Educational Engagement: Ideas for Innovation

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1. Learning through Reteaching
Description: Learning will be more fun, relevant, and memorable if it takes place in a group. We propose a system where goals are set to teach others in the group some number of things that have been learned recently. Goal progress could be shown on an ambient display.
Use case: A family learns together when a child teaches the parents what she has learned this week (calculus), thereby reinforcing her knowledge of the subject, teaching the parents a subject they forgot or did not know, and improving family bonding.

Pros: Feasibility and impact on family and learning.
Cons: Ambient display idea has already been done with UbiFit.

2. RESPOND– Early Language Learning
The player(s) must respond through instructed movements in a foreign language to get through levels. Consequences and rewards for correct movements.

> Ex.   "跑!" (run)
>   Player jumps.
>   "No, not 跳 (jump)! 跑!"

Pros: Learning reinforced by movement. Repetition helps memorization.
Cons: Difficulty detecting varied movements, limited number of movements compared to vocabulary terms

3. Job Shadow Role Play *
Students are assigned a profession of their interest. They job shadow and research professionals in their field to create an active character based on their findings. These characters live simultaneously with other characters of various professions (by other users) to form a realistic and lively virtual world. Profiles open to public.

Pros: Learn broadly and deeply about multiple professions (daily life, interactions with other professionals, salary); avoid costly career changes later; creative and customizable.
Cons: Virtual interaction difficult; wanted to use for historical characters but difficult to motivate entering those characters.

Implementation: System or software for multi-player (web?), game using real materials from class. Goals can be set by teachers or other educators, which include basic information and structure of the whole world.

4. Challenge Trading *
Individuals challenge one another to achieve goals.

*Learning through Reteaching idea: individuals in a group (a family?) set goals to teach others in the group some number of things that the individuals have learned recently.

Pros: Exciting; competitive; learning reinforcement; bonding
Cons: Challenges may be unreasonable, or of varying difficulties

Implementation:
- How to force challenges to be education based? Mechanical Turk?
- Pair users according to common interests, self-select into groups of families / friends
- Idea: Challenges become increasingly difficult as they are achieved. Reward mechanism.

5. Easing Elders into Technology through Cooperation *
Elderly people can learn new technology by helping more savvy users of technology accomplish their daily tasks. Suppose we take a task the savvy user would normally complete, and have the elder complete a component of the task.
Use Case: Savvy user writes an instant message to her friend, and must guide the elder on how to send the message.

Pros: Elder learns technology; overcomes fear, feels empowered; savvy user learns to empathize with elder; increases interaction between young and old generations.
Cons: Savvy user has less to gain than elder; frustration and ill-feelings may result.

Implementation: Split interface, with main control delegated to savvy user and assistive control delegated to elder. Can this be generalized to different interfaces and applications?

6. Down-Time Learning
We want to take advantage of moments of "down-time" to encourage life-long learning outside the classroom. Examples of down time include waiting in line, riding the bus, and attending to personal business. A system could use location-assisted activity inference to determine if down-time is occurring, and then provide an educational experience. This learning experience could be related to the current location or activity for increased relevance and retention.

Pros: Efficient use of time.
Cons: Down time is often short and fragmented. Dangers in moving vehicles include distraction and health problems related to use of electronics (e.g., eye damage), especially in children.

7. Online Collaborative Learning Environment
With progress being made at UW on classifying educational materials (lecture videos, lecture notes, and problem sets) on the web, we have the opportunity to come up with new ways of presenting this material and encouraging meaningful learning interactions. We envision a system that will present materials on a topic (gathered from multiple course offerings on the web), and enable interactions including collaborative annotations, ranked materials, question-answer forums, and mentoring relationships.

Pros: Timeliness (Coursera and others are offering a single version of a course; a crowdsourced version offers new possibilities), availability of researchers at UW working on these classification problems, possibility of novel interactions.
Cons: Complexity of such a system, tangential impact on engagement.

8. ON TASK– Improving Focus Outside the Classroom

Interest in online education is surging, and it is time to focus on how we learn outside the structure of a classroom. In particular, it is difficult to stay on task when surrounded by the distractions in the home environment. There is a great deal of interest in online courses, but retention is poor. We envision a system that would monitor the home environment and help students avoid distractions and complete courses.

Pros: Impact on all sorts of people who work from home; make in-home education more feasible.
Cons: Privacy concerns with home monitoring; what if course retention is more closely tied to course content than patterns of behavior in the home?

9. In Context Language Learning
It is commonly held that talking to native speakers is essential to language acquisition. We propose an system that would allow a language learner to interact with virtual native speakers and learn in context. These native speakers might ask the language learner (user) to buy local products or engage him in other local activities that promote talking in the native language.

Pros: Realistic scenes will make language learning interesting and promote cultural understanding.
Cons: Difficult to build such an interactive system or game; memorization may still be an issue.

10. Group Travel Exploration
We are intrigued by the possibility of transforming learning from passive learning to explorative learning, in the spirit of a Montessori education. Explorative learning in combination with social learning could be very powerful. Since tackling abstract learning is difficult, we envision an exploratory learning experience in the real world.
Use Case: Imagine a group of people (a family?) arrives at a new city. Instead of being led to the major sites by a tour guide (the teacher), the group must explore and arrive at an understanding of the history and culture of that region. Members of the group should pose questions to the group and post content (photos, geotags, information), making tradeoffs of depth and breadth of discovery to arrive at a deep understanding of the place and people.

Pros: Learn to ask questions and explore; innovate instead of regurgitate; learn history and geography; bridge cultural barriers.
Cons: Fun but potentially does not address the most fundamental problems in the education system