Immersion in e-learning

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What is immersion in e-learning?

Based on psychological concept of flow:

learners 'are so engaged in learning that time and fatigue disappear'

- Flow antecedents
  - Clear goals & immediate feedback
  - Challenge & skill balance

- Flow
  - Merging of action and awareness
  - Focused concentration
  - Sense of control

- Flow consequences
  - Loss of self-consciousness
  - Time distortion
  - Self-rewarding experience
3 conditions to meet for achieving a flow state

1. being involved in activities with clear and structured goals and progress
2. performing tasks with articulate and immediate feedbacks
3. having a good balance between perceived challenge level and skill level
Progression of Immersion Mechanisms

- Personalised Learning, Adaptive Hypermedia
- E-learning 2.0, Social E-learning
- Visualisation & Familiarity
- Gamification & Feedback
Personalised Learning

FOR A FAIR SELECTION EVERYBODY HAS TO TAKE THE SAME EXAM! PLEASE CLimb THAT TREE
Adaptive Hypermedia

- Allows content to be personalised and recommended to users based on:
  - User Preferences
  - User History
  - Presentation format
  - Network parameters
  - Context
  - etc.

![Course Navigation]

- The current page
- A relevant link
- A link with less relevance
Adaptive Hypermedia

About Hosting City

Location

The city of Sousse is located in the east-central part of the country on the Mediterranean coast.

The old part of the city, known as the medina, was declared by UNESCO a World Heritage Site in 1988.
About Hosting City

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Weather

This period of the year (July) in Sousse is summer time. Temperatures are in the 25-35°C and may reach
Social E-Learning: MOT 2.0

Adaptive Hypermedia

E-Learning

Web 2.0

- IMS CP standards
- Sakai learning
- LMS

- Personalization
- User modelling

- Communication Web

- Web
- Web
- tagging
- rating
- Social collaboration
- Mashup
- Facebook
- Flickr
Collaborative filtering uses the assumption that people with similar tastes will rate things similarly. Content-based filtering uses the assumption that items with similar objective features will be rated similarly. For example, if you liked a web page with the words “tomato sauce,” you will like another web page with the words “tomato sauce.” The challenge is to cleanly extract the features of items that are most predictive. One then builds a user profile of features from the items a user has rated, and then compares that user profile to item profiles of new items whose features are extracted [48]. Content-based recommendations are discussed in Chapter 10 of this book [48]. Content-based filtering and collaborative filtering have long been viewed as complementary [1].

Content-based filtering can predict relevance for items without ratings (e.g., new items, high-turnover items like news articles, huge item spaces like web pages); collaborative filtering needs ratings for an item in order to predict for it. On the other hand, content-based filtering needs content to analyze. For many domains content is either scarce (e.g., restaurants and books without text reviews available) or it is difficult to obtain and represent that content (e.g., movies and music). Collaborative filtering does not require content. A content filtering model can only be as complex as the content to which it has access. For instance, if the system only has genre metadata for movies, the model can only incorporate this one extremely coarse dimension.
Designers of web services should carefully identify the possible tasks users may wish to accomplish with their site as different tasks may require different design decisions. From a marketing perspective, this is the value added by the CF system. In this section, we consider user tasks for which collaborative filtering is useful. Tasks for which people use collaborative filtering that have been studied include:

1. Help me find new items I might like. In a world of information overload, I cannot evaluate all things. Present a few for me to choose from. This has been applied most commonly to consumer items (music, books, movies), but may also be applied to research papers, web pages, or other ratable items.

2. Advise me on a particular item. I have a particular item in mind; does the community know whether it is good or bad?

3. Help me find a user (or some users) I might like. Sometimes, knowing who to focus on is as important as knowing what to focus on. This might help with forming discussion groups, matchmaking, or connecting users so that they can exchange recommendations socially.

4. Help our group find something new that we might like. CF can help groups of people find items that maximize value to group as a whole. For example, a couple that wishes to see a movie together or a research group that wishes to read an appropriate paper.

