

**VLE and MUVE Integration:
Exploratory Survey Data Summary**

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Abstract

This document presents a preliminary summary of selected results from an online survey conducted in May/June 2009. The aim of the survey was to establish initial user requirements and expectations of a system which would integrate web-based Virtual Learning Environments (VLEs) with immersive Multi User Virtual Environments (MUVEs).

197 responses were received to the survey. The first few questions established that a large number of participants had experience with VLE and MUVE technologies. Subsequent questions about the integration of the technology showed a general acceptance of and support for the concept. Finally, a series of questions regarding suggested methods of integration showed areas where the proposal is strong and areas where the usefulness is disputed.

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Introduction

This research is being conducted alongside the SLOODLE¹ project, and is part of a PhD exploring the possibilities of integrating two technologies: web-based Virtual Learning Environments (VLEs, also known as Learning/Course Management Systems), and immersive Multi User Virtual Environments (MUVEs, also known as virtual worlds). The focus of the research as a whole is on interface and usability issues, rather than exploring new pedagogical territory. As such, principles of user centred design are being adopted throughout. Key technologies being used to explore the integration are the “Moodle”² VLE, and the “Second Life”³ MUVE.

The data presented in this document are from an early, exploratory⁴ stage of investigation into the user expectations and requirements of a system which would integrate the two technologies.

Background

Web-based Virtual Learning Environments are becoming very widely used at educational institutions throughout the world. The benefit this technology can bring to distance and face-to-face learners has been discussed and demonstrated substantially in literature. Many tools and features are used widely, including discussion forums, chat rooms, wikis, and quizzes.

A less common though increasingly popular technology for education is that of immersive Multi User Virtual Environments. This graphically-rich technology has grown from roots in computer games, providing users with the ability to engage in a wide variety of activities in a shared virtual space, using their personal computers. One of the challenges facing educators is that these MUVEs are not usually designed for education, and can therefore lack some very basic tools to support teaching and learning.

Many of the important tools are already found on VLE platforms. As such, instead of designing and implementing a completely different learning support system, it is suggested that integrating the VLE features with the MUVE could provide the most optimal solution.

¹ <http://www.sloodle.org>

² <http://moodle.org>

³ Second Life ® is a registered trademark of Linden Lab, Inc. ®

⁴ Rubin, Jeffrey. 1994. Handbook of usability testing. New York, NY: Wiley.

Methodology

This evaluation consisted of a mixed-method survey, including several quantitative questions regarding the technologies and proposed methods of integration. The aim of these questions was to stimulate deeper user feedback. This was gathered using several qualitative (free-text) questions throughout the survey, although this data has been omitted from this summary pending further analysis. Demographic data has also been omitted.

A brief pilot of the survey was conducted, with participants invited from core SLOODLE project members and from an independent group of computer users. Feedback from this pilot supported the content and aims of the survey, although also highlighted the importance of pre-existing knowledge – i.e. users with no experience whatever of VLE or MUVE technologies had difficulty completing it.

Lack of familiarity with the technologies concerned has been widely identified in literature as a barrier to their effective use. As such, it was deemed appropriate to focus on recruiting participants who would likely have at least some familiarity. To this end, participants were recruited from mailing lists, discussion groups, and user communities which were related to the technologies.

The survey was presented online, with 197 responses received between 13th May and 7th June 2009. 125 of the responses (63%) were completed in full.

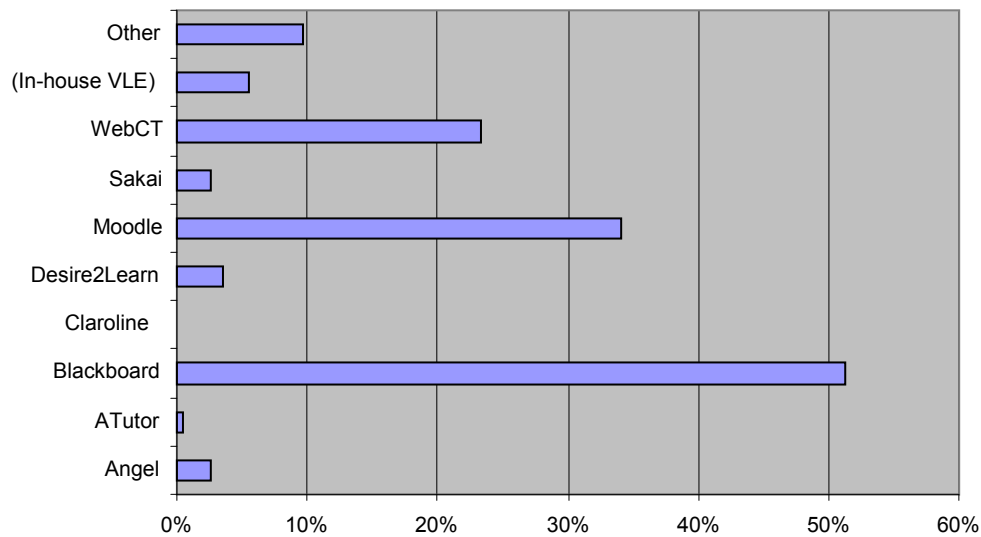
Summary Results

Virtual Learning Environments (VLEs)

VLE(s) Used

Question: “Have you ever used any of the following Virtual Learning Environments in any role? (e.g. teacher, student, course builder etc.)”

