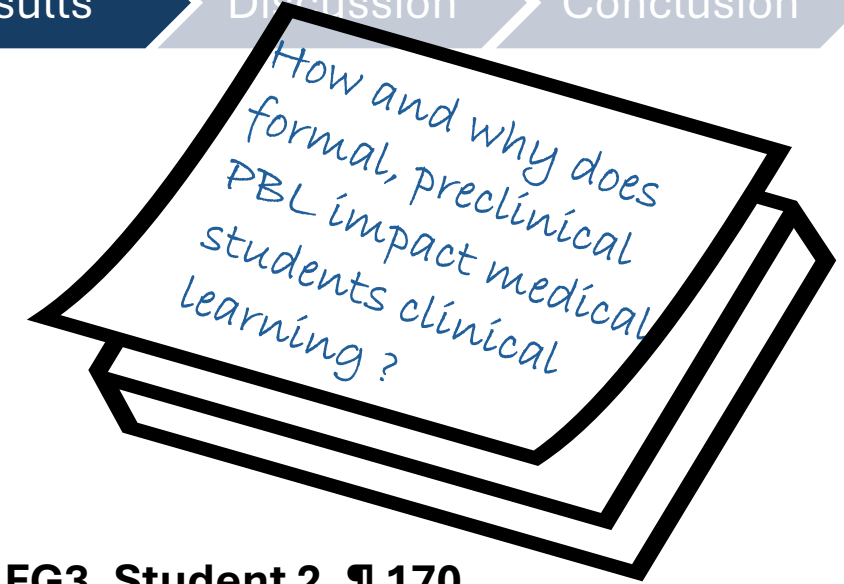


FG1, Student 6, ¶ 417

I'm sorry, but I wouldn't even know how to [reason] like that in a group. [...] I find that PBL pushed us to ask questions in a group, to try and reflect a little about a case or physiopathology. It makes you think as a group, and it puts you in the same atmosphere as now, during the clinical part of our training.

Results - Thematic analysis

1. Collaborative learning principles of PBL **can positively impact students' workplace learning** through
 - a. social competence development
 - b. collaborative learning skill development
- ✓ Discussion and scientific debate
- ✓ Cohort feeling and sense of belonging
- ✓ Collaborative reasoning
- Although not clear whether/how attributable to PBL



” FG3, Student 2, ¶ 170

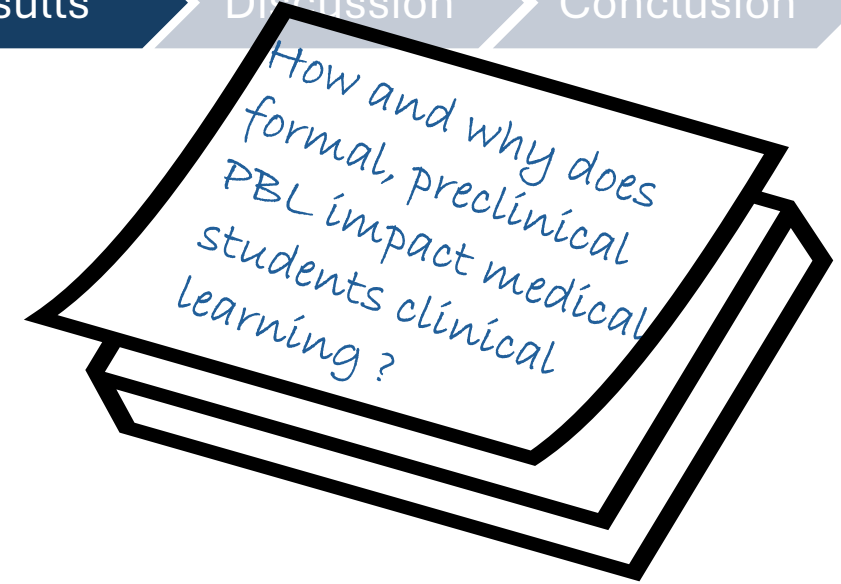
“ Letting oneself speak and listen to others are everyday skills. [...] you acquire them outside PBL, and I have the impression that people who are reluctant to acquire them, well it's not PBL that's going to develop the thing too much, even though it may help.

I1, Supervisor, ¶ 115

It doesn't matter what model we use in the preclinical program, there are lots and lots of new things in the clinical program anyway. [...] Remaining useful and transposable when they arrive in the units.... I don't know whether it's PBL. [...] It's hard to say.

