Digital Epistemology: Computer Games as Cognitive Artifacts
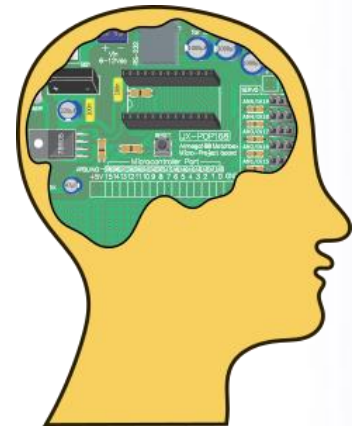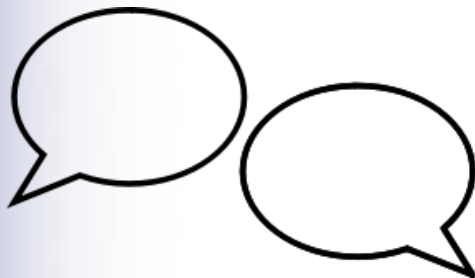
Rita Santoyo Venegas

lunazapdos@gmail.com
@lunazapdos

1. Literacy and Media

- Intellectual technologies
  - We think through, with, and alongside media (Hayles, 2012).

- Two important cognitive revolutions
  - From orality to literacy
  - From literacy to digital literacy

2. The Shift Towards Digital Literacy

- Computers are procedural artifacts that represent ideas and promote participation and collaboration from their users.

- The computer is a hypermedia artifact that uses its procedural nature to structure the experiential meaning of oral cultures and the abstract concepts established through the written word (Worch, 2013).

- Digital literacy entails changes in the conception and transmission of knowledge by introducing new artifacts to think with (virtual reality, simulations).

- We develop new skills and abilities while using digital technology. It shapes and transforms our cognition.

- In the literate tradition, knowledge was mainly represented in textual form (e.g. books). In the digital tradition, knowledge can be encoded in multimedia form (e.g. computer games).

3. Computer Games as Cognitive Artifacts

- "Cognitive artifacts are artifacts that are able to represent, store, retrieve and manipulate information" (Brey, 2008).

- A cognitive artifact can be used to enhance our cognitive abilities, such as abstract thought, memory, problem solving, and language use by helping us think, plan, solve, calculate, measure, know, categorize, identify, or remember (Brey, 2005).

- Computer games are cognitive artifacts because their simulated worlds are powerful tools for thinking and learning, thus enhancing our cognitive abilities.

- Their navigable virtual environments offer us new structures to experience, explore and interact with.

- They provide simulations that allow the development of situated understanding (Gee, 2003).

4. Collaborative computer games and collaborative knowledge

- Collaboration is the joint effort of a community to create something together that it would be impossible to create alone (McGonigal, 2011).

An example of a computer game designed with a collaborative purpose in mind is Foldit, developed by the University of Washington.

Watch the introductory video that explains the mechanics of the game:

https://www.youtube.com/watch?v=LQKLtqf3Nzcc

Foldit is a great example of the joint effort of a community of players to achieve a new generation and formulation of knowledge.

Future Implications

- Explore the possibilities of using computer games cognitive artifacts in science and humanities

- New forms of gaming communities who focus on creating collaborative knowledge

- New ways of thinking