Learning Experience and Learning Environment Design Principles

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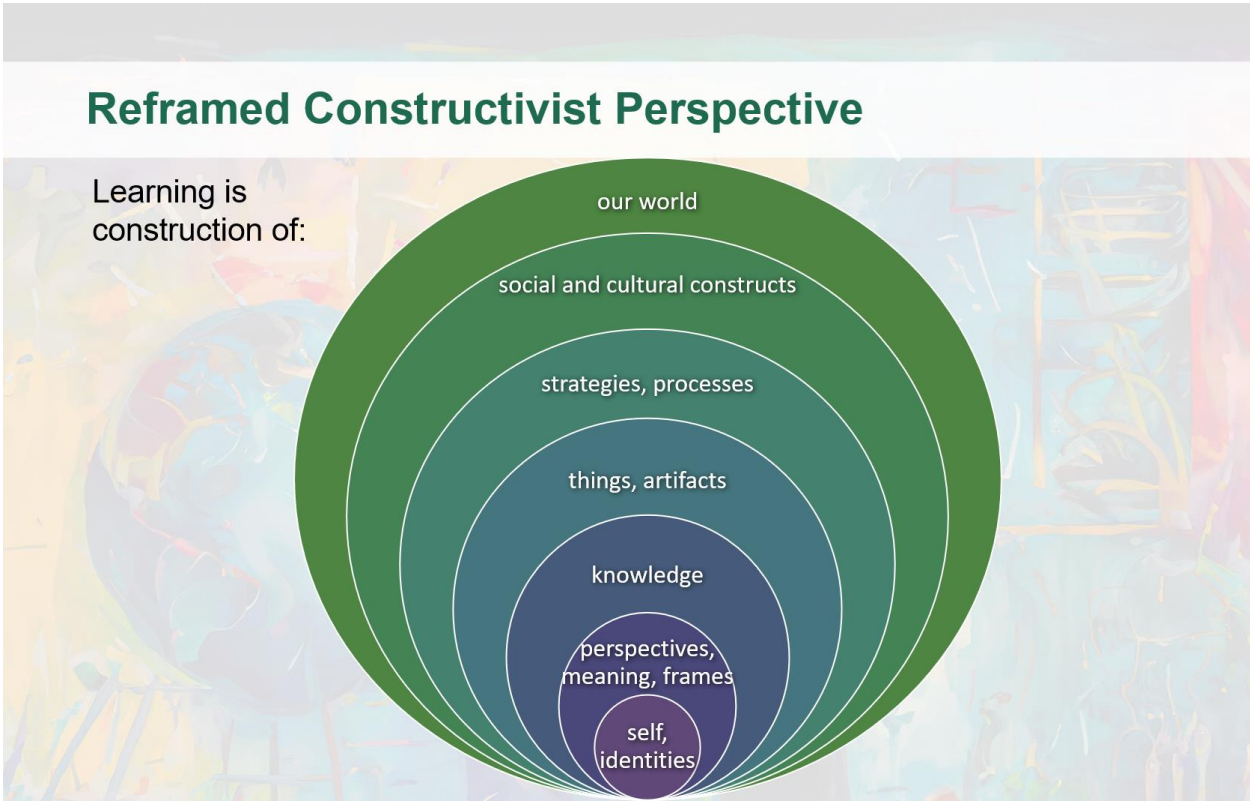
Constructivist Learning Theory: Learners actively build knowledge, meaning, frames, self, and the world through experiences and reflection individually (cognitive) or collaboratively (social).

- Learning Experience Design Principles:
  - Engage students in constructing knowledge (and meaning).
  - Help students develop skills in differentiating information and knowledge.
  - Develop learner confidence in their own authority to construct knowledge, while also problematizing the dominant idea that knowledge is "acquired."
  - Engage learners in collaborative construction of knowledge.
- Learning Environment Design Principles:
  - Create an environment that encourages active exploration, experimentation, and discovery.
  - Provide resources and tools that support learners in constructing their own knowledge.
  - Foster a collaborative atmosphere where learners can engage in social knowledge construction.



Cultural-Historical Activity Theory: Cultural-historical activity theory defines learning as a change in an activity system through resolution of tensions between different aspects of the systems. It focuses on the mediation of human action through cultural artifacts, tools, and social interaction, highlighting how individuals shape and are shaped by their socio-cultural contexts.

- Learning Experience Design Principles:
    - Design for learning that is balanced (subject, mediating artifacts, etc.,)
    - See class from a student perspective as an instructor ("flipped out" instead of "flipped class" e.g., students make lecture videos)
    - Work with your students to co-construct shared objectives (rather than assuming yours aligns with theirs), rules, division of labor, community identity, and selection of tools/mediating artifacts
- Learning Environment Design Principles:
    - Design the learning environment to support balanced interactions between subjects, tools, rules, community, and division of labor.
    - Provide tools and artifacts that mediate learning and align with the learners' goals and the course objectives.
    - Create a community-oriented environment that encourages social interaction and shared learning experiences.

Constructionist Learning Theory: Constructionist theory posits that learning is most effective when learners are actively involved in constructing something meaningful, creating a positive feedback loop between the construction of knowledge and the construction of tangible artifacts.