Results - Thematic analysis

2. Perceived issues in preclinical PBL processes negatively affect preclinical learning, with subsequent consequences on clinical learning.

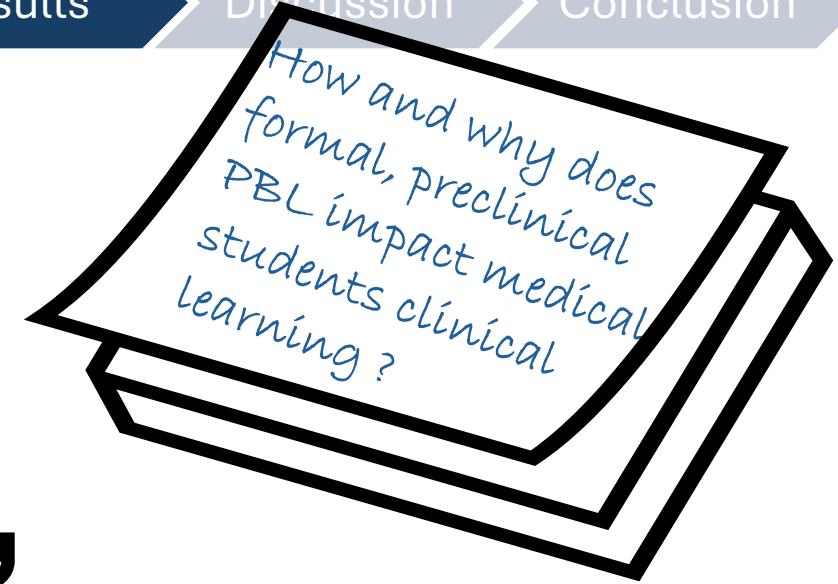


Results - Thematic analysis

2. Perceived issues in preclinical PBL processes negatively affect preclinical learning, with subsequent consequences on clinical learning.

a. Perceived mismatch between claimed PBL aims (foster deep and SD learning) and

- Availability of compiled resources for self-study
- Assessment of student learning through cMCQ exams



”
“

Typically, when you take a MCQ exam and realize that you've got a bad mark, well, that doesn't give you a trigger that would allow you to say Ah, I'm not going to become a good doctor. [Taking MCQs] doesn't reflect at all your competence as a trainee or as a good doctor.

FG4, Student 3, ¶ 181

Results - Thematic analysis

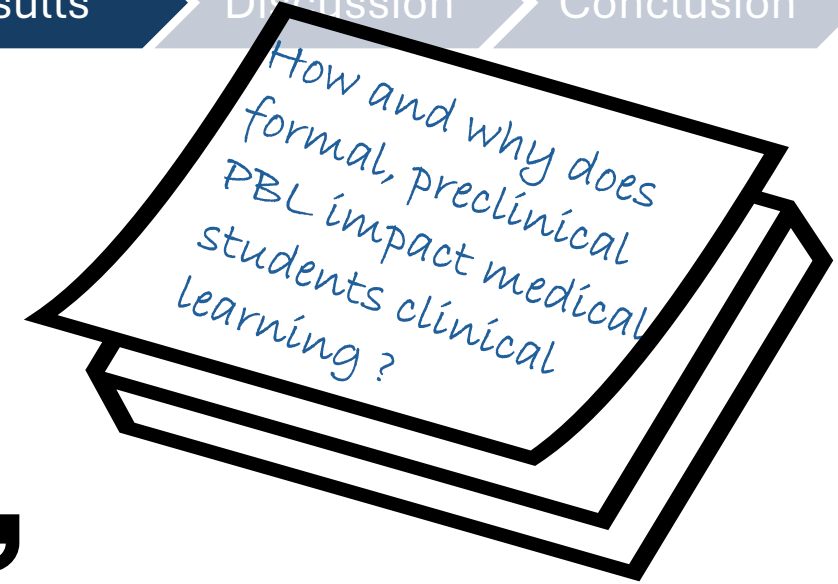
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b. Perceived mismatch between intended tutorial group process to practice physiopathological reasoning and

- List of case-related learning objectives (vs. tutorial-derived)
- Validation of knowledge acquisition (bilan)
- Doing clinical reasoning

