

*Education on the Horizon: Teaching
and Learning with Technology*

Week 09: Child
Development and
Technology

===

Dr. Yizhen (Eejain) Huang

Department Erziehungswissenschaft, University of
Potsdam



Are we addicted to the screen?



- Compulsive engagement in rewarding substance or activity, despite the adverse consequences.

TOP DEFINITION



phubber

The combination of the words, "phone" and "snubber" which means people who lower their heads looking at their smart phones.

The number of phubbers has risen dramatically in recent years.



Young Phubber

by Eejian Huang. With the growing economy, lots of young Chinese children are equipped with mobile devices and have the freedom of playing mobile games when their parents are too tired to take care of them. This picture was shot during a common family gathering, and my cousins had their heads down for almost the entire evening. Beijing.

Why do we care more about
children's digital usage?

Children have difficulty in delaying gratification

- The marshmallow test
- The ability to resist instant gratification is highly correlated with future achievement

Negative impacts

- Screen addiction
- Online bullying
- ADHD
- Depression
- ...

A word of caution

- All the medium had been criticized at some point
- Even the books!
- Medium itself doesn't carry value judgment, but content does

How to choose proper educational
content?

Children's cognitive development

- Children's *thinking* is fundamentally *different* from adult's
- Educational content has to match the children's cognitive development stage (not necessarily their ages) and promote "metacognition"

Piaget's theory

- Development is characterized by a sequence of *stages*
- Each stage builds on preceding stages, but is qualitatively unique
- Children need to accomplish the essential task of one stage in order to enter the next

Stage	Key Task	Knowledge	Approximate Age
Sensorimotor stage	Object permanence	Action knowledge	0–2 years
Preoperational stage	Egocentrism (theory of mind)	Symbolic knowledge	2–6 years
Concrete operational stage	Conservation problem	Abstract knowledge	6–12 years
Formal operational stage	Abstract reasoning	Propositional knowledge	> 12 years

Sensorimotor stage: Object permanence

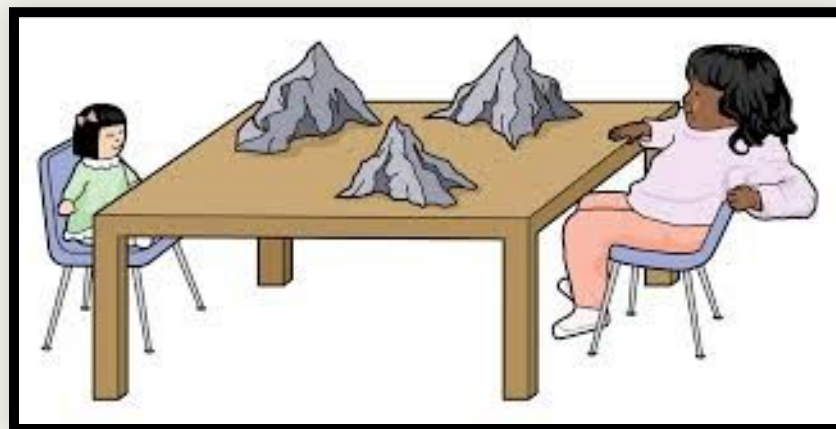


Pre-operational stage: Theory of mind

- The task of pre-operational stage is understanding other people also have their own thinking
- Can you solve the question on the left?