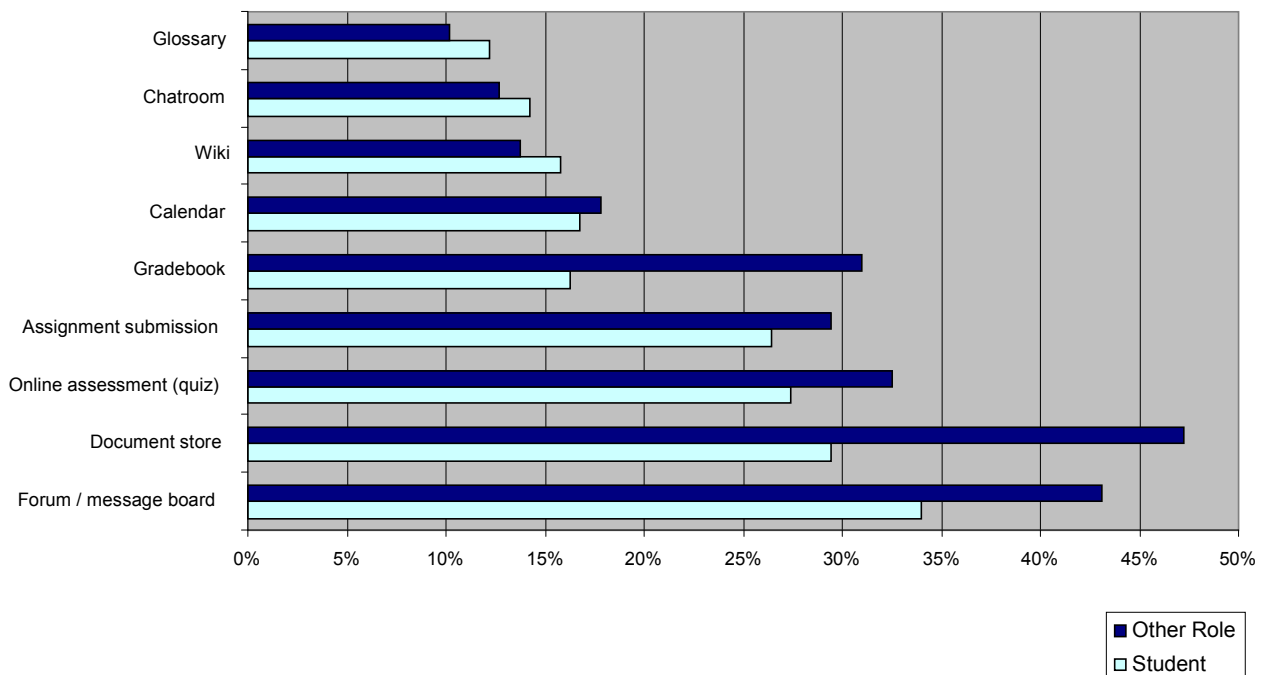
VLE	Num.
Other	9.64%
(In-house VLE)	5.58%
WebCT	23.35%
Sakai	2.54%
Moodle	34.01%
Desire2Learn	3.55%
Claroline	0.00%
Blackboard	51.27%
ATutor	0.51%
Angel	2.54%



Useful Features

Question: “Which of these common features of Virtual Learning Environments do you find most useful as a student (if applicable)? And which do you find most useful in any other role (such as teacher or course builder)?”

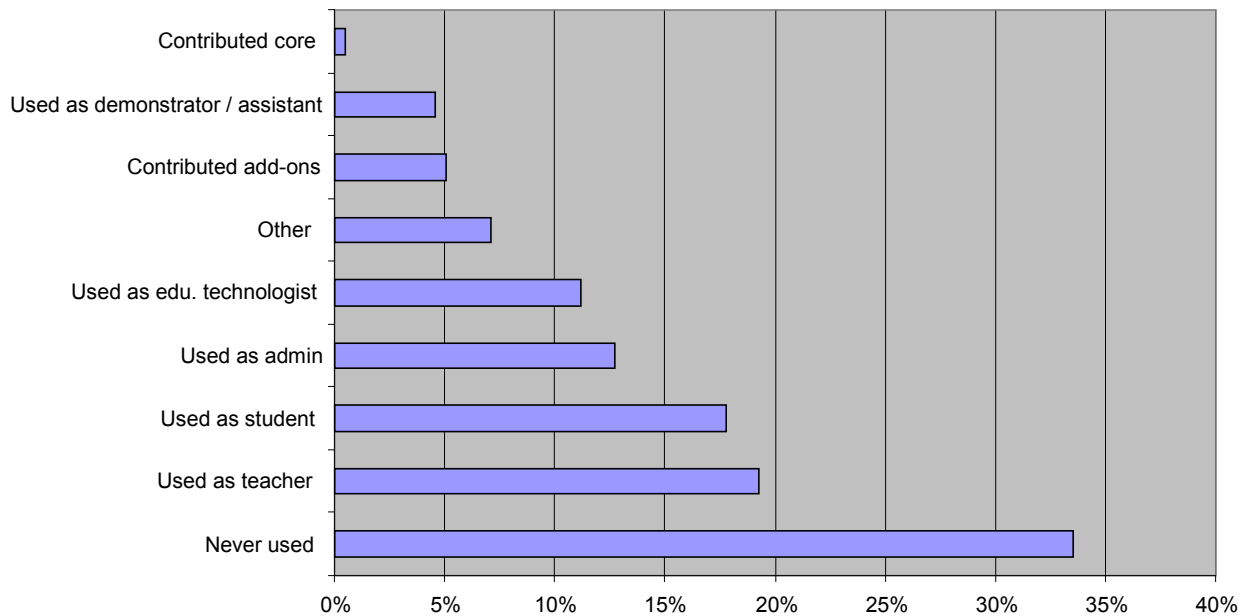
Feature	Student	Other Role
Glossary	12.18%	10.15%
Chatroom	14.21%	12.69%
Wiki	15.74%	13.71%
Calendar	16.75%	17.77%
Gradebook	16.24%	30.96%
Assignment submission	26.40%	29.44%
Online assessment (quiz)	27.41%	32.49%
Document store	29.44%	47.21%
Forum / message board	34.01%	43.10%



Moodle Experience

Question: “This research is particularly interested in the Moodle virtual learning environment. What is your experience of Moodle?”

