



Refresh-Teaching 2015

Misconceptions

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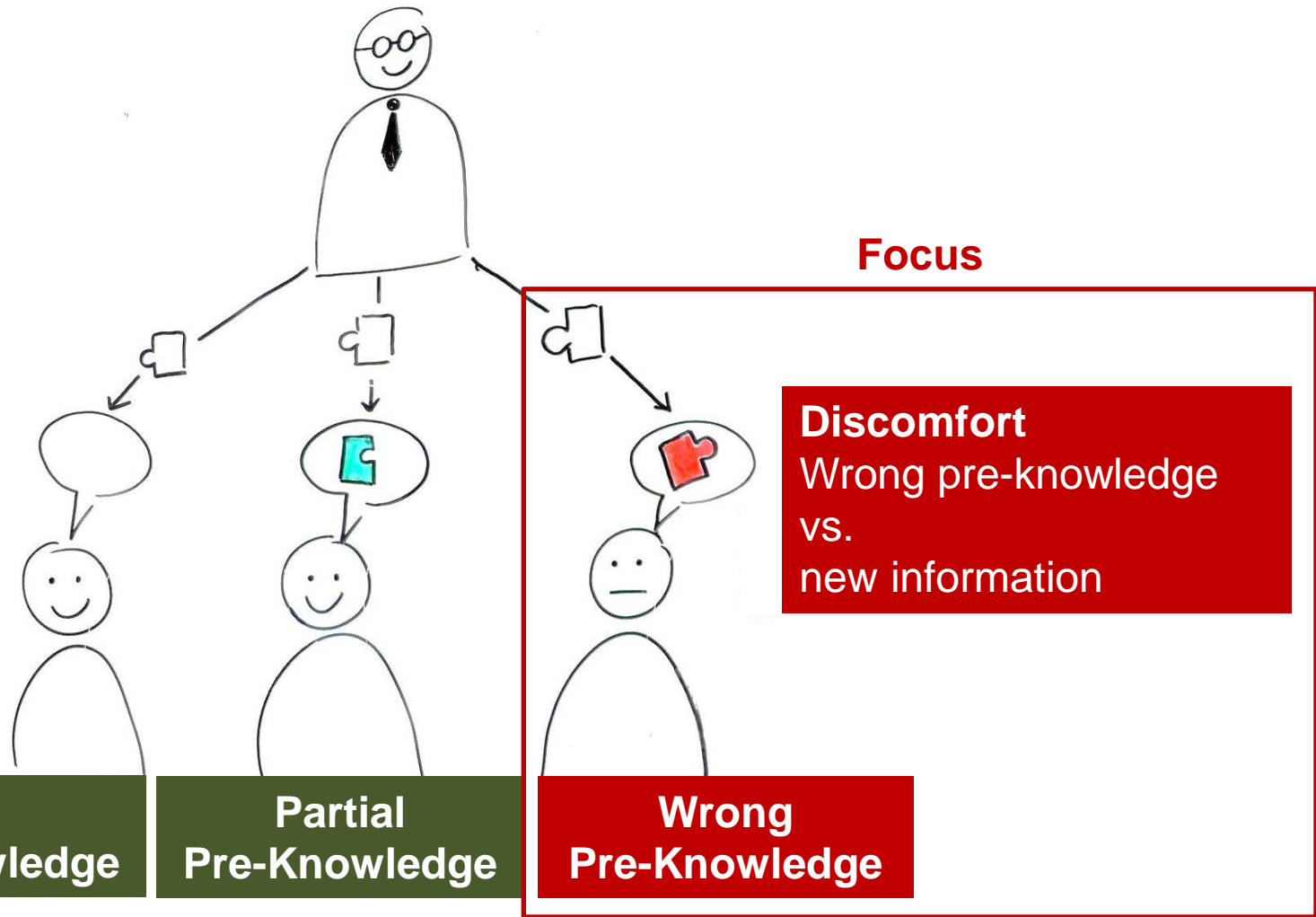
Definition 'Misconception'

