Application of Constructivist Principles in Individual Capstone Projects

Discuss the application of subject principles in your Capstone Project or a training/educational/corporate situation of your choosing. We often see references to a Constructivist approach in Capstone proposals that are basically individual skill approaches. You may also address why Constructivist principles do not apply.

Please answer item "a" and use the 5P rubric to address the "P" items in "b" so that we can see how you are answering the issue.

a. Consider if learning by doing or group work evidences a Constructivist approach. What are the essential elements of a Constructivist approach? Is the group working to learn an objective standard or is knowledge being created by the work?

b. Consider how you are going to deal with:

1. Presentation: How the subject is presented, the initial taskings, the motivational element Response: Do this for all.
2. Practice: Will your audience need the same practice or will there by differing levels of task readiness or Zones of Proximal Development
3. Production: How will you verify learning?
4. Posting: Will some form of publishing, sharing of information, certificate, or other form of evidence to the group be required
5. Participation/Collaboration: Is there a knowledge creation event connected to your

objectives?

Response:

I chose to attempt to address prompt #1, applying the principles of constructivism in a preliminary analysis of my capstone project. As much of the capstone work is theoretical at this time, the 5P analysis will be based upon plans and assumptions about the end product. I hope to use this exercise to brainstorm how constructivist principles might be utilized within the framework of this course on safe and effective vinyl cutter use.

Part A response: "Learning by doing" and group work are essential elements of a constructivist approach. A constructivist curriculum is not necessarily designed to build towards a specific planned outcome. The teacher is placed in the role of "guide on the side," supporting learners in constructing their own models or schemata. From a Vygotskian social constructivism standpoint, this world view construction is inextricably connected to social interaction. Knowledge is a function of culture, "constructed and negotiated socially" (Harasim, 2017, p. 61). Piaget's cognitive constructivism champions the essential role of active participation, allowing students to organize and adapt new information into existing concepts (Harasim, 2017).

As the goal of this "Level 1" safety training is to prepare learners to safely use the Innovation Lab's vinyl cutter according to standards that do not allow deviation, the subjectivist tenets of constructivism (in which learners are supported in coming to their own conclusions) do not

support the overall objectivist framework. However, the larger goal of the course is to prepare learners to apply these tools (safely and effectively) in complex creative problem-solving, a distinctly constructivist task. In fact, the guiding instructional theory of the Innovation Lab is liberatory design, which challenges upon its adherents to tackle complex problems empathetically via six nonlinear steps: empathize, define, inquire, imagine, prototype, and try. Practitioners are called upon to see problems, engage with key stakeholders, and take actions from which they will learn (National Equity Project, n.d.).

Bearing this overarching goal in mind, I intend to integrate thought challenges that provoke creative individual assessment of how this tool might be used to benefit society, in alignment with Vygotsky's social constructivism.

Vygotsky's emphasis on tools within the context of culture is of particular interest in relation to my capstone work, which aims to prepare learners to creatively use tools to design solutions for difficult problems. As Harasim (2017) states, Vygotsky defined social development as "internalization of the tools of the culture," which serve to support engagement with our group (p. 68).

A truly constructivist learning environment supports learners within their individual zone of proximal development as students collaboratively and actively learn by doing (Harasim, 2017). As opposed to transmitting data, a constructivist instructor presents students with techniques, collaboratively scaffolding their understanding of *how* to tackle a problem. This hands-on work will typically result in physical production (Harasim, 2017)

David Jonassen if credited with defining a constructivist learning environment as providing "multiple representations of reality" that reflect the world's complexity where students are required to grapple with "authentic tasks" in real-world contexts, facilitating knowledge construction (Harasim, 2017, p. 75). This construction is accomplished socially and collaboratively. Reflection for internalization is encouraged (Harasim, 2017).

Online learning is seen as highly compatible with constructivist tenets, providing students with the opportunity to readily access data, communicate and collaborate across space, encounter challenges, and reflect on learning experiences via discussion boards or online portfolios (Harasim, 2017).

The ability to generate symbols is seen as an essential skill within Piaget's cognitive constructivism view of human development (Mcleod, 2023). Schemas allow humans to efficiently make sense of different aspects of the world they encounter. As conflicting concepts are encountered, humans adapt these mental models, or schema, through assimilation and accommodation until equilibration is achieved (Mcleod, 2013).

The Plowden report, produced in the UK in the 1960s by educators seeking to implement tenets of Piaget's cognitive constructivism within primary education, emphasized the importance of readiness for learning (Mcleod, 2013). A flexible curriculum that allows adjustment to the individual readiness of each learner is one of the key recommendations this report provided.

As my audience is 11- to 65-year-old learners, it might be assumed that most participants will have reached Piaget's formal operational stage of cognitive development. At this stage, learners are expected to be capable of hypothetical thinking and logical reasoning (Mcleod, 2013). It is relevant to note, however, that not all learners are believed to reach this final stage; critics of Piaget have asserted that only one third of adults actually achieve formal operational thinking (Mcleod, 2013).

References

Harasim, L. (2017). *Learning theory and online technologies* (2nd Ed.). Routledge.

Mcleod, S. (2023, March 8). Jean Piaget's theory and stages of cognitive development. Simply Psychology. https://simplypsychology.org/piaget.html

National Equity Project. (n.d.). Introduction to liberatory design. National Equity Project. Retrieved November 16, 2022, from https://www.nationalequityproject.org/frameworks/liberatory-design