Immersion in Virtual Worlds – but not Second Life!

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Introduction

- **What?**
  - The ways immersion is reached when students work in a virtual world.

- **Why?**
  - To measure immersion in non-game oriented virtual world.

- **How?**
  - Survey.

- **So what?**
  - Immersion mostly depends on co-presence and communication of users.
What is Immersion?

A phenomenon during which the users of a virtual world focus their senses on stimuli received from the virtual world and ignore partially or completely the stimuli received from the physical world.
Why Immersion is Important?

- interesting activities
- pleasant activities
- effective activities
- learning motivation
- collaboration
- engagement

Immersion

- Why Immersion is Important?
So, which virtual world is more immersive?
NONE & ALL!

BUT... WHY?
Because…

immersion  ➔  not intrinsic feature of VWs

potential feature  (Childs, 2010; Bredl et al., 2012; Onyesolu, 2009)

➢ just using a virtual world is not enough for immersion to be achieved  (Childs, 2010)
What Immersion is generated from?

Immersion

- users’ willingness
- co-presence & interactions
- use of avatars
- content & technical features
Users’ Willingness

- Users assess virtual worlds subjectively
  - Personal perspectives
  - Needs
  - Psychological processes
  - Mental processes

  Certain level of immersion (Childs, 2010)
The Use of Avatars

• the users alter and shape their avatars (Kay Michel et al., 2011).

• the users directly handle their avatars and, through them, the content of the virtual worlds (de Freitas, 2009).

• the users feel that the avatars, and not them, act in-world (Levesque & Lelievre, 2011).
Content & Technical Features

vividness & plausibility
stepping stones
(Bredl et al., 2012)

technical problems & utilitarian issues
obstacles
(Childs, 2010)
Co-persistence & Interactions

✓ A virtual world “exists” when there are users in it, interacting with its content and with each other.

✓ A user “exists” in a virtual world when interacting with other users and the world.

(Anneta et. al, 2009)
Let’s discuss the findings…
Of Mice or Men?

- The study of “avatar–user” relationship in SL
- Hold at UoB in Feb – June 2009
- 283 participants
- 16 items questionnaire
- 73.5% response rate

“The distinction between avatar and self seems to be blurred” (Conrad et al. 2010)
Leaving the Lindens
(Sept 2011)

– Dedicated provider (e.g. ReactionGrid)
– OSgrid
– University hosted virtual world
– USB stick based
– No virtual world at all...

(Conrad, 2011)
ReactionGrid (RG)

The same technical handling as Second Life (SL)

– virtual islands can be rented
– structures can be built
– communication is possible (text or voice)

Can we expect immersion in this “New Brave World”? 
Population as one of crucial factors

Population  Interactions  Immersion
Hypothesis:
Very little or no immersion is expected due to lack of population in this new world.
Set up

- Students of UoB
- Computer Science and Engineering
- 19 participants (16 males, 3 females)
- “Standard” PC, single screen, keyboard, mouse
- General university lab environment
- Day time
- Modified questionnaire from Jennet et al. (2008)
- 29 questions in total (http://perisic.com/rg/)
Task

• To build educational showcase in RG
  – Part of the Social and Professional Management module
• Use prims, scripts or both
• Communicate (or not) with people around
• Spend in VR at least 30 min doing (or not) the task
• Answer the questionnaire (absolutely voluntary)
New Bedfordia: building spots
New Bedfordia: work in progress
New Bedfordia: showcases
Likert Scale:

- participant-friendly
- easily understood
- offers a good range of responses
- captures the intensity of feelings for a given item

(Kothari, 2004)

<table>
<thead>
<tr>
<th>Not at all</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>A lot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Little</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very much</td>
</tr>
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</table>
The seven questions where more than 50% of the respondents choose a value of 4 or 5 on the Likert scale.
How much **effort** did you put into playing the task?

<table>
<thead>
<tr>
<th>Score</th>
<th>4-5</th>
<th>53%</th>
</tr>
</thead>
</table>

Did you feel that you were **trying your best**?

<table>
<thead>
<tr>
<th>Score</th>
<th>4-5</th>
<th>58%</th>
</tr>
</thead>
<tbody>
<tr>
<td>score 1-2</td>
<td>26%</td>
<td></td>
</tr>
<tr>
<td>score 3</td>
<td>16%</td>
<td></td>
</tr>
</tbody>
</table>
21. To what extent did you feel like you were making progress towards the end of the task?

22. How well do you think you performed in the task accomplishing?
25. How much did you **want to accomplish** the task?

- Score 4-5: 63%
- Score 3: 32%
- Score 1-2: 5%
8. To what extent were you **aware of yourself** in your surroundings?

11. To what extent did you **feel** that you were **interacting** with the Virtual World environment?

- **Score 4-5**: 53%
  - Score 1-2: 21%
  - Score 3: 26%

- **Score 4-5**: 69%
  - Score 1-2: 5%
  - Score 3: 26%
The three questions where more than 50% of the respondents choose a value of 1 or 2 on the Likert scale.
7. To what extent did you **forget** about your everyday **concerns**?

