Interactive multi-user worlds in education

(workshop at Unicamp)

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☞ **The Context (see also my CMC talk)**

☞ **Some theoretical arguments in favor**

☞ **Multi-user worlds as complement**

☞ **MUDs and MOOs**

☞ **Demos**

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1. The Context

> **1.1. Why multi-user worlds ?**
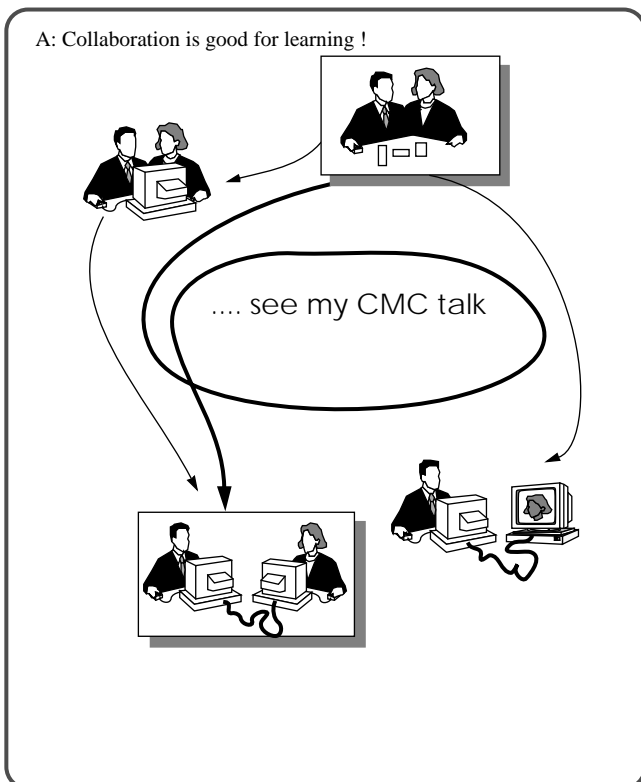
1. The Context

1.1   Why multi-user worlds ?

Several arguments
- **Collaboration is good for learning (and such environments are collaborative)**
- **New ways of teaching:**
  - Distance teaching,
  - "just in time", "on the spot", ... learning
  - "resource-based combined with "mentor-based" learning
- **Virtual environments foster a sense of community**
  - users develop an "electronic identify" and form on-line communities
- **Virtual environments are immersive (either sensory or social, sometimes both)**
  - knowledge is experience (immersion)
  - social interactivity is a key to learning (apprenticeship)
- **Multi-user worlds have potential for being "cyberspace integrators"**
  - multiple media support
  - applications "within", e.g. WWW pages with people, shared editing of text, etc.
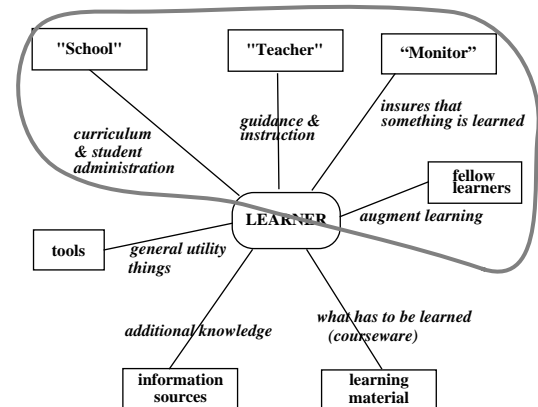 - persistent objects in cyberspace that can be accessed anywhere
- **......**

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1. The Context

> **1.1. Why multi-user worlds ?**

A: Collaboration is good for learning !

.... see my CMC talk

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1. The Context

> **1.1. Why multi-user worlds ?**

B: (Semi)Distance teaching, tutoring, mentoring, etc.

Communication is about half of "the story" !

So why not use an integrated environment that has additional benefits (community building, interactive objects, etc.) ?

Even combined with traditional teaching: such environments (as well as most CMC tools) enhance collaboration and learning

2. Some theory in favor of multi-user environments as learning environments

2.1 The "Samba school" argument (Papert/ Bruckman)

(or what went wrong with LOGO)

Papert (in Mindstorms) describes the Brazilian "Samba Schools"

- **not really schools, but social clubs in which people of all ages and levels of experience work together in both formal and informal ways.**
- **he is inspired by the different relationship to learning the members develop, and the way in which learning becomes a community process.**

Unfortunately, Logo rarely finds itself in that sort of environment:

- Schools generally undermine the development of such a learning culture by excessively formalizing learning and segregating people by age and experience.
- Logo appeals mostly to people who want to make fundamental changes in school.