5. Help me find a mixture of “new” and “old” items. I might wish a “balanced diet” of restaurants, including ones I have eaten in previously; or, I might wish to go to a restaurant with a group of people, even if some have already been there; or, I might wish to purchase some groceries that are appropriate for my shopping cart, even if I have already bought them before.

6. Help me with tasks that are specific to this domain. For example, a research paper recommender might also wish to support tasks such as “recommend papers that my paper should cite” and “recommend papers that should cite my paper.” Similarly, a recommender for a movie and a restaurant might be designed to distinguish between recommendations for a first date and recommendations for other dates.
Visualisation & familiarity in Topolor1

a) messages, Q&A list, notes, to-do.
b) Learning peer list:
c) Information flow wall
d) Posting tool

e) Quiz

a) Learning topic adaptation.
b) Learning peer adaptation & Messaging
c) Web2.0 tools.
d) next
Visualisation of social status, comparison & learning progress in Topolor 2

- Topolor’s support for the sense of competence and relatedness include the comparison of learner performance and contribution.
Structured & chunked goals with increasing challenges

Learning Path: Control

- Control Process
  - Basic Elements in Control Process
    - Basic Elements in Control Process: Establish Standards [up next]
    - Basic Elements in Control Process: Measure Performance
  - Types and Scope of Control
    - Strategic Controls
      - Tactical Controls: Financial

unlocked locked learnt not learnt [up next] a recommended topic to learn next
Gamification
Games characteristics?
multidimensional levels of interactivity and feedback

In games, for example, failing is allowed, it's acceptable, and it's part of the process.
feedback is frequent, instantaneous/immediate
feedback is highly visible
feedback is fine-grained
feedback is volatile
feedback is traceable
challenges conquered (vs. distance to achievement)
distance to achievement

Evaluating User-Interface Design Without Users

There are good reasons for performing evaluations without users (in addition to testing with users):

- Users have only limited time for taking part in the design and evaluation. Therefore, the user-interface should be free of (trivial) problems which can be easily foreseen and avoided.
- Evaluation with only a few users may not reveal all problems a large number of final end-users will experience, because not all possibilities of the application and user-interface will be tried.
- While the user-interface is being developed the test-users are still learning the interface. They may not encounter the problems experienced users will encounter later.

There are three popular evaluation techniques which are performed without involving test-users:

- **cognitive walkthrough**: this technique is especially useful for task-centered design.
- **action analysis**: this technique is used to estimate the time an expert user will need to perform a task using the interface.
- **heuristic evaluation**: using a checklist one may catch a wide variety of problems, but this technique requires evaluators with knowledge of usability problems.

All rights reserved.
Interactivity with other players, social aspects
Access to information in multiple, redundant ways
Gamification: Feedback

- multidimensional levels of interactivity and feedback
- feedback is frequent, instantaneous/immediate
- feedback is highly visible
- feedback is fine-grained
- feedback is volatile
- feedback is traceable
- distance to achievement, instead of challenges conquered (distance from start point)
- Interactivity with other players, social aspects
- Access to information in multiple, redundant ways
Immediate Feedback in Topolor 2

2. **Within the context of organizations, control involves...**
   A. arranging the organization’s workforce in some sequence.
   B. tracking flow of transactions across different organizational departments.
   C. regulating activities and behaviors to accomplish specific organizational objectives.

   **Your answer: A**  Correct answer: C
Feedback is fine-grained
Gamification: Social aspects

interactivity with other players; social aspects

- Competitive vs. collaborative element, group forming, chat, different type of interaction, mediation (tutor-learner versus peer learning; filtering (education, context), re-mediation)
Competition: Player vs. Player

<table>
<thead>
<tr>
<th>Questions asked</th>
<th>Questions answered</th>
<th>Resource shared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lei</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Sunci</td>
<td>6</td>
<td>20</td>
</tr>
</tbody>
</table>