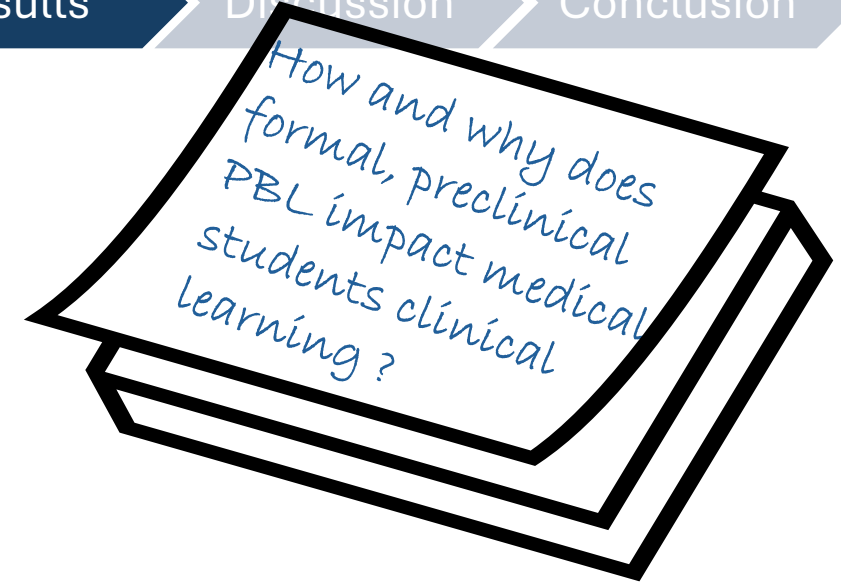


“ The case is Mr X, but the number of times I wanted to say “But let's go back to the case” and in fact we only did the list of objectives and forgot about the case [...] But once again, it's also tutor-dependent” **FG1, Student 7, ¶ 258**

*I have the impression that the [Bachelor] objectives are to acquire the biomedical sciences, and not to mix it already with clinical stuff. But [...] we ended up doing a lot of clinical [reasoning] without necessarily having understood the underlying mechanisms. [multiple verbal and non-verbal agreements in the room]. **FG3, P3, ¶ 114***

Results - Thematic analysis

2. **Perceived issues in preclinical PBL** processes negatively affect preclinical learning, with subsequent consequences on clinical learning.
 - a. **Perceived mismatch between claimed PBL aims (foster deep and SD learning) and**
 - Availability of compiled resources for self-study
 - Assessment of student learning through cMCQ exams
 - b. **Perceived mismatch between intended tutorial group process to practice physiopathological reasoning and**
 - List of case-related learning objectives (vs. tutorial-derived)
 - Validation of knowledge acquisition (bilan)
 - Doing clinical reasoning
 - c. **Heterogeneity:** tutors, resources, units

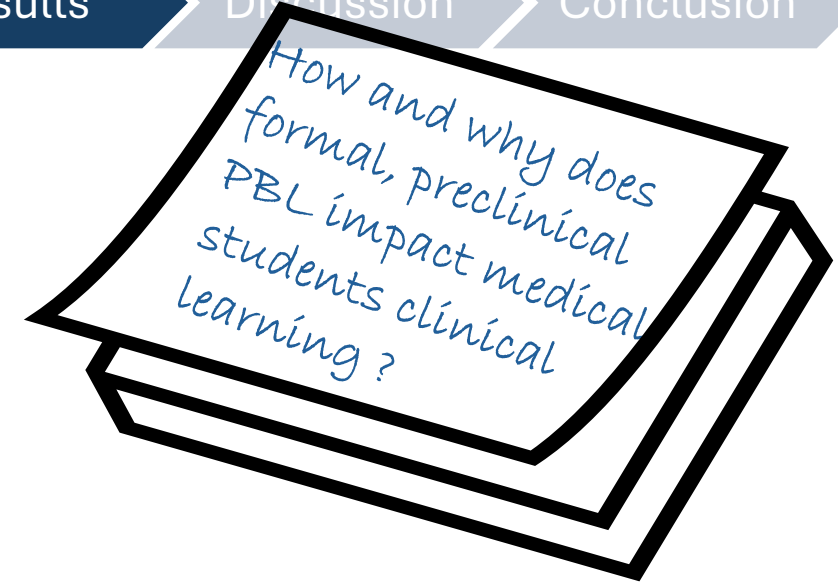


Results - Thematic analysis

2. Perceived issues in preclinical PBL processes **negatively affect preclinical learning**, with subsequent consequences on clinical learning.

