



**LDAR**

LABORATOIRE DE DIDACTIQUE  
ANDRÉ REVUZ

✱  
RECHERCHE  
EN DIDACTIQUE  
DES SCIENCES

## University teachers' *in situ* practices and comparison with students' experiences : a case study

INDRUM 2020

september, 14th 2020

Stéphanie BRIDOUX - UMONS  
Cécile de HOSSON - Université de Paris  
Céline NIHOUL - UMONS

# Plan

## Plan

Research questions and theoretical framework

First results

Conclusion

- 1 Research questions and theoretical framework
- 2 First results
- 3 Conclusion

# Research context

Plan

Research questions and theoretical framework

First results

Conclusion

- University teachers' teaching practices (UT).

# Research context

Plan

Research questions and theoretical framework

First results

Conclusion

- University teachers' teaching practices (UT).
- A lot of research on this topic (Berthiaume, 2007 ; Trede, Macklin, & Bridges, 2012) but few of them have taken into account a disciplinary approach.

# Research context

Plan

Research questions and theoretical framework

First results

Conclusion

- University teachers' teaching practices (UT).
- A lot of research on this topic (Berthiaume, 2007 ; Trede, Macklin, & Bridges, 2012) but few of them have taken into account a disciplinary approach.
- In line with research on UT's professional identity (Bridoux et al., 2019 ; de Hosson et al., 2015).

# Research context

Plan

Research questions and theoretical framework

First results

Conclusion

- University teachers' teaching practices (UT).
- A lot of research on this topic (Berthiaume, 2007 ; Trede, Macklin, & Bridges, 2012) but few of them have taken into account a disciplinary approach.
- In line with research on UT's professional identity (Bridoux et al., 2019 ; de Hosson et al., 2015).
- Focus on the consequences of UT's practices on students' experiences.

# Theoretical framework

Theoretical environment : professional identity (Dubar, 1996 ; Tickle, 2000).

Plan

Research  
questions and  
theoretical  
framework

First results

Conclusion

# Theoretical framework

Theoretical environment : professional identity (Dubar, 1996 ; Tickle, 2000).

## The professional identity specified in didactics

- Considering UT's relationship to the discipline (**epistemological** relationship).
- Considering how UT relate to the way the discipline has to be taught (**pedagogical** relationship).



# Theoretical framework

Theoretical environment : professional identity (Dubar, 1996 ; Tickle, 2000).

## The professional identity specified in didactics

- Considering UT's relationship to the discipline (**epistemological** relationship).
- Considering how UT relate to the way the discipline has to be taught (**pedagogical** relationship).

The study of these two relationships highlights **norms**, **qualities** and **values** that the UT assigns to his profession.

↪ Better understanding of UT's choices when they teach.

# Research questions

Plan

Research questions and theoretical framework

First results

Conclusion

## Hypothesis

Student's success depends especially on the match between UT's intentions and how students perceive them.

# Research questions

Plan

Research questions and theoretical framework

First results

Conclusion

## Hypothesis

Student's success depends especially on the match between UT's intentions and how students perceive them.

## Research questions

- Which dimensions of UT's professional identity are reflected in their practices?
- What are the consequences of these dimensions on students' experiences?

# Methodology

- 2 UT from UMONS (Belgium) : one in mathematics, one in physics.
- 17 students participating both courses.
- 3 steps :

Plan

Research questions and theoretical framework

First results

Conclusion

# Methodology

- 2 UT from UMONS (Belgium) : one in mathematics, one in physics.
- 17 students participating both courses.
- 3 steps :
  - ① **Interviews (30') with each UT** : identify norms, qualities, values assigned to his teaching practices.  
↪ characterize the epistemological and pedagogical relationships UT has with his discipline.

# Methodology

- 2 UT from UMONS (Belgium) : one in mathematics, one in physics.
- 17 students participating both courses.
- 3 steps :
  - ① **Interviews (30') with each UT** : identify norms, qualities, values assigned to his teaching practices.  
↪ characterize the epistemological and pedagogical relationships UT has with his discipline.
  - ② **In situ observation (lecture)** : supports, examples, drawings, questions, ...  
↪ confront the dimensions identified in the interviews and the effective lecture.

# Methodology

- 2 UT from UMONS (Belgium) : one in mathematics, one in physics.
- 17 students participating both courses.
- 3 steps :
  - ① **Interviews (30') with each UT** : identify norms, qualities, values assigned to his teaching practices.  
↪ characterize the epistemological and pedagogical relationships UT has with his discipline.
  - ② **In situ observation (lecture)** : supports, examples, drawings, questions, ...  
↪ confront the dimensions identified in the interviews and the effective lecture.
  - ③ **Questionnaires for students.**  
↪ confront the dimensions identified in the interviews and students' experiences.