Experience	Number
I have contributed to the Moodle core	0.51%
I have used it as a demonstrator / classroom assistant	4.57%
I have contributed to add-on modules/blocks for Moodle	5.08%
Other	7.11%
I have used it as an educational technologist	11.17%
I have used it as an administrator	12.69%
I have used it as a student	17.77%
I have used it as a teacher	19.29%
I have never used Moodle	33.50%

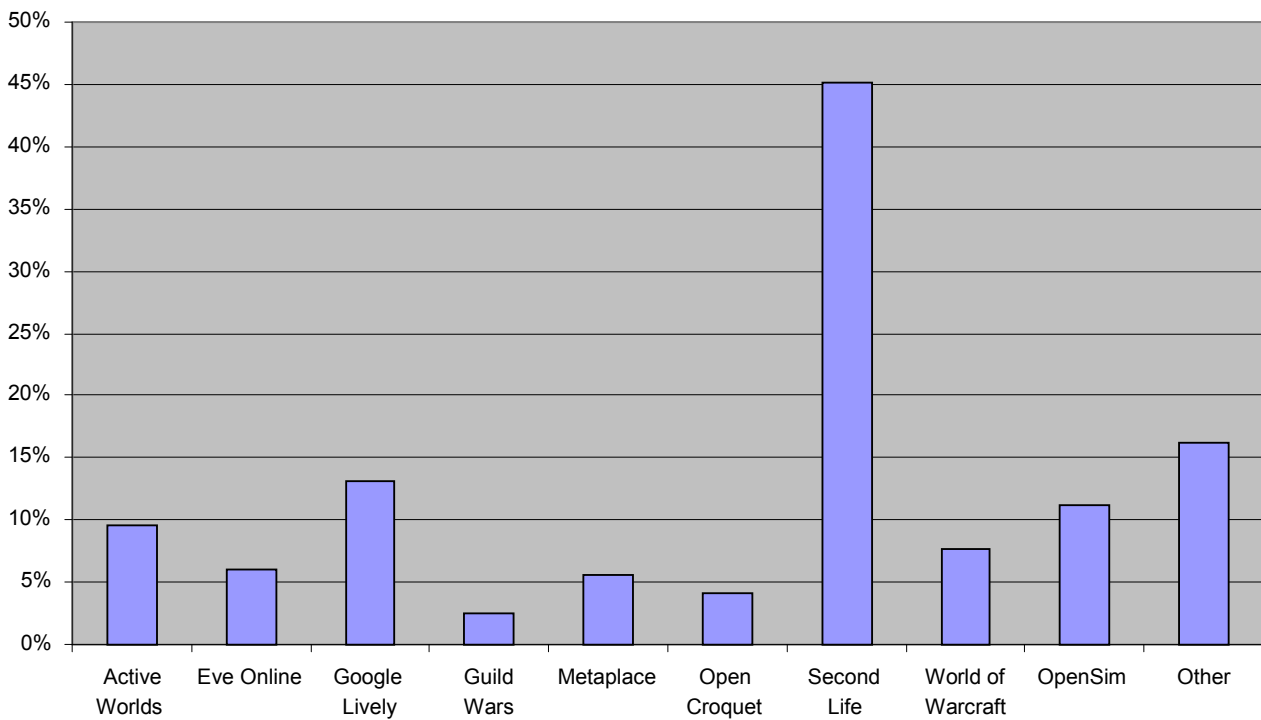


Multi User Virtual Environments (MUVEs)

MUVE(s) Used

Question: “Which Multi-User Virtual Environments have you used?”

