Unit 2:
LEARNING BY PLAYING
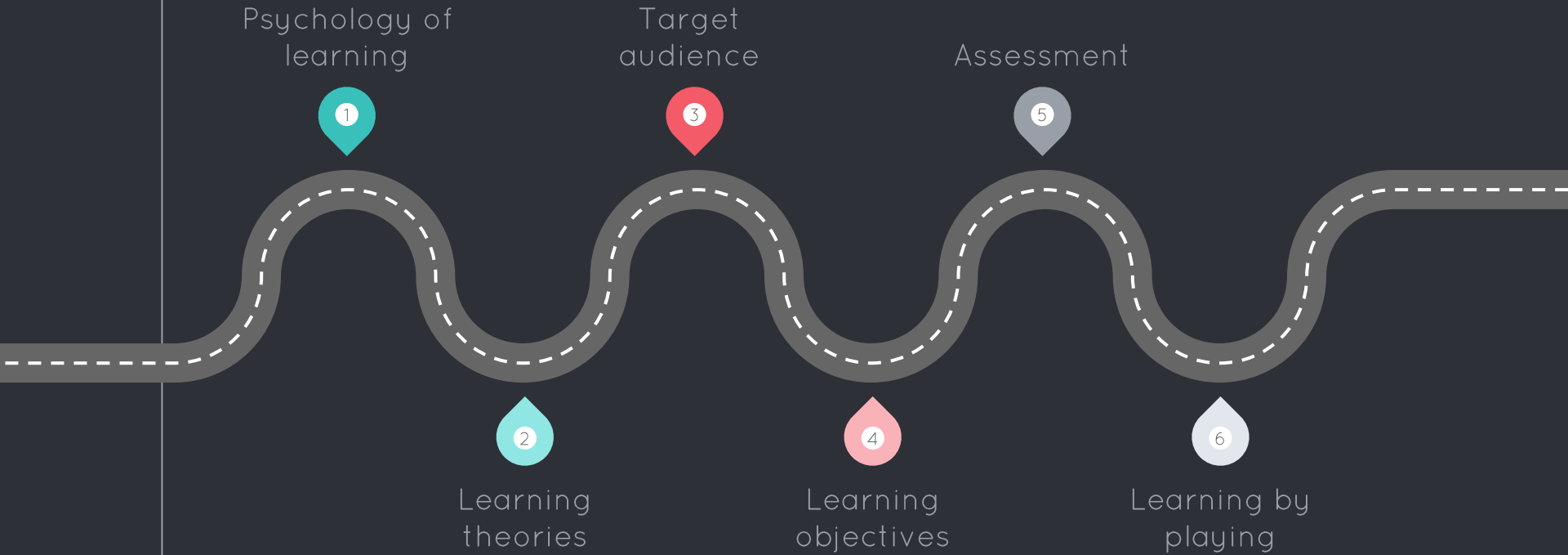
Hello!

WE ARE Katharina Hohla & Martin Ebner

Today's Roadmap

Psychology of learning

1

Target audience

3

Assessment

5

Learning theories

2

Learning objectives

4

Learning by playing

6

1 PSYCHOLOGY OF LEARNING

How do we remember? What is happening in our brains?

WHAT IS „LEARNING"?

Wikipedia:

"Learning is the process of acquiring new
understanding,
knowledge,
behaviors,
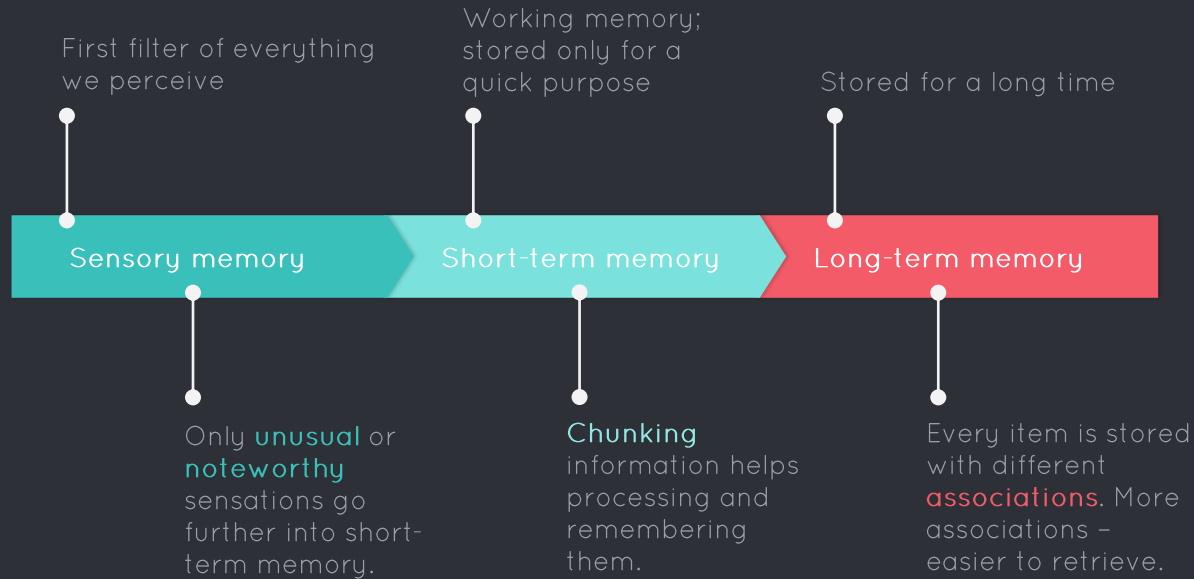skills,
values,
attitudes,
and preferences."