Impact on preclinical learning: Confusion, frustration causing

- Decreased motivation for learning, resolving to pass the year



”
“

*There was nowhere written concretely what you needed to know and what happened is that the students revise with summaries for the exams. **FG2, Student 3, ¶ 67***

P4 : The first year I was super passionnate. I loved it, really. And PBL came like something really heavy that got imposed on us. We realized pretty quickly that it wasn't what we would need later. As I told you, it was to pass the exams. I have the impression, at least for me, that it even decreased my motivation to study subjects I actually like.

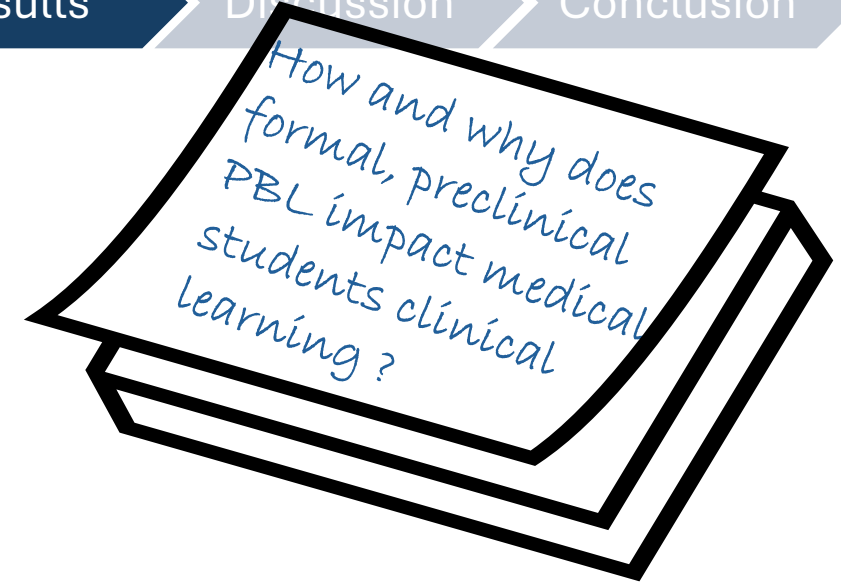
*P1 : I agree, 100%. **FG2, students 1 & 4, ¶ 126***

Results - Thematic analysis

2. Perceived issues in preclinical PBL processes **negatively affect preclinical learning**, with subsequent consequences on clinical learning.

Impact on preclinical learning: Confusion, frustration causing

- Decreased motivation for learning, resolving to pass the year
- Poor development of SDL skills



“

I: Did you do [SDL] during PBL.

P4: No

P5: No

P3: Looking for other resources when facing a knowledge gap? Not really.

FG3, students 3,4&5, ¶ 80

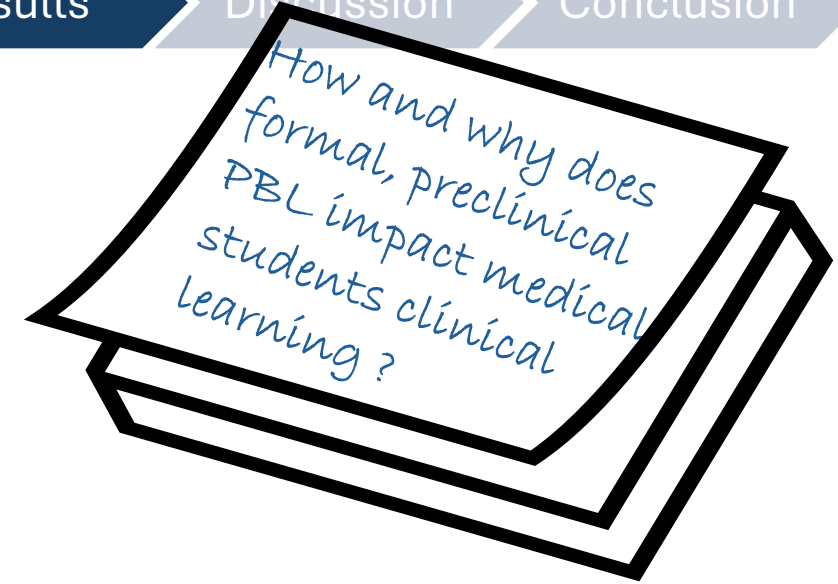
Since the summary allows me to perform well on the exam, I don't go and search anything else. Having scientific curiosity would have been to [go beyond] to find a more complete answer to a question I would have during PBL. FG2, Student 6, ¶ 121

Results - Thematic analysis

2. Perceived issues in preclinical PBL processes **negatively affect preclinical learning**, with subsequent consequences on clinical learning.

