WHAT VIDEO GAMES
HAVE TO TEACH US ABOUT
LEARNING AND LITERACY

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APPENDIX

THE 36 LEARNING PRINCIPLES

1. Active, Critical Learning Principle
All aspects of the learning environment (including the ways in which the semiotic domain is designed and presented) are set up to encourage active and critical, not passive, learning.

2. Design Principle
Learning about and coming to appreciate design and design principles is core to the learning experience.

3. Semiotic Principle
Learning about and coming to appreciate interrelations within and across multiple sign systems (images, words, actions, symbols, artifacts, etc.) as a complex system is core to the learning experience.

4. Semiotic Domains Principle
Learning involves mastering, at some level, semiotic domains, and being able to participate, at some level, in the affinity group or groups connected to them.

5. Metalevel Thinking about Semiotic Domains Principle
Learning involves active and critical thinking about the relationships of the semiotic domain being learned to other semiotic domains.

6. "Psychosocial Moratorium" Principle
Learners can take risks in a space where real-world consequences are lowered.

7. Committed Learning Principle

Learners participate in an extended engagement (lots of effort and practice) as extensions of their real-world identities in relation to a virtual identity to which they feel some commitment and a virtual world that they find compelling.

8. Identity Principle

Learning involves taking on and playing with identities in such a way that the learner has real choices (in developing the virtual identity) and ample opportunity to meditate on the relationship between new identities and old ones. There is a tripartite play of identities as learners relate, and reflect on, their multiple real-world identities, a virtual identity, and a projective identity.

9. Self-Knowledge Principle

The virtual world is constructed in such a way that learners learn not only about the domain but about themselves and their current and potential capacities.

10. Amplification of Input Principle

For a little input, learners get a lot of output.

11. Achievement Principle

For learners of all levels of skill there are intrinsic rewards from the beginning, customized to each learner's level, effort, and growing mastery and signaling the learner's ongoing achievements.

12. Practice Principle

Learners get lots and lots of practice in a context where the practice is not boring (i.e., in a virtual world that is compelling to learners on their own terms and where the learners experience ongoing success). They spend lots of time on task.

13. Ongoing Learning Principle

The distinction between learner and master is vague, since learners, thanks to the operation of the "regime of competence" principle listed next, must, at higher and higher levels, undo their routinized mastery to adapt to new or changed conditions. There are cycles of new learning, automatization, undoing automatization, and new reorganized automatization.

14. "Regime of Competence" Principle

The learner gets ample opportunity to operate within, but at the outer edge of, his or her resources, so that at those points things are felt as challenging but not "undoable."

15. Probing Principle

Learning is a cycle of probing the world (doing something); reflecting in and on this action and, on this basis, forming a hypothesis; reprobing the world to test this hypothesis; and then accepting or rethinking the hypothesis.

16. Multiple Routes Principle

There are multiple ways to make progress or move ahead. This allows learners to make choices, rely on their own strengths and styles of learning and problem solving, while also exploring alternative styles.

17. Situated Meaning Principle

The meanings of signs (words, actions, objects, artifacts, symbols, texts, etc.) are situated in embodied experience. Meanings are not general or decontextulized. 'Whatever generality meanings come to have is discovered bottom up via embodied experiences.

18. Text Principle

Texts are not understood purely verbally (i.e., only in terms of the definitions of the words in the text and their text-internal relationships to each other) but are understood in terms of embodied experiences. Learners move back and forth between texts and embodied experiences. More purely verbal understanding (reading texts apart from embodied action) comes only when learners have had enough embodied experience in the domain and ample experiences with similar texts.

19. Intertextual Principle

The learner understands texts as a family ("genre") of related texts and understands any one such text in relation to others in the family, but only after having achieved embodied understandings of some texts. Understanding a group of texts as a family (genre) of texts is a large part of what helps the learner make sense of such texts.

20.   Multimodal Principle Meaning and knowledge are built up through various modalities (images, texts, symbols, interactions, abstract design, sound, etc.), not just words.

21.   "Material Intelligence" Principle

Thinking, problem solving, and knowledge are "stored" in material objects and the environment. This frees learners to engage their minds with other things while combining the results of their own thinking with the knowledge stored in material objects and the environment to achieve yet more powerful effects.

22.   Intuitive Knowledge Principle

Intuitive or tacit knowledge built up in repeated practice and experience, often in association with an affinity group, counts a great deal and is honored. Not just verbal and conscious knowledge is rewarded.

23.   Subset Principle Learning even at its start takes place in a (simplified) subset of the real domain.

24.   Incremental Principle

Learning situations are ordered in the early stages so that earlier cases lead to generalizations that are fruitful for later cases. When learners face more complex cases later, the learning space (the number and type of guesses the learner can make) is constrained by the sorts of fruitful patterns or general-izations the learner has found earlier.

25.   Concentrated Sample Principle

The learner sees, especially early on, many more instances of fundamental signs and actions than would be the case in a less controlled sample. Fundamental signs and actions are concentrated in the early stages so that learners get to practice them often and learn them well.

26.   Bottom-up Basic Skills Principle

Basic skills are not learned in isolation or out of context; rather, what counts as a basic skill is discovered bottom up by engaging in more and more of the game/domain or game/domains like it. Basic skills are genre elements of a given type of game/domain.

27. Explicit Information On-Demand and Just-in-Time Principle

The learner is given explicit information both on-demand and just-in-time, when the learner needs it or just at the point where the information can best be understood and used in practice.

28. Discovery Principle

Overt telling is kept to a well-thought-out minimum, allowing ample opportunity for the learner to experiment and make discoveries.

29. Transfer Principle

Learners are given ample opportunity to practice, and support for, transfer-ring what they have learned earlier to later problems, including problems that require adapting and transforming that earlier learning.

30. Cultural Models about the World Principle

Learning is set up in such a way that learners come to think consciously and reflectively about some of their cultural models regarding the world, without denigration of their identities, abilities, or social affiliations, and juxtapose them to new models that may conflict with or otherwise relate to them in various ways.

31. Cultural Models about Learning Principle

Learning is set up in such a way that learners come to think consciously and reflectively about their cultural models of learning and themselves as learners, without denigration of their identities, abilities, or social affiliations, and juxtapose them to new models of learning and themselves as learners.

32. Cultural Models about Semiotic Domains Principle

Learning is set up in such a way that learners come to think consciously and reflectively about their cultural models about a particular semiotic domain they are learning, without denigration of their identities, abilities, or social affiliations, and juxtapose them to new models about this domain.

33. Distributed Principle

Meaning/knowledge is distributed across the learner, objects, tools, symbols, technologies, and the environment.

34. Dispersed Principle
Meaning/knowledge is dispersed in the sense that the learner shares it with others outside the domain/game, some of whom the learner may rarely or never see face-to-face.

35. Affinity Group Principle
Learners constitute an "affinity group," that is, a group that is bonded primarily through shared endeavors, goals, and practices and not shared race, gender, nation, ethnicity, or culture.

36. Insider Principle
The learner is an "insider," "teacher," and "producer" (not just a "consumer") able to customize the learning experience and domain/game from the beginning and throughout the experience.