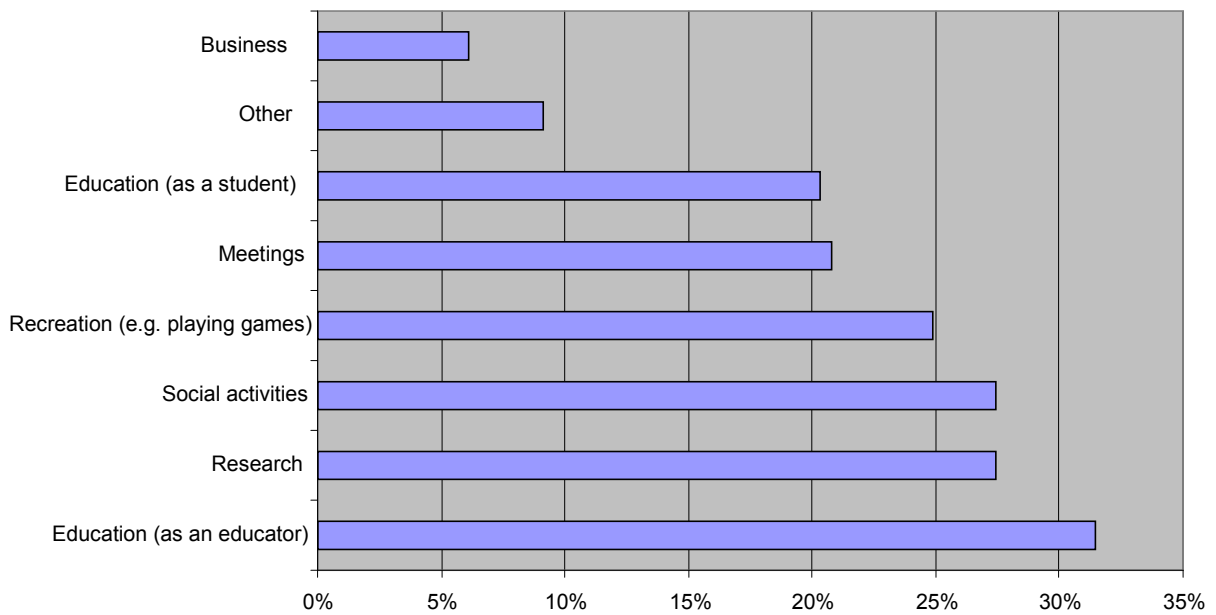
MUVE	Num.
Active Worlds	9.64%
Eve Online	6.09%
Google Lively	13.20%
Guild Wars	2.54%
Metaplace	5.58%
Open Croquet	4.06%
Second Life	45.18%
World of Warcraft	7.61%
OpenSim	11.17%
Other	16.24%



Purpose of Use

Question: “What have you used virtual worlds for?”

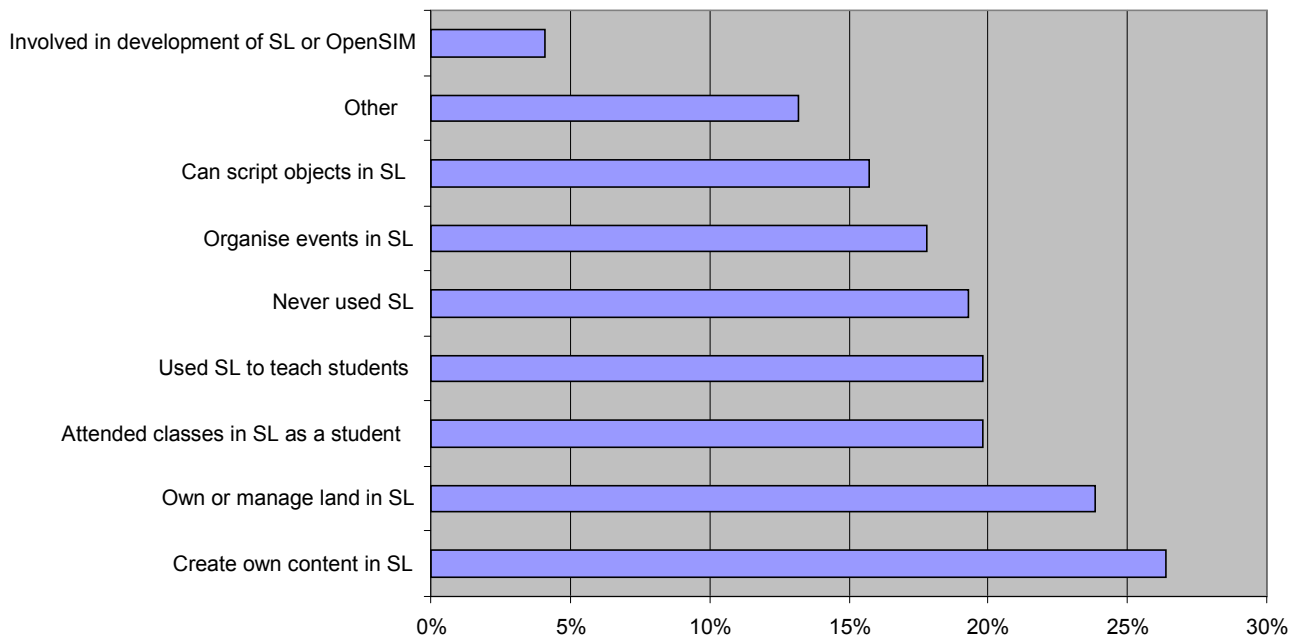
Purpose	Num.
Business	6.09%
Other	9.14%
Education (as a student)	20.30%
Meetings	20.81%
Recreation (e.g. playing games)	24.87%
Research	27.41%
Social activities	27.41%
Education (as an educator)	31.47%



Second Life Experience

Question: “This research work is particularly interested in the Second Life virtual world, created by Linden Lab. What is your experience with Second Life?”

Experience	Num.
I have been involved in developing the Second Life or OpenSIM platforms, or related technologies	4.06%
Other	13.20%
I can script objects in Second Life	15.74%
I organise events in Second Life	17.77%
I have never used Second Life	19.29%
I have attended classes in Second Life as a student	19.80%
I have used it to teach students	19.80%
I own or manage land in Second Life	23.86%
I create my own content (objects, textures, clothes)	26.40%



VLE + MUVE Integration

The following introductory text was presented for users to read before attempting this section of questions:

“The aim of this research is to integrate the systems which have been mentioned so far: Virtual Learning Environments (VLEs), and Multi-User Virtual Environments (MUVEs).