Impact on preclinical learning: Confusion, frustration causing

- Decreased motivation for learning, resolving to pass the year
- Poor development of SDL skills
- Poor constructive learning



”
“

*I have the impression that this is what is wrong with the very concept of PBL, it wanted us to make links [between concepts] too strong, too quickly, and as a result we have this completely fragmented knowledge which is supposed to help us make links with the clinic. But in the end, underneath it all, the knowledge ... our basic knowledge isn't structured, we can't reuse it. **FG3, Student 4, ¶ 135***

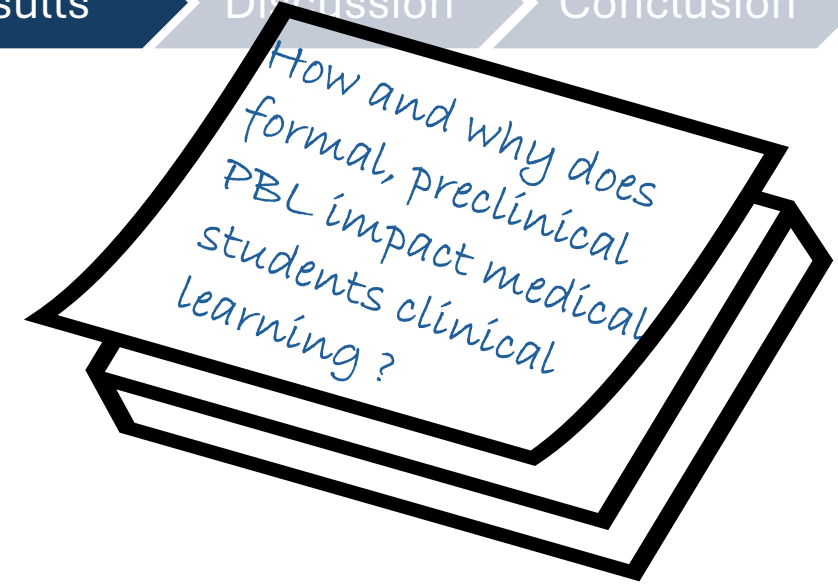
Results - Thematic analysis

2. Perceived issues in preclinical PBL processes negatively affect preclinical learning, with subsequent **consequences on clinical learning**.

Consequence on clinical learning

- Difficulties to go back to foundations

*I don't have a solid source or base now. Physiopathology, for its part, has become a bit dilapidated in PBL, by dint of making small subjects, putting in a lot of molecules and I find that for the master's degree, that's a big shortcoming. [...] When I revise now, I go back to my first-year courses because I know them all [...]. The 2nd and 3rd years – there's nothing. **FG1, Student 1, ¶ 104***



”
“

*For example, kidney failure. First of all you need to go back to the unit, then remember which case. And once found the case and the material created during the tutorial, the structure isn't very appropriate. [...] In fact, in the end, we end up studying the subject and its physiopathology from other sources rather than what we did in the 2nd-3rd years. I wonder what did I learn back then? **FG3, Student 3, ¶ 35***