Source: https://en.wikipedia.org/wiki/Learning, CC BY-SA 3.0

BUT HOW?

Der Nürnberger Trichter in alter Zeit, der machte die dümmsten Leute gescheit!

NÜRNBERGER TRICHTER

2×2=8.
6+
7
10

Gruss aus Nürnberg.

Learning/Teaching = Pouring in knowledge?

HOW DO WE REMEMBER?

First filter of everything we perceive

Working memory; stored only for a quick purpose

Stored for a long time

Sensory memory ▸ **Short-term memory** ▸ **Long-term memory**

Only unusual or noteworthy sensations go further into short-term memory.

Chunking information helps processing and remembering them.

Every item is stored with different associations. More associations – easier to retrieve.

HOW DO WE BUILD MEMORIES?

◦ Learning something new -> connections between neurons are formed

◦ **More contact with material** -> connections between neurons are strengthened

◦ No contact for some time -> connections between neurons become weaker

WHAT TYPES OF MEMORIES ARE THERE?

Declarative memory	Facts
Episodic memory	Experiences and events
Conditioned memory	Practiced or conditioned
Procedural memory	How to do things
Flashbulb memory	Everything around an emotionally charged event

2 LEARNING THEORIES

How do we learn?

LEARNING THEORIES – HOW DO WE LEARN?

- **Behaviourism**
  - Learning as a **reaction** to stimuli
  - Interest in behaviour, not in mental processes or pre-existing knowledge
  - Conditioning by rewards or punishment (Pavlov's dog)

- **Cognitivism**
  - Learning as a **mental** process of information processing (sender – encoded information – receiver)
  - Focus on problem solving

- **Constructivism**
  - Learning as a **creation** of individual representations of the world
  - Assumption: There is no objective reality

LEARNING THEORIES – WHAT'S THE BEST ONE?

- There is no „best learning theory".

- Different learning theories mean …
  - … a different understanding of human beings.
  - … different approaches on how to design learning experiences.

3 TARGET AUDIENCE

Who are your learners?

WHO ARE YOUR LEARNERS?

- Demographics (age, gender, job, ...)

- What do they want? Why are they "here"?

- What is their current skill level?

- What do they like?

○ Innate types according to sensorial input:
Visual – auditory – communicative – kinaesthetic?

▫ Attention: No evidence!

▫ Better: use variety and adapt to the content!

4 LEARNING OBJECTIVES

What is the goal?

WHAT'S THE GOAL?

1. Define the problem
    Why do the learners need to know that?
    What bad thing could happen if they don't?

2. Define the goal
    What should they be able to do?

Photo by Ante Hamersmit on Unsplash

LEARNING OBJECTIVES – HOW DO I DEFINE THEM?

○ "The learner will be able to …"

○ What are really good learning objectives?
  ▫ Learners would do it also in real world.
  ▫ I can tell when they've done it – it is measurable.

○ Example: Programming – The learner will be able …
  ▫ … to program. X
  ▫ … to write and execute the "Hello world" program.
  ▫ … to use the "while" and "for" loops for repeated actions.
  ▫ … to use the correct data type for a variable according to the value they want to store.

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LEARNING OBJECTIVES – HOW DO I ACHIEVE THEM?

- Repetition -> long-term memory
  - Many different encounters for knowledge
  - Lots of practice for skills

- BUT: Not too much new info at the same time! (overloading the brain)
  - Find balance between ability and challenge (not too difficult, not too easy)
  - Space out the practice over time (sleeping in between helps)

5 ASSESSMENT

How do we measure the goal?

ASSESSMENT – FEEDBACK - EVALUATION

○ Did the learners learn what I wanted them to learn?
-> Use assessment!

▫ Keep in mind:
Learning objective, practice and assessment should match.

○ Do they know what they've learned?
-> Give them feedback!

▫ The more detailed the feedback, the better.

▫ Feedback in video games:
Sounds, points, character reactions, scores,
visual cues, badges, …

Photo by Museums Victoria on Unsplash

6 LEARNING BY PLAYING

Learning without studying?

What do you think are those advantages?

-> Please brainstorm in the chat

ADVANTAGES OF LEARNING BY PLAYING

- Players are engaged, emotionally involved, highly motivated

- Games are (simplified) simulations of the real world

- Playing can support self-regulated learning

- Playing can support emotional, social and situational learning

Group Work

... it's your turn

NOW IT'S YOUR TURN

- ◦ Form groups of 4.
- ◦ Go into your breakout room.
- ◦ Complete the task.

- ◦ Afterwards: Group presentations

Resummee

What can you take away for yourself and your work?

Go to https://fbr.io/join/idgbl and enter your answer

References

○ Dirksen, Julie (2016): *Design for how people learn*. Berkeley: New Riders.

○ E-teaching.org (2015): *Game Based Learning*. https://www.e-teaching.org/didaktik/konzeption/methoden/lernspiele/game_based_learning

○ Reinmann, Gabi (2013): *Didaktisches Handeln. Die Beziehung zwischen Lerntheorien und Didaktischem Design*. In: Ebner, Martin, Schön, Sandra: L3T. Lehrbuch für Lernen und Lehren mit Technologien. https://l3t.tugraz.at/index.php/LehrbuchEbner10/article/view/93

CREDITS

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Thanks for the attention!

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