My Performance

My Contribution

Lei PK. Sunci
Social aspect: sharing
Gamification: Rewards

Barriers to access versus rewards
Gamification: multi-dimensionality

Access to information (such as feedback) can be obtained in multiple, redundant ways.
Courses

SunciHadzi
last activity 12/23 12:31 PM

15 topics learnt 21 likes
34 sharings 5 comments
3 questions 2 answers

message profile

Asking

Student, please choose a course and mark to enter any questions you have.
Gamification: Freedom

- Rules of the ‘game’ <-> versus freedom (‘shoot someone/ anyone’)

Resources recently shared

Simon Sinek: How great leaders inspire action
12/23 11:46 AM

What factors affect control?
12/23 11:38 AM

Questions recently asked
Gamification: Centrality of Learning

- Vicarious learning (learning almost as a side effect) in games
  - Learning whilst interacting

- Knowledge has a function in the game

- Packaging of content and information in smaller sized ‘packages’, encased in other information (or, more interestingly activities and context)
  - E.g.: course – lesson – resources ...
Gamification: Emphasis on Process

- Information and process both as first hand citizens
  - E.g., interaction – views, messages ...
other gamification features

- **storytelling**: tours for guiding ‘newbie’ learners to use various features

- **profile pages**: publishing learning activities, learning status statistics, visualisations of performance and contribution

- **leaderboard**;

- **team building**: discussing and commenting on learning contents

- **peer reviewing**: rating peers’ posts and comments
Collaborative Filtering

Collaborative filtering (CF) is a technique used by some recommender systems. Collaborative filtering has two senses, a narrow one and a more general one. In general, collaborative filtering is the process of filtering for information or patterns using techniques involving collaboration among multiple agents, viewpoints, data sources, and systems.

The Beginning of CF

As a formal area of research, collaborative filtering got its start as a means to handle the shifting nature of text repositories. As content bases grew from mostly "official" content, such as libraries and databases, to "informal" content such as discussion lists and e-mail lists, the need for more effective ways to find and use information became apparent.

Early stages of Collaborative Filtering

In the early 1990s there seemed to be two possible solutions to this new challenge: Wait for improvements in artificial intelligence that would allow better automated classification of documents, or Bring in human judgment into the loop. While the challenges of automated classification have yet to be fully resolved, the need for human judgment is becoming increasingly recognized.
Early stages of Collaborative Filtering

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Recommended Reading

Personalised, Social e-learning:


– Shi, Lei and Cristea, Alexandra I., 2016 “Simplifying is not always best: learners thrive when using multifaceted open social learner models.” IEEE MultiMedia, 23 (1). pp. 36-47. ISSN 1070-986X (IF: 1.767).


Warwick-Brazil workshop, 28-04-2016
Recommended Reading

Adaptation languages and Authoring:


– flexible, easy to create adaptation
(Further) recommended Reading

- **Personalised e-health**: emotional support

- **Personalised Advertising**: liking adds

- **Election prediction**: predicting the future
  - Tsakalidis, A. ; Papadopoulos, S. ; Cristea, A.I. ; Kompatsiaris, Y., 2015, “Predicting Elections for Multiple Countries Using Twitter and Polls (local copy)” IEEE Intelligent System, 30(2)
(Further) recommended Reading

Social (Net) mining: – understanding people


– Adam Tsakalidis, Maria Liakata, Theo Damoulas, Brigitte Jellinek, Weisi Guo, Alexandra Cristea, 2016, “Combining Heterogeneous User Generated Data to Sense Well-being, COLING 2016, December 11-16, Osaka, Japan


Demos

Try out at:

• **Topolor2**: http://www.topolor.com/
• **Topolor1**: http://topolor-shek.rhcloud.com
• **Topolor1.1**: http://www.alamri.co.uk/
Thank you!

Any questions?
e-learning: where to?

* augmented face-to-face learning

www.topolor.com

virtual synchronous learning: social support

privileges for “face” vs “have-rolls”
teachers’ moderation

? avatars: too much control?

* just learning (not obvious “e”)

(rew) data → information → knowledge