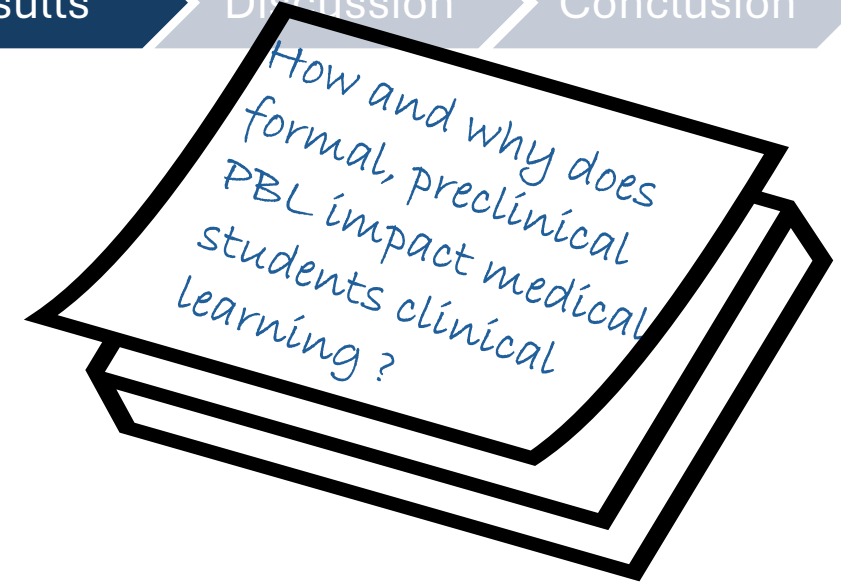
Results - Thematic analysis

2. Perceived issues in preclinical PBL processes negatively affect preclinical learning, with subsequent **consequences on clinical learning**.

Consequence on clinical learning

- Difficulties to go back to foundations
- Insecurity to identify relevant resources

I have the impression that the faculty doesn't actually provide a resource, a resource that's a bit like the Gold standard for everyone, like French colleges. In fact, we spend a lot of time looking for information, and we're never 100% sure whether what we're learning is relevant or not, and whether it's what we're doing at the HUG. FG3, Student 3, ¶ 22



”
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Even if the PBL system promotes a bit of independence, they still arrive with a rather passive attitude, where they still expect a lot of explanations from the clinical supervisor.

I3, Supervisor, ¶ 34

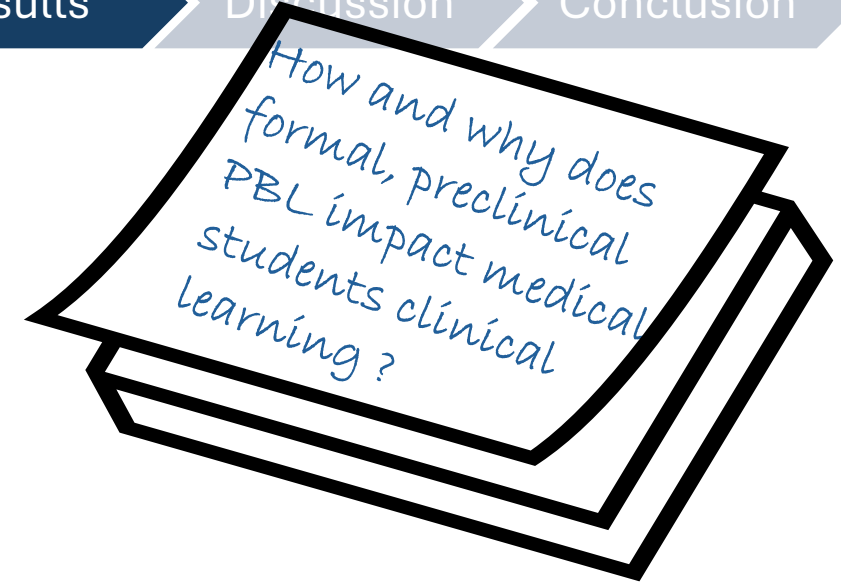
Results - Thematic analysis

2. Perceived issues in preclinical PBL processes negatively affect preclinical learning, with subsequent **consequences on clinical learning**.

Consequence on clinical learning

- Difficulties to go back to foundations
- Insecurity to identify relevant resources
- Mistrust

”
“



Trusting the teaching, trusting the references, trusting PBL - there's a... if it's really, if it's aligned with what's expected of us and if what's expected of us is aligned with what's really necessary for clinical application. In fact, it's really this path that has to be suitable. If it's not right, we don't have much confidence. FG3, Student 3, ¶ 55