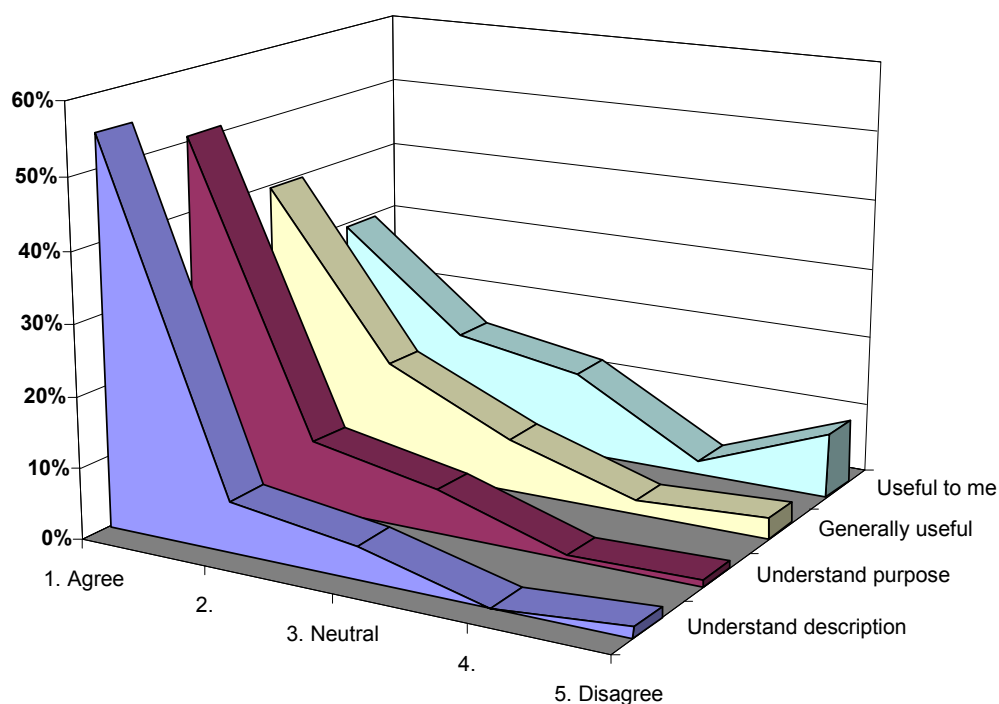
We are particularly interested in general purpose, immersive virtual worlds, such as Second Life. These are typically very rich environments, allowing you to move around and interact with the virtual world in many ways, and to collaborate with other people. Integration with a VLE is intended to help introduce educational content and structure, making MUVEs more suitable for teaching and learning.”

Response to Integration

Note: results for this question are given relative to the number of people who responded to it.

Question: “Please read the block of text above, describing the integration of VLE and MUVE technology, and then state how much you agree or disagree with the following statements.”

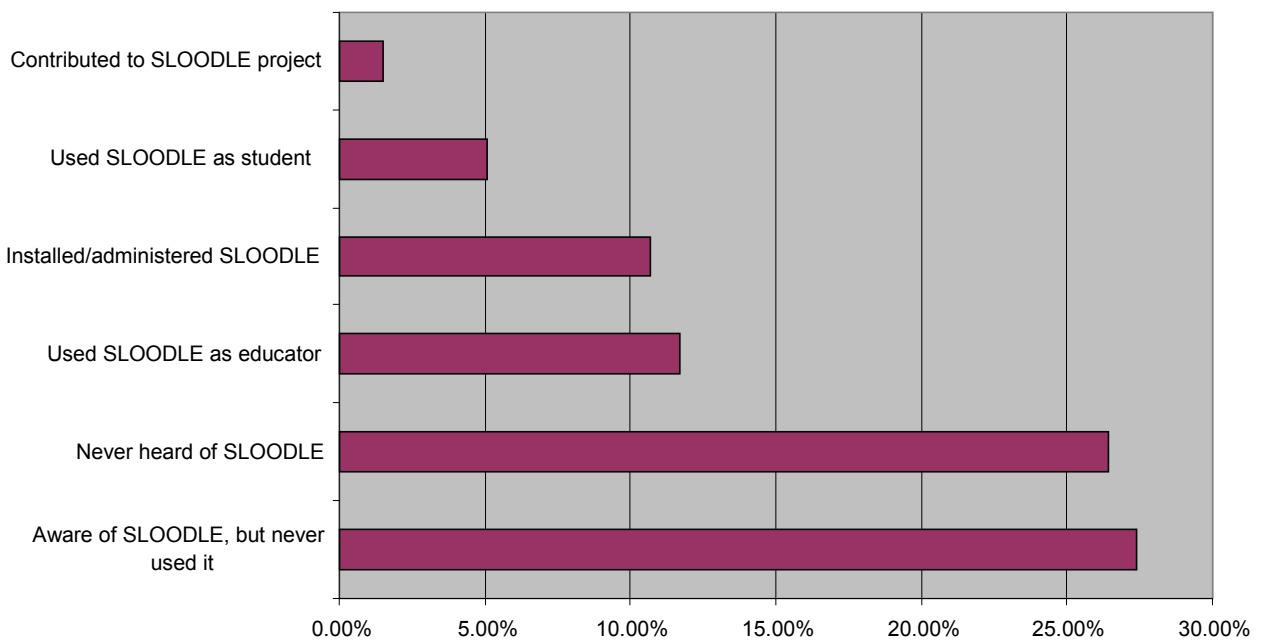
<i>[Scale: 1 = Agree, 5 = Disagree]</i>	1.	2.	3.	4.	5.
I understand the description given above	80.60%	10.45%	6.72%	0.00%	2.24%
I can understand the purpose of the integration	74.63%	14.18%	8.96%	0.75%	1.49%
I think this integration of technologies could be generally useful	58.21%	23.13%	11.19%	2.99%	4.48%
I think this integration of technologies could be useful to me personally	43.28%	22.39%	17.91%	2.99%	13.43%



SLOODLE Usage

Question: “This research will work alongside the SLOODLE project. SLOODLE is currently researching and developing the integration of the Moodle VLE with the Second Life MUVE. What is your experience of SLOODLE?”