In addition:

- Logo is rather "content free", no purpose besides programming
- Difficulty to coordinate projects between computers, between school and home, etc.

In samba schools learning is:

(quoted from Bruckman's MOOSE Crossing Ph.D. proposal)

- * **self-motivated,**
- * **richly connected to popular culture,**
- * **focused on personally-meaningful projects,**
- * **community based,**
- * **an activity for people of all ages to engage in together,**
- * **life long--experts as well as novices see themselves as learners, and**
- * **situated in a supportive community.**

☞ **Text-based virtual worlds on the Internet (MUDs) can have each of these features, in particular: combination of construction with community with purpose**

☞ **BUT:**

(1) those environments are not really user friendly

(2) "Embedded" learning domains are limited so far, mostly:
- programming (interactive objects, other internet applications)
- verbal skills (how to articulate, describe, organize)
- social skills (how to deal with people)

2.2 The similar "immersion" argument (e.g. Ackerman)

☞ **Immersion in an experience is also often as enhancement factor for learning:**
- **"`interactivity is a key to learning"**
- **"experience is actively constructed and reconstructed through direct interaction with the world**
- **"knowledge is experience"**

☞ **Therefore we need environments that can be manipulated and in which we can build (under construction !)**
- VEs can be seen as a social context for propagating constructionism (e.g. students manipulating ``symbolic physical'' objects ([Moshell et al., 1995]) or ``real virtual physical objects'').
- Interactive objects favor reflection which in turn favors learning ([Collins and Brown, 1988]).
- VEs can be enhanced with artificial agents or more generally can integrate Human-Computer Collaborative Learning Systems (HCCLS) with Computer-Supported Collaborative Learning Systems (CSCLS).
- Collaborative Information tools, e.g. collaborative hypertext ([Tennison, 1995]
- People working together over the network must be able to share usual work tools (e.g. simulators) and be able to represent knowledge in structured form in order to optimally ground conversation.
- VEs also show great potential for all sorts of social simulations. Some "RPG or social'' MOOs, can be viewed as global social simulations (though education or social research are not the issues there).

2.3 The practical argument (Schneider)

(applied to learning how to program with a MOO !!)

The multi-purpose idea:
- **We use this thing for communication & research anyhow, so let's use it to teach programming**
- **one can teach easy and more difficult programming matters, e.g. algorithms, object-oriented programming, software engineering, cgi-programming, networking, ...**

The MOO language
- **Moo programming is not easy, but still better than C or Perl**
- **you actually CAN do useful things with it (some objects that students programmed are of real use to others)**

Distance
- **I can debug students at distance, and they can get help from other persons and work easily together.**

Motivation
- **Moo programming is quite fun. It's building something that has immediate effect and that you can show to others.**
- **Immediate effect (for simple programs)**
- **reusability of skills for practical purposes**

3. Multi-user environments as complement (an example)

☞ **Le diplôme STAF**
   (Sciences et Technologies de l'Apprentissage et de la
   Formation) uses a special semi-distance teaching format:
   • 6 x 1 week of intensive courses in-site / year
   • independant study periods using the network

☞ **4 basic tools**

(1) WWW (hypertext), e.g. for:
   • planning, curicula, agendas, ...
   • texts, resources (and pointers), ...
   • student assignments (cooperation by imitation)
   • collaboration by group projects

(2) Email, e.g. for:
   • agenda planning (teacher)
   • search for information (student)
   • information about updates (student, teacher)
   • short comments (teacher)

(3) Discussion Forums, e.g. for:
   • debates (about articles or themes)
   • technical Q/A

(4) The MOO, e.g. for:
   • urgent things
   • co-presence (common virtual space, common radio channels)
   • virtual meetings
   • non-intrusive (almost) real time questions/answers

4. MUDs and MOOs

4.1   What is a MUD ?

MUDs (specially the MOO variant) can be be characterized by:
   • **Many persons can connect simultaneously to a server.**
   • **The MUD has a spatial organization, e.g. people interact with people or objects primarily within "rooms".**
   • **Within a MOO, many real time communication actions exist, like "saying" or "emoting" things publically to the persons in a "room", paging people elsewhere, "whispering" messages, using a "CB" channel, etc.**
   • **Asynchronous communication tools include internal e-mail, Newsgroups, News papers, tutorial rooms, "notice boards", etc.**
   • **MOOs are extensible, and most imaginable (text-based) objects and features can be programmed.**
   • **Moos also can be used as backend for various network services. A good example are http servers.**