Discussion

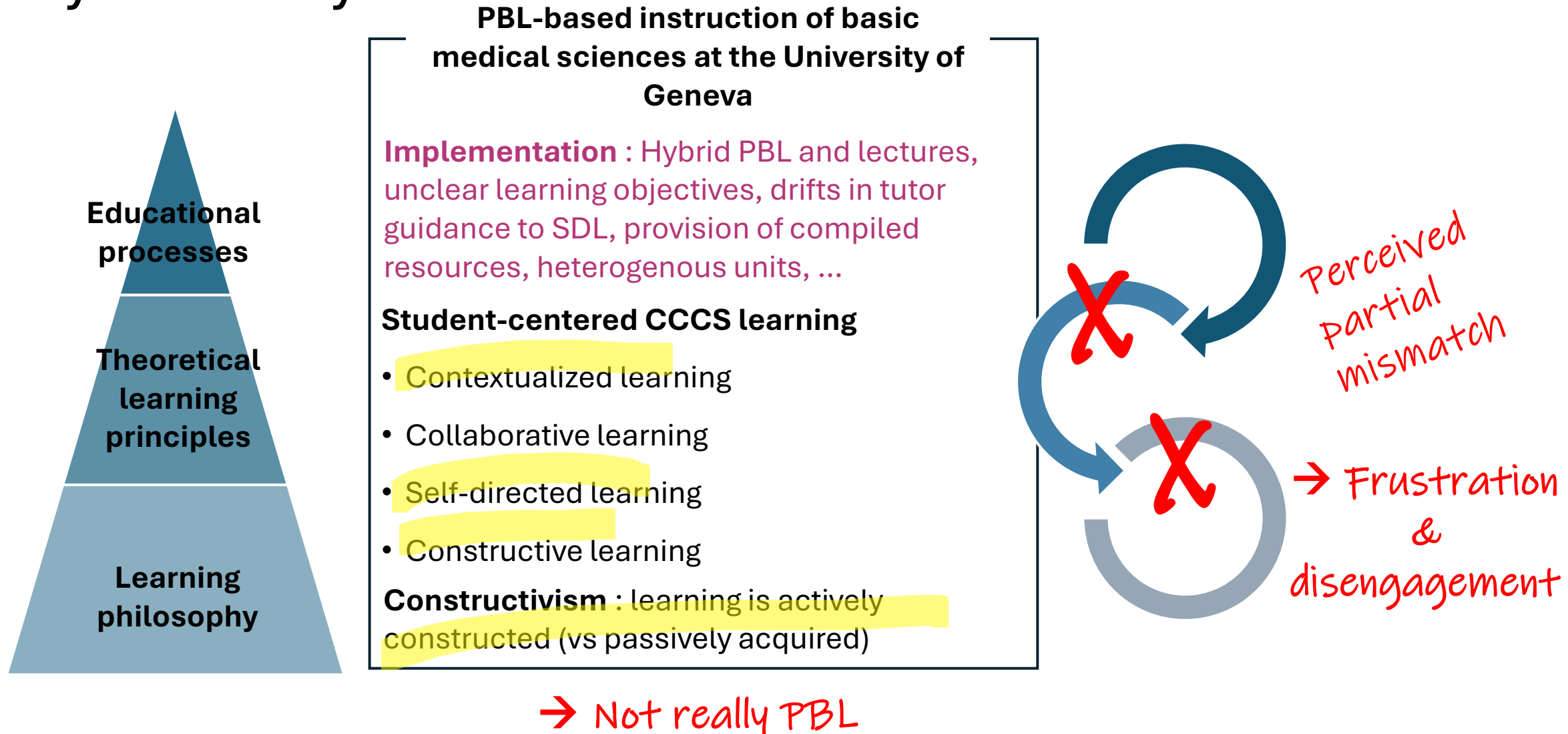
PBL, as implemented at the University of Geneva,

1. May **positively** impact students' workplace learning through **social competence development** and **collaborative skill development** in the preclinical years
2. Can have **no/negative impact** on students' workplace learning by having no/negative impact on preclinical learning, through **problems in the educational processes** that students perceive

Why ?

And what can we do about it ?

Layered analysis



Perspectives

1. What is our desired educational philosophy ?
2. What learning principles should underpin our instruction ?
3. How can we develop and implement educational processes that adopt (rather than adapt) those learning principles ?

PBL → CBCL @ Unige

- Take the momentum for **change** !
- Identify and **communicate** key learning principles
- **Continuous monitoring** (QA, CQI) of educational processes & link with theoretical groundings

Limitations

1. Target population clinical supervisor
 - Small number (however : sufficiency reached)
 - No interns, who are the actual supervisors
2. Student perceptions
 - Self-reported (but : supervisor perspective)
 - Apparent focus on “negative” aspects (however : thorough interview guides)
3. Researcher (SW)
 - Highly involved with current reform (however : co-animation with RA, reflexivity)
 - Coding and analysis carried out alone → present and discuss findings with community

Merci !



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University



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Faculté de médecine

And for your attention ;-)

Questions ?

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