	Num.
I have contributed some work to the SLOODLE project	1.52%
I have used SLOODLE as a student	5.08%
I have installed/administered SLOODLE myself	10.66%
I have used SLOODLE as an educator (teacher, demonstrator or classroom assistant)	11.68%
I have never heard of SLOODLE	26.40%
I am aware of SLOODLE, but have never used it	27.41%

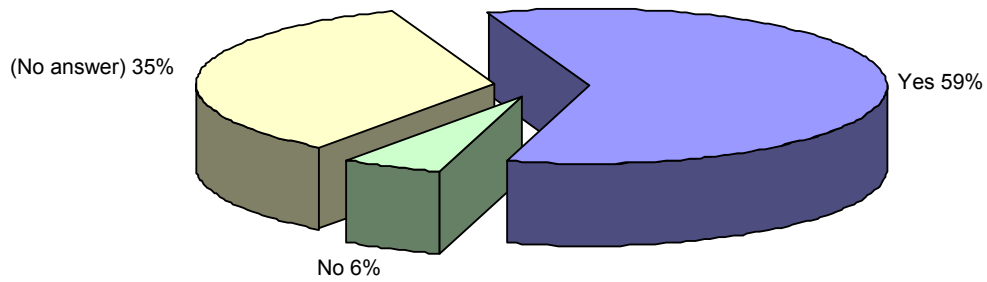


Asynchronous Discussion

Forum Usage

Question: "Have you ever used a web-based discussion forum?"

Answer	Num.
Yes	59.90%
No	5.58%
(No answer)	34.52%

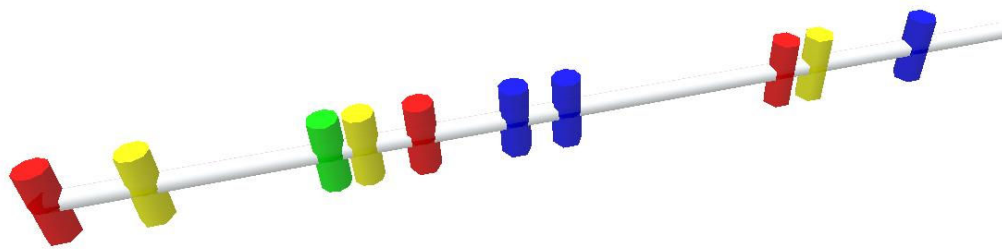


Basic Forum Timeline

Note: results for this question are given relative to the number of people who responded to it.

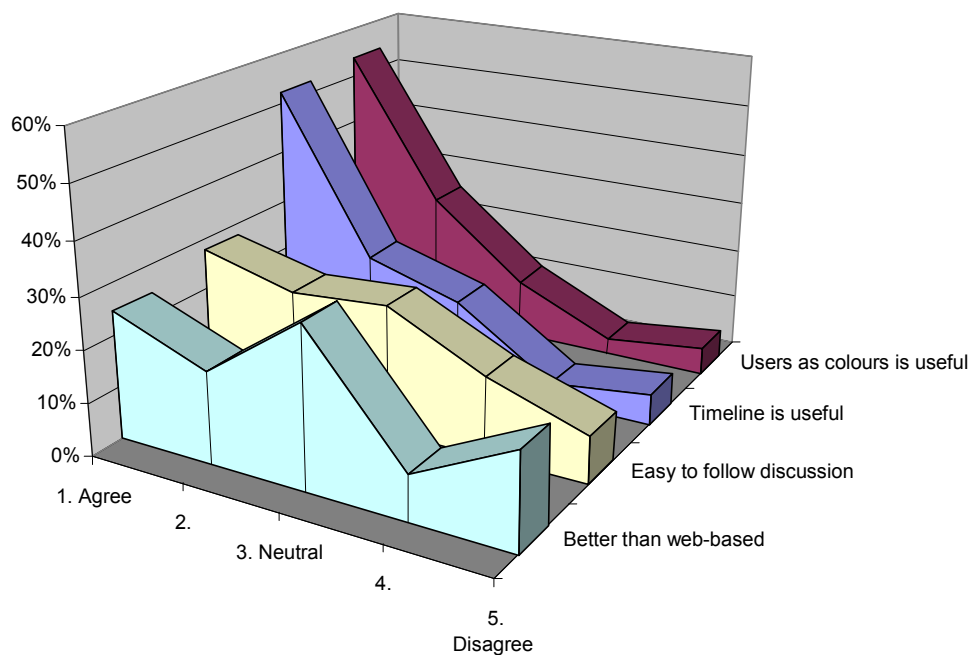
The following introduction and image were displayed to participants before answering the subsequent questions:

“This is a simple example of how a discussion on a forum could be illustrated. Each cylinder (or 'marker') represents a single message, with each colour representing a different person. The first post is at the left-hand side, and other posts are positioned on a timeline, showing when they were added. You would click on a marker to view the text of that post.”