# Sample questions

Plan

Research questions and theoretical framework

First results

Conclusion

	UTs	Students
Norms	What do students have to learn/understand? What is easy/difficult?	What was easy/difficult?
Qualities	What is a good math/physics course?	Did you enjoy the course? Why?
Values	What is your approach? Which supports? Which examples?	Did the examples help you to understand the course?



# Interviews of UT before courses

## Main aspects

- In **Mathematics** (**epistemological** profile) :
  - UT starts the course with examples of differential equations describing physical movements.
  - GOALS : UT does all the mathematical details rigorously (value), aims for an in depth understanding (norm).

# Interviews of UT before courses

## Main aspects

- In **Mathematics** (**epistemological** profile) :
  - UT starts the course with examples of differential equations describing physical movements.
  - GOALS : UT does all the mathematical details rigorously (value), aims for an in depth understanding (norm).
- In **Physics** (**methodological** profile) :
  - UT starts the course with examples on electric flow and Gauss theorem.
  - GOALS : UT prepares students for evaluations (quality), introduces different methods that students need to remember for evaluations (value).

# *In situ* observation

- There is consistency between UT's goals and classroom implementations.

Plan

Research questions and theoretical framework

First results

Conclusion

# *In situ* observation

- There is consistency between UT's goals and classroom implementations.
- In both courses, mathematics and physics are used in the examples.

Plan

Research questions and theoretical framework

First results

Conclusion

# *In situ* observation

- There is consistency between UT's goals and classroom implementations.
- In both courses, mathematics and physics are used in the examples.
- UT's profile influences the examples process.

Plan

Research questions and theoretical framework

First results

Conclusion

# *In situ* observation

Plan

Research questions and theoretical framework

First results

Conclusion

- There is consistency between UT's goals and classroom implementations.
- In both courses, mathematics and physics are used in the examples.
- UT's profile influences the examples process.
  - In **Mathematics** : UT considers that students have the necessary physics basis to understand it.  
↔ The examples are too different from what students have learnt in physics.

# *In situ* observation

Plan

Research questions and theoretical framework

First results

Conclusion

- There is consistency between UT's goals and classroom implementations.
- In both courses, mathematics and physics are used in the examples.
- UT's profile influences the examples process.
  - In **Mathematics** : UT considers that students have the necessary physics basis to understand it.  
↔ The examples are too different from what students have learnt in physics.
  - In **Physics** : UT structures his course in methods to be remembered.  
↔ The course is close to what students have learnt and how they work.

# Analysis of the questionnaires

## Did you enjoy the course? Why?

Mathematics	Physics
<b>87% didn't like it</b> because it was too fast and the presentation was unclear.	<b>47% didn't like it</b> because it was hard to stay focused.

Plan

Research questions and theoretical framework

First results

Conclusion



# Analysis of the questionnaires

## Did you enjoy the course? Why?

Mathematics	Physics
<b>87% didn't like it</b> because it was too fast and the presentation was unclear.	<b>47% didn't like it</b> because it was hard to stay focused.

## Did the examples help you to understand the course? Why?

Mathematics	Physics
<b>87% said no</b> because the links between math and physics were difficult to identify.	<b>70% said yes</b> because it was easier to prepare for evaluations.

# Conclusion (1/2)

Plan

Research questions and theoretical framework

First results

Conclusion

## Research question 1

Which dimensions of UT's professional identity are reflected in their practices ?

- UTs' practices are organized according to specific dimensions of professional identity : targeted understanding, selected examples, examples process, ...
- Teaching practices are influenced by the UT's goals and understanding of the topic.  
↪ epistemological profile vs methodological profile

## Conclusion (2/2)

### Research question 2

What are the consequences of these dimensions on students' experiences?

- In **Mathematics** : UT's epistemological anchoring leads to gaps between his goals and the students' experiences. It can even make it more difficult for the students.
- In **Physics** : the practices of the UT stems from a methodological profile and is constrained by pedagogical concerns. Students are more likely to embrace these practices.

## Conclusion (2/2)

### Research question 2

What are the consequences of these dimensions on students' experiences ?

- In **Mathematics** : UT's epistemological anchoring leads to gaps between his goals and the students' experiences. It can even make it more difficult for the students.
- In **Physics** : the practices of the UT stems from a methodological profile and is constrained by pedagogical concerns. Students are more likely to embrace these practices.

**PERSPECTIVE** : Focus on the effects of UTs' practices on students' intended learning.