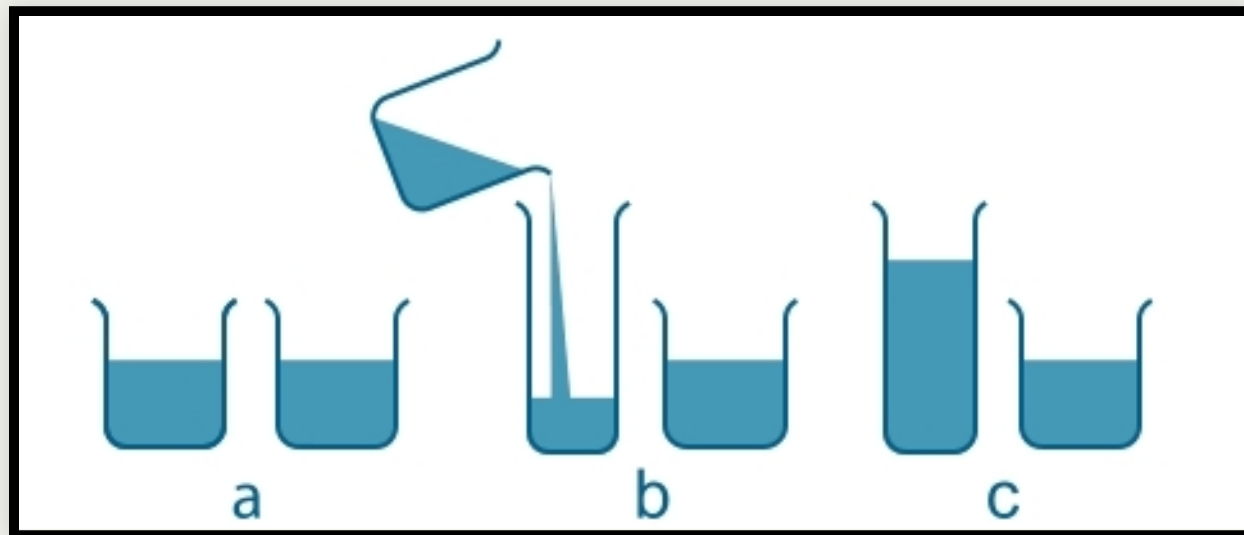
Three mountain experiment

- Another classic test to check if children can understand theory of mind
- The child has to answer what kind of view the doll is looking at



Concrete operational stage: Conservation problem

- Can you tell me which container in picture c has more liquid?
- At the end of concrete operational stage, children should be able to solve this conservation problem



Formal operational stage: Abstract reasoning

- In the last stage of cognitive development, children need to understand abstract concept

Let's test your knowledge

Patricia is upset because she is convinced that her brother has a bigger piece of cake than she does. Her dad quickly slices Patricia's piece of cake in two and tells her that she now has "more" cake. If Patricia calms down and is convinced that she does have more cake than her brother, it would suggest that she:

- A. has not yet mastered object permanence.
- B. does not understand the process of assimilation.
- C. does not yet understand conservation.
- D. is displaying egocentric reasoning.

A Fairy-Tale-King invites you to sit down in front of him... “design for me, a magical castle with beautiful towers.” It turns out that he has enough money to pay for ten floors and tells you to distribute these ten floors any way you like between your towers.

“However”, he whispers, “None of the towers can be the same height!” For example, you could build three towers of height 4,5,1 but you could not build four towers of heights 1,3,5,1 because two towers are of height 1.

When you are thinking about this problem, did you also thought about the *thinking* itself?

Think about thinking = Metacognition

- Metacognition means “thinking about one’s own thinking”, “higher-order cognition about cognition”, “knowledge about knowledge”, “thoughts about thoughts” or “reflection about reflection”
- Monitor and organize your own thinking is important for effective problem solving!

How to solve ANY
problem?

For example...

- Assess the task: Have I seen similar problem before? How difficult this might be?
- Evaluate strengths / weaknesses: Can I ask someone for help regarding xxx?
- Plan the approach: What's my goal? How can I get there?
- Apply strategies: Am I on the right track?
- Reflect: Did I meet my goal? Are there different ways to do it?

Here are some articles you might found interesting!

- Boost metacognition in classroom
- Classroom activities for metacognition

Take home message

- Media is not evil for kid's development
- Children's learning needs to be scaffolded with consideration to
 - their cognitive development stage
 - their metacognition strategy