Question: “How much do you agree with the following statements?”

<i>[Scale: 1 = Agree, 5 = Disagree]</i>	1.	2.	3.	4.	5.
Showing the sequence of posts as a timeline is useful	52.31%	21.54%	16.15%	3.85%	6.15%
Representing different users as different colours is useful	53.85%	26.15%	11.54%	3.08%	5.38%
The discussion would be easy to follow like this	27.69%	23.08%	24.62%	15.38%	9.23%
This representation illustrates the structure of the discussion better than web-based forums	24.60%	17.46%	30.95%	8.73%	18.25%

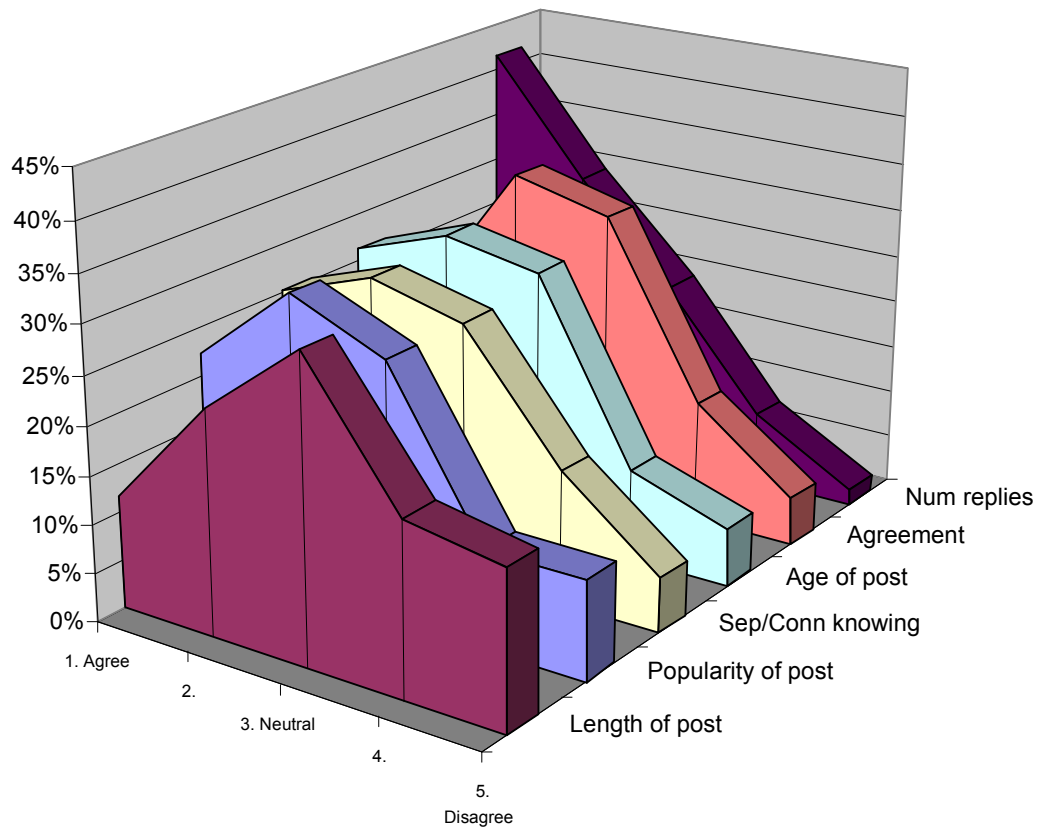


Post Attributes

Note: results for this question are given relative to the number of people who responded to it.

Question: “The individual markers could be used to indicate different attributes of the posts. For example, if you or your students can rate the posts, the marker could show popularity. Consider the following attributes of forum posts, and indicate how useful or otherwise you think they would be:”

[Scale: 1 = Agree, 5 = Disagree]	1.	2.	3.	4.	5.
Popularity of post	22.22%	30.77%	26.50%	10.26%	10.26%
Length of post	11.61%	23.21%	31.25%	17.86%	16.07%
Separate/Connected knowing	25.29%	28.74%	26.44%	13.79%	5.75%
Age of post	26.32%	29.82%	28.07%	9.65%	6.14%
Number of replies (if it is a threaded discussion)	41.53%	29.66%	19.49%	7.63%	1.69%
Agreement with original post (argumentation)	18.64%	33.05%	30.51%	12.71%	5.08%

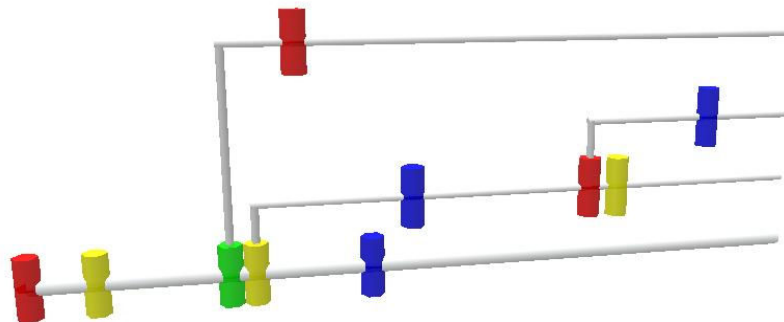


Threaded Discussion

Note: results for this question are given relative to the number of people who responded to it.

