Constructionism

learning by creating

About the Model

✔ a philosophy of instruction related to constructivism

✔ likewise suggesting more meaningful and transferable learning will result when students are given opportunities to construct knowledge from their own point of view

About the Model

✔a constructivist activity might ask students to predict and test their own theories via microworlds or pre-structured cases

✔unlike constructivism, however, constructionism ALWAYS involves students in the creation of their own artifacts and representations (e.g., a multimedia case or report)

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Jonassen, D. H., Myers, J. M., & McKillop, A. M. (1996). From constructivism to constructionism: Learning with hypermedia/multimedia rather than from it. In B. G. Wilson (Ed.), Constructivist learning environments (pp. 93-106). Englewood Cliffs, NJ: Educational Technology Publications.

"Rather than using the limited capabilities of the computer to present information and judge learner input (neither of which computers do well) while asking learners to memorize information and later recall it (which computers do with far greater speed and accuracy than humans), we should assign cognitive responsibility to the part of the learning system that does it the best. Learners should be responsible for recognizing and judging patterns of information and then organizing them, while the computer system should perform calculations, and store and retrieve information."

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Constructionist Elements

✔ students are given a variety of resources and tools in constructionist environments

✔ resources reflect the content elements students are to acquire

✔ tools are hypermedia web page editors, multimedia program editors, video editors, etc., used by students to reconstruct information in a novel form

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Constructionist Elements

✔ students may work alone or in teams on constructionist projects

✔ the length of a project can vary widely from one week to a whole semester

✔ these design environments stress higher-order thinking skills and process understanding over extensive content coverage

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Some Steps of Constructionism
1 - Different Options for Selecting Project Topics

✓ teacher assigns topics for students to develop (e.g., given a historical period, create a web site)
✓ teacher creates product template into which students insert information of interest
✓ students and teacher brainstorm topics to develop into products
✓ teacher allows learners to create a course-related project in place of final exam

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Some Steps of Constructionism
2 - Training Students

✓ obviously students will need some prior knowledge of or exposure to development products before construction can occur
✓ templates can facilitate product creation, although potentially limiting student creativity

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Some Steps of Constructionism
3 - Collecting Information

✔ background research is a necessary step prior to production

✔ students collect and begin to organize data related to their topic from resources (e.g., maps, books, web sites, CD-Roms, videos)

✔ resources can be provided to students or students can be asked to conduct their own research/find their own resources

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Some Steps of Constructionism
4 - Scaffolding Process

✔ information should not be organized for students, as the act of finding and making sense of information structures is a key learning event in constructionism

✔ however, instructor or peer scaffolding is included in the learning environment as needed (e.g., effective strategies, concepts to focus on, procedural guidance)

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Some Steps of Constructionism
5 - Organizing

✓ one scaffolding example is to engage students in outlining their project prior to production

✓ concept mapping different screens in a web site or computer program with index cards

✓ flowcharting a presentation

✓ storyboarding a presentation

✓ using project timelines

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Some Steps of Constructionism
6 - Evaluation

✓ an effective technique in constructionist environments is evaluation

✓ students can present their products and receive feedback from their peers, their instructor, or a professional

✓ critique from multiple perspectives can lead to revision, better products, and improved understanding of concepts

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Some Steps of Constructionism
7 - Synthesis

✔ Although not a part of every constructionist project, some instructors involve students in synthesis activities whereby one group's web site or product is linked to another group's product, again focusing on similar and different perspectives

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Some Steps of Constructionism
8 - Assessment

✔ constructionist assessments focus on how well students <u>apply</u> information on a task, not how <u>much</u> they learn

✔ rubrics or criteria for expected performance can be distributed prior to a project as assessment guidelines for students to follow

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Potential Outcomes

✔increased collaboration

✔increased technical skills, production skills

✔motivation, interest, enthusiasm, pride of
ownership in products

✔easy to identify student misconceptions
through their personal representations of
content

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Potential Outcomes

✔"...the collection, adaptation, and utilization
of these materials in a hypermedia
application promotes higher level cognitive
skills such as evaluation, analysis, and,
ultimately, synthesis"
*Beal, J. W. (1994/95). The Civil War: An example of integrating LinkWay
into the Social Studies curriculum. HyperNexus, 5 (3/4), 3-5.*

✔increased understanding of relationships,
particularly through creation of hypermedia

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Potential Outcomes

✓ increased presentation skills

✓ increased understanding of visual design principles, multimedia integration principles (e.g., combining text with audio, video, graphics)

✓ increased understanding that information is not "fact," but subject to interpretation, evaluation, verification

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