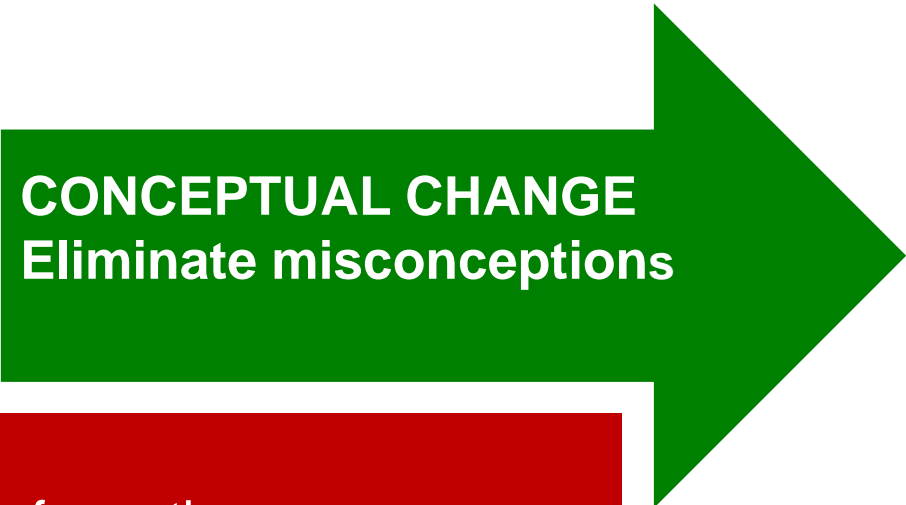
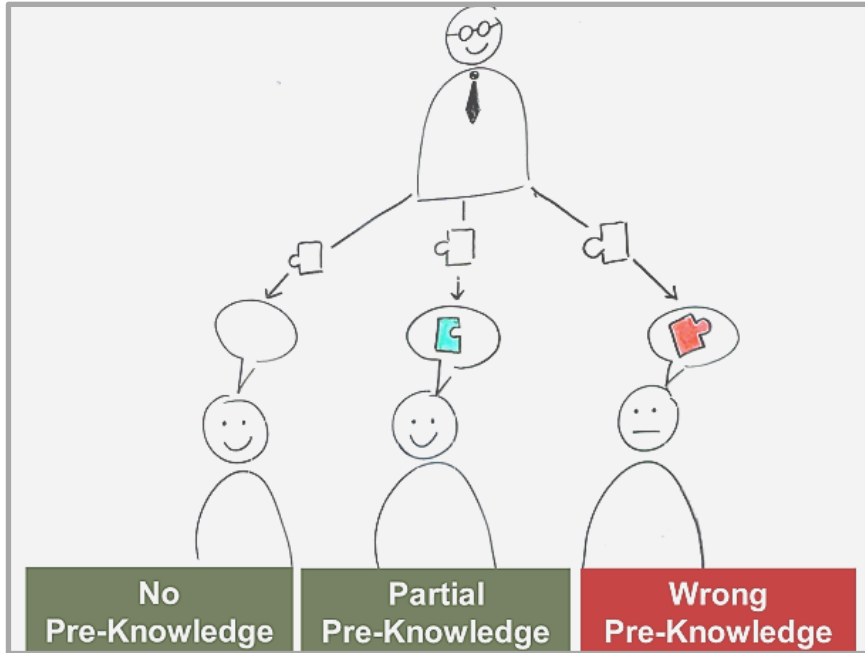
A view or opinion that is incorrect because based on faulty thinking or understanding.

(Oxford Dictionaries, 2015)

Our focus for this event:

- Misconceptions **shared by many**
- **Persistent** misconceptions
- **How to react** to known misconceptions?





LEARNING
Accept new concept

NO LEARNING
Ignore or reject information

WRONG or INCOMPLETE LEARNING
Build parallel theories

Summary of presentations

**Find
Misconceptions**

**Use
misconceptions
for planning
teaching**

**Eliminate
misconceptions**

D-BIOL	Pre-Post-Tests	-First scenarios -Curriculum- Adaptation	First scenarios
D-USYS	Use essay- exams	-First scenarios -New MC-Tests	First scenarios
D-PHYS	Concept- Questions	-Demonstrations -Peer-Instruction	-Demonstrations -Self-Study

Conceptual Change Framework

1. **Faculty create** situations where learners' existing conceptions about particular topics are made explicit and directly challenged in order to create a **cognitive conflict**.
2. The situation **cannot be explained by the students' current conceptions** but by the correct conception.
3. **Faculty encourage and guide conceptual restructuring** by giving students time to reflect and restructure their knowledge.

KEY: Learners take an **active role** in reorganizing their knowledge.

Transfer-Phase: Activity

Start with a known misconception in your department.

How can faculty and students react to misconceptions?

Take Home Message

1. Misconceptions can be **detected with existing inventories** (web), **own MC-Questions** or by **categorizing wrong open-text-answers of exams.**
2. Misconceptions can be used as **wrong answers** (Multiple Choice)
3. It is **important to overcome misconceptions** (they hinder learning)
4. The creation of **cognitive conflicts** helps to overcome misconceptions (e.g. concept questions)