

## **Constructivist Teaching Model**

### **Description**

- Constructivist Model**
- Common Variations, Synonyms**
- Teaching Role**

### **Assumptions**

- Premise**
  - People learn by constructing their own...**
  - The process of constructing involves...**
  - The contexts for constructing involves...**

### **Processes**

- Learning processes include...**
- Teaching processes include...**

### **Examples**

## Description

**Constructivist Model** – “a new, widespread acceptance of this old set of ideas” with “new research in cognitive psychology to support [them]...” - ideas explained long ago by John Dewey [5, 9, 11], Jerome Bruner (discovery model) [7, 9], Piaget [7, 11], and Vygotsky [10], and even earlier in the 18<sup>th</sup> C by Giambattista Vico “who held that humans can only clearly understand what they have themselves constructed.” [11]

**Common variations/synonyms:** problem-based learning, cooperative learning, authentic learning, reciprocal learning, inquiry learning, situated learning, anchored instruction, case-based instruction, cognitive apprenticeship, generative learning, discovery learning, open learning [15, 16]

### Teaching role:

The focus shifts to the learner, to the thinking about the process of learning of the content, not just the content of a subject or lesson. [5] The teacher “sets up problems and monitors student exploration, guides the direction of student inquiry and promotes new patterns of thinking.” [10] Students gain responsibility for learning. [10] Teachers provide “coaching and scaffolding at critical times” [15] In a web course, this could mean monitoring threads of discussions and encouraging reflections, or using information gathered from discussions to “prompt students’ thoughts, and to encourage reflection and articulation of the ideas presented.” [16] The teacher coaches and analyzes the strategies used to solve the problems. [16] “Classes can take unexpected turns as students are given the autonomy to direct their own explorations.” [10]

### Assumptions

**Premise:** there is no absolute “truth” or “ultimate reality” – we all have our personal interpretation and organization of knowledge [9] and what we learn depends upon our “prior learning, new information, and readiness to learn” as well as the choices we make “about what new ideas to accept and how to fit them into [our] established views of the world.” [10] We enter a new learning situation with “myths, taboos, things we learn from our families, friends, and teachers – all are part of cultural influence.” [10] If a teacher does not know “what views the students hold, classroom teaching can actually help students construct faulty ideas.” [10] “...learners’ prior knowledge and experiences interact with both learning outcomes and instructional techniques.” [16]

### People learn by constructing their own...

meaning 1, 9

ideas about the world 2

knowledge structures – concepts, beliefs, theories 2, 5, 16

cognitive structures 3

### The process of constructing involves...

building upon their existing knowledge 3, 5, 9, 16

“fitting new information together with what they already know” 6

interconnecting ideas 3, 9, 11, 16  
simultaneously processing parts and wholes of many types of information – thoughts, emotions, cultural knowledge 6  
exchanging views and testing them against those of others 10, 14, 16

**The contexts for constructing include...**

individual study, autonomy 4, 5, 9, 11, 16  
social interactions 4, 5, 9, 11, 16  
authentic applications 9, 15, 16  
anchored instruction 9, 15

**Learning and Teaching Processes**

**Learning processes include...**

self-regulating, internally controlling and mediating, self-assessing 4, 16  
taking time for learning 5  
taking time to think about questions before being expected to answer them 10  
using empirical evidence 10  
making observations 10  
processing new information in juxtaposition to old 10  
using models, observations of others, expert performances of others 10, 15, 16

activity(ies) 5, 9, 11, 16  
physical, sensory, hands-on, interactive experiences 5, 10  
social connections 5, 6, 10

reflecting 1, 4, 5, 15, 16  
abstracting 4, 5, 15  
explaining, articulating, reasoning 15, 16  
thinking about thinking 1, 15  
revising thinking 1  
learning to learn 5  
creating patterns, concept maps 2, 6, 10  
revising patterns, concept maps 9  
changing cognitive structures 1

exploring 1, 15  
discovering 1  
framing questions 10  
trying-out ideas and hypotheses 1

inventing 1  
collaborating 1, 16  
figuring out how to find solutions 1  
grapple with “ill-defined and ill-structured problems” 15

## **Teaching processes include...**

build upon prior knowledge 1, 3, 5  
challenge thinking, reasoning, hypotheses or ideas 6, 10, 14  
create maps of thinking 2, 6  
articulate ideas and knowledge 15  
assess learning – integrate testing/assessment with the task, not separate from learning 9, 15  
use assessment results for self-analysis 16  
frame questions for exploration 10  
answer open-ended questions 10  
go beyond just the facts 10

gain new knowledge 5  
respond to stimuli 3  
experience:  
authentic, realistic, real-life, real-world situations 1, 9, 10, 11, 14, 16  
context/situation-specific problems 3, 10, 15, 16  
social context of a “community of learners” who build knowledge together 11, 14

explore, discover – students interact with materials and each other 2, 15  
introduce concepts, ideas 2  
apply concepts & ideas (apply & extend knowledge) 2  
engage in dialogue about ideas and rationales 10

analyze, predict, justify, and defend ideas 10  
analyze cases 15, 16  
solve problems 14, 15, 16

help the learner fill in the gaps 3, 9  
provide a path for the learner to reach into the subject 5  
“map multiple paths through cases” 16

## **Examples**

Students discover that certain handfuls of beans cannot be laid out in completed rows and columns (to learn prime number concept). 8

Students observe skulls of animals, then other bones, to describe them, suggest their function, add meaning to terms and concepts introduced during the observations and discussions. 2

Students observe what happens to the flame and water when a cylinder is inverted over a lighted candle in a pan of water, discuss observations, provide explanations about combustion, air pressure, and scientific inquiry. 2

Students test hypothesis that clothes produce heat by placing thermometers inside the clothes for three days. They confront the subsequent raw data contradicting their pre-existing ideas and figure out how the new data fits together with what they thought before. 10

Provide problem/project with context, representation, manipulation space, related cases, information resources, cognitive tools, conversation/collaboration tools, social/contextual support. 9

Students keep a journal to log observations of the moon and its shape in the sky for several weeks. Later small groups discuss the “observations and speculations” of others. 10

Students learn definitions, not by memorizing them, but by “constructing, visualizing, drawing, measuring, contrasting, and classifying figures according to their properties.” They learn concepts of congruence and similarity by exploring “flips, slides, turns, stretchers, and shrinkers” and observing how shapes change. 12

Students construct containers of different shapes with the same surface area, fill them with beads, move beads from one container to the next, make and discuss observations and rationales for different shapes requiring different amounts of beads in order to be filled up to the top. 13

Students design a floor plan for their home in a neighborhood, plot shapes and spaces of their houses, produce data and hypotheses, discuss observations and ideas in small groups. 13

Facilitator presents problem. Learners generate working ideas or solutions, identify information available, identify what they need to find out more about, identify resources, assign tasks to group members, gather the needed information, propose solutions. 14

In a web-based course, instructor presents problem-solving or case-analysis task, group roles with rotation of roles, discussion space, formative feedback to guide thinking, open ended exams. 16

Faculty. [This group today?]

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