Can educational games ever be fun? On redesigning the gaming experience.

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Introduction

Making educational games is hard. Simply making a game is complicated, but integrating learning elements increases this complexity. An example of this is Kelly's (2007) description of building *Immune Attack*, a computer game to teach high school students about immunology. The stakeholders in the design process ranged from game designers to biologists, teachers to immunologists, all of whom were pulling in different directions to make the game "better". Compromises had to be made in order to provide a fun and engaging game which integrated factually accurate subject matter.

However, teaching and learning are integrated into the fabric of our society: consider school, lifelong learning, documentaries, museums and narrative. There must be a way of better understanding how these learning experiences work, leaving us better informed of how to create a game which teaches in just as effective a manner.

Teasing Apart, Piecing Together

One tool to help achieve this understanding is TAPT (Teasing Apart, Piecing Together), which was initially designed for the software engineering space (Hooper 2010). TAPT was inspired by issues of accessibility in current technology, such as problems in making social technologies available to offline people.

TAPT is a two-phase method. The first phase involves taking an initial experience, which might be physical or digital, and carrying out an in-depth analysis of that experience. This results in a description of the 'abstracted' or distilled experience -- that is, what the experience *means* in terms of its experiential aspects. This includes emotional, social and cultural facets.

The second phase involves rebuilding (piecing together) the experience in its new context. Starting with the abstracted experience from phase one, a sequence of brainstorming, scenario-building and checking is carried out, resulting in a description of the new, reimagined experience.

For example, if we were trying to reprovide the 'write a status update' aspect of the web-based Facebook experience in the wild, we would start by teasing that experience apart. This would include considering design elements of the experience: for example, a textbox to write the update, a button to submit it, and a list of previous updates. More importantly, we would delve into experiential aspects, such as the one-to-many communication, consolidation of an online identity, openness about experiences, anticipation of responses, and so on. The description of the 'distilled' experience might focus on a very simple design to enable the composition and posting of brief one-to-many text messages, aimed at a somewhat unknown audience.

When piecing together our status update example, one scenario might involve our updater wearing a t-shirt which incorporates a scrolling text display [1] showing their most recent post.

A comparative evaluation of TAPT has been held in the software engineering domain. A study of over 40 professional software engineers saw the participants applying TAPT alongside a mainstream design technique and also no method (used as a neutral baseline against which

the other processes could be judged). Results suggested that TAPT is a powerful analytical tool for improving understanding of an experience, and useful for replicating experiences.

In summary, TAPT helps us thoroughly explore experiences, including aspects which might otherwise be overlooked. TAPT helps software engineers design richer, accessible interactions inspired by starting experiences, and lets us redesign online experiences (such as using social technologies) via novel, accessible mechanisms.

TAPTing in Different Domains

Concerning TAPT's relevance to educational computer games,an investigation is currently in progress to test the use of TAPT for translating a learning experience into an educational game. The proposed methodology is to Tease Apart the lesson plan used to teach a particular topic, then use the distilled experience to inform the game design process. Unfortunately, the game design process is not as concretely defined as one would hope, meaning it is somewhat down to the skill of the game designer to generate a successful output. Ongoing research by Frazer (2008) seeks to relate a breakdown of game features to various genres of game, which may meld with the distilled experience to jumpstart the game design process.

In addition to applying TAPT to educational games, we are carrying out several case studies on TAPT's use in domains such as e-learning and pervasive computing. We are confident that TAPT is transferable to other domains, and hope to explore possibilities with representatives of those domains at InterFace. For example, can TAPT help in the teaching of modern languages by deconstructing the experience of living in another country? Could it be used to deconstruct the experience of being on an archaeology dig, so it could be better replicated online or in a classroom? Where can TAPT be used in the humanities?

Conclusion

TAPT is a methodology for breaking down an experience so it can be reappropriated in a different medium or context. While TAPT was initially created for use in computer software design, we are in the process of investigating its applicability for helping us to better understand learning experiences towards rebuilding these in educational computer games. We strongly believe that TAPT has the potential to be used in many areas of humanities, in particular as a tool to improve collaboration in interdisciplinary projects: for this reason, we seek the opportunity to bring this work to InterFace 2010.

References

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[1] Such t-shirts are currently on the market: they use thin battery-powered LED displays to show short messages.