12. To what extent did you feel as though you were **separated from your real-world** environment?
15. At any point did you find yourself become **so involved** that you were unaware you were even using controls?
The rest are questions with “balanced” answers – less than 50% of respondents are scored 1-2 or 4-5
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Score 1-2</th>
<th>Score 3</th>
<th>Score 4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To what extent did the task <strong>hold your attention</strong>?</td>
<td>26.3%</td>
<td>26.3%</td>
<td>47.4%</td>
</tr>
<tr>
<td>2</td>
<td>To what extent did you feel you were <strong>focused on the task</strong>?</td>
<td>15.8%</td>
<td>36.8%</td>
<td>47.4%</td>
</tr>
<tr>
<td>5</td>
<td>To what extent did you <strong>lose track of time</strong>?</td>
<td>47.4%</td>
<td>31.6%</td>
<td>21.1%</td>
</tr>
<tr>
<td>6</td>
<td>To what extent did you feel consciously <strong>aware of being in the real world</strong> whilst doing the task?</td>
<td>15.8%</td>
<td>36.8%</td>
<td>47.4%</td>
</tr>
</tbody>
</table>
Indeed, population and/or co-presence in VR might affect the immersion experience.
Probably next steps

• ReactionGrid is not an option anymore
• They migrated to some other activities
• UoB is migrating to it’s own locally hosted VR
• Collaboration with University of St.Andrews
Thank you very much!

K. Bredl, A. Groß, J. Hünniger and J. Fleischer, “The Avatar as a Knowledge Worker? How Immersive 3D Virtual Environments may Foster Knowledge Acquisition”, Institute for Media and Educational Technology, University of Augsburg, Germany, ISSN 1479-4411, (2012).


<table>
<thead>
<tr>
<th>Question</th>
<th>Score 1-2</th>
<th>Score 3</th>
<th>Score 4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>9  To what extent did you notice events taking place around you?</td>
<td>15.8%</td>
<td>36.8%</td>
<td>47.4%</td>
</tr>
<tr>
<td>10 Did you feel the urge at any point to stop doing the task and see what was happening around you?</td>
<td>21.1%</td>
<td>36.8%</td>
<td>42.1%</td>
</tr>
<tr>
<td>13 To what extent did you feel that the task was something you were experiencing, rather than something you were just doing?</td>
<td>26.3%</td>
<td>47.4%</td>
<td>26.3%</td>
</tr>
<tr>
<td>14 To what extent was your sense of being in Virtual World environment stronger than your sense of being in the real world?</td>
<td>42.1%</td>
<td>36.8%</td>
<td>21.1%</td>
</tr>
<tr>
<td>#</td>
<td>Question</td>
<td>Score 1-2</td>
<td>Score 3</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
<td>-----------</td>
<td>---------</td>
</tr>
<tr>
<td>16</td>
<td>To what extent did you feel as though you were moving through the task according to your own will?</td>
<td>21.1%</td>
<td>47.4%</td>
</tr>
<tr>
<td>17</td>
<td>To what extent did you find the task challenging?</td>
<td>15.8%</td>
<td>52.6%</td>
</tr>
<tr>
<td>18</td>
<td>Were there any times during the task doing in which you just wanted to give up?</td>
<td>42.1%</td>
<td>15.8%</td>
</tr>
<tr>
<td>19</td>
<td>To what extent did you feel motivated while accomplishing the task?</td>
<td>26.3%</td>
<td>31.6%</td>
</tr>
<tr>
<td>Question</td>
<td>Score 1-2</td>
<td>Score 3</td>
<td>Score 4-5</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------</td>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>To what extent did you find the <strong>task easy</strong>?</td>
<td>31.6%</td>
<td>42.1%</td>
<td>26.3%</td>
</tr>
<tr>
<td>To what extent did you feel <strong>emotionally attached</strong> to the task?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To what extent were you <strong>interested in seeing</strong> how the task’s events would <strong>progress</strong>?</td>
<td>10.5%</td>
<td>42.1%</td>
<td>47.4%</td>
</tr>
<tr>
<td>Were you in <strong>suspense</strong> about whether or <strong>not</strong> you would <strong>successfully accomplish</strong> the task?</td>
<td>36.8%</td>
<td>21.1%</td>
<td>42.1%</td>
</tr>
<tr>
<td>Question</td>
<td>Score 1-2</td>
<td>Score 3</td>
<td>Score 4-5</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
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<td>-----------</td>
</tr>
<tr>
<td>27 To what extent did you <strong>enjoy</strong> the <strong>graphics</strong> and the <strong>imagery</strong>?</td>
<td>31.6%</td>
<td>31.6%</td>
<td>36.8%</td>
</tr>
<tr>
<td>28 How much would you say you <strong>enjoyed being in the Virtual World</strong> environment?</td>
<td>10.5%</td>
<td>42.1%</td>
<td>47.4%</td>
</tr>
<tr>
<td>29 Would you like <strong>to do</strong> this task <strong>again</strong>?</td>
<td>31.6%</td>
<td>26.3%</td>
<td>42.1%</td>
</tr>
</tbody>
</table>