- Learning Experience Design Principles:
    - Engage learners in making things (physical things, digital things, representations, processes, frames/theories, etc.).
    - Give learners the agency to determine what they will design, and how they will go about constructing it - be careful not to dictate goals and processes beyond general parameters outlined by the course learning outcomes.
    - Engage learners in constructing things that have a real-world impact or audience beyond the course, particularly things that solve real-world problems (immediately - not hypothetically or in the future after they graduate).
    - Help learners develop skills in focused tinkering and the ability to keep trying many approaches while embracing failure.
- Learning Environment Design Principles:
    - Provide a rich environment with diverse materials, tools, and resources for learners to construct meaningful artifacts.
    - Create spaces and opportunities for learners to showcase and share their constructed artifacts with others.
    - Encourage a culture of experimentation, tinkering, and embracing failure as part of the learning process.

Situated Learning Theory: Situated learning theory defines learning as changes in patterns of participation in, and identification with, a community of practice, emphasizing the contextual and social nature of learning within shared activities and dialogue.

- Learning Experience Design Principles:
    - Design for multiple levels of engagement, including legitimate peripheral participation.
    - Engage students in becoming part of a professional/disciplinary community of practice.
    - Engage students in the practices of the professional/disciplinary community of practice - especially authentic work (rather than preparing for future application).
    - Engage students in frequent identity exploration.
- Learning Environment Design Principles:
    - Design the learning environment to resemble authentic contexts and communities of practice.
    - Provide opportunities for learners to engage in legitimate peripheral participation and gradually increase their involvement.
    - Foster a sense of belonging and identity within the learning community.

Transformative Learning Theory: Transformative learning theory defines learning as a transformation of beliefs, assumptions, and frames through a process of critical reflection. The transformation leads to new ways of knowing, new way of being, and new ways of doing.

- Learning Experience Design Principles:
    - Help learners develop skills in identifying assumptions (their own, those of others).
    - Help learners develop skills in questioning and problematizing assumptions.
    - Help learners develop systems thinking and complex systems thinking skills.
    - Engage learners in frequent reflective activities (individual and group).
- Learning Environment Design Principles:
    - Create a safe and supportive environment that encourages critical reflection and questioning of assumptions.
    - Provide resources and activities that promote systems thinking and complex problem-solving.
    - Foster an atmosphere of openness, dialogue, and respect for diverse perspectives.

4E Cognition Theory: 4E cognition theory underscores that cognition is embodied, embedded, enacted, and extended, framing mental processes as arising from dynamic interactions between the body, environment, and social context.

- Learning Experience Design Principles:
    - Ensure that the majority of the time learners spend in the learning activity is spent in action and interaction.
    - Help learners develop skills in identifying tools (including disciplinary tools, theoretical or conceptual frameworks, and language) through which to extend their thinking.
    - Engage learners in physical (or digital) construction of things - the things they construct and/or the processes through which they construct them should embody their thinking and learning.
    - Help learners develop skills in analyzing the relationships between the learning at hand and contextual features including relationships, physical environment, and socio-historical cultural elements.
- Learning Environment Design Principles:
    - Design the learning environment to encourage embodied, active learning experiences.
    - Provide tools and resources that extend learners' cognitive capabilities and support their thinking processes.
    - Create spaces that facilitate physical and digital construction and interaction with the environment.

Critical Pedagogy: Critical pedagogy defines learning as changes in the ability to read and write (or right) the world, with an emphasis on understanding how power dynamics function within one's own context and empowering learners as authors of themselves and their world.

- Learning Experience Design Principles:
    - Engage learners in problematizing positivist paradigm (assumptions) about the nature of knowledge, the nature of reality, and the nature of learning.
    - Help students develop critical consciousness through analysis of power (including intersectionality) in the context of your discipline and course topics.
    - Help students develop skills in identifying and questioning assumptions.
    - Help students develop agency, autonomy, and authority.
    - Engage students in real-world work (not preparation for work after they graduate) in which they make the world a better place, particularly in alleviating the suffering of marginalized people whenever possible.
- Learning Environment Design Principles:
    - Foster an environment that encourages critical thinking, questioning, and challenging of power structures.
    - Provide resources and activities that promote understanding of social justice issues and empowerment.
    - Create opportunities for learners to engage in real-world, transformative projects that address social inequities.

Dynamical Systems Model of Role Identity: The Dynamic Systems Model of Role Identity (DSMRI) presents role identity as a complex dynamic system, encompassing interrelated components (beliefs, goals, self-perceptions, and action possibilities) that interact dynamically and evolve as the individual interacts with their environment. DSMRI can be used to understand the "learning is becoming" principle of the learning sciences.

- Learning Experience Design Principles:
    - Engage learners in reflection on their identities frequently.
    - Engage learners in identifying and questioning their beliefs.
    - Engage learners in identifying and refining their purposes and goals.
    - Engage learners in articulating the full range of their perceived action possibilities and expanding the boundaries of their perceived action possibilities.
    - Embrace and nurture understanding of the nature of the relationship between emotion, action, and aspects of identity.
- Learning Environment Design Principles:
    - Design the learning environment to support exploration and development of learners' identities.
    - Provide opportunities for learners to reflect on and articulate their beliefs, goals, and self-perceptions.
    - Create a supportive atmosphere that encourages learners to expand their perceived action possibilities.

Self-Determination Theory: Self-determination theory (SDT) posits that humans have inherent psychological needs (autonomy, competence, and relatedness) that, when satisfied, lead to intrinsic motivation, personal growth, and optimal learning, and well-being.

- Learning Experience Design Principles:
    - Avoid providing tangible rewards that have an undermining effect on intrinsic motivation.
    - Discuss with the students what interests them and design learning activities around their interests to make them intrinsically motivated to the topic.
- Learning Environment Design Principles:
    - Foster an autonomy-supportive environment that allows learners to make choices and take ownership of their learning.
    - Provide challenges and feedback that support the development of competence.
    - Create opportunities for learners to connect and build relationships with others in the learning community.

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