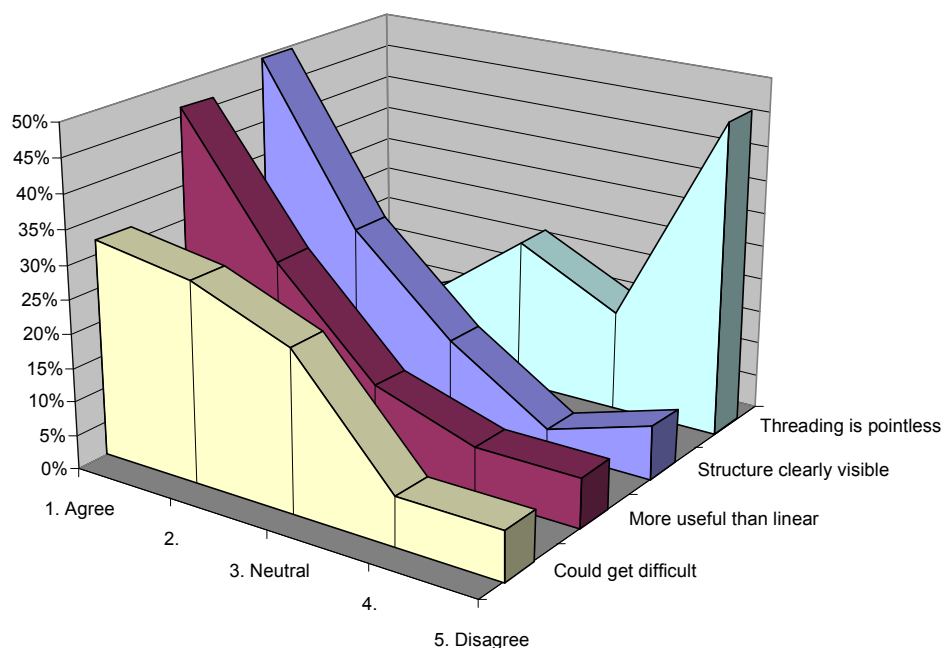
The following introduction and image were displayed to participants prior to answering the subsequent questions:

“Some forums support threaded discussions, which allows you to respond to specific posts which other people have made in a discussion. This can be represented as a branching structure, showing each 'thread' in the forum. This could be represented like this:”



Question: “Please consider the following statements, and indicate how much you agree with them:”

<i>[Scale: 1 = Agree, 5 = Disagree]</i>	1.	2.	3.	4.	5.
The structure of the discussion is clearly visible.	49.60%	26.40%	12.80%	3.20%	8.00%
This is more useful than the simple linear timeline which shows no threading.	46.34%	26.83%	12.20%	7.32%	7.32%
Interacting with discussions like this could get difficult.	32.00%	29.60%	24.00%	7.20%	7.20%
Threaded discussion forums in general are a waste of time.	5.00%	10.83%	22.50%	15.00%	46.67%



Discussion “Post-Its”

Note: results for this question are given relative to the number of people who responded to it.

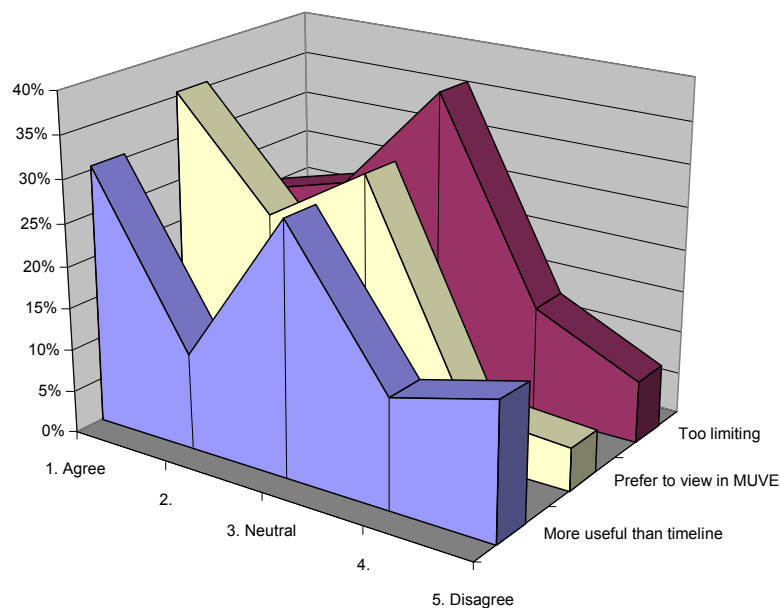
The following introductory text and image were displayed to participants prior to answering the subsequent questions:

“The following image shows a completely separate approach to visualising a forum in a MUVE (proposed by Jeremy Kemp on the SLOODLE project):



Each yellow 'sticky note' (or group of notes) represents a discussion, and each discussion is associated with a particular location or feature in the MUVE. When a particular note is clicked, the discussion forum appears in the user's web-browser. This allows students to discuss points of interest in the MUVE, using a forum in the VLE.”

[Scale: 1 = Agree, 5 = Disagree]	1.	2.	3.	4.	5.
This is a more useful representation than the timeline above.	30.40%	11.20%	29.60%	12.80%	16.00%
Having to associate discussions with particular locations would be too limiting.	19.83%	23.14%	36.36%	13.22%	7.44%
I would prefer to be able to view the forum posts directly in the MUVE.	35.54%	23.14%	30.58%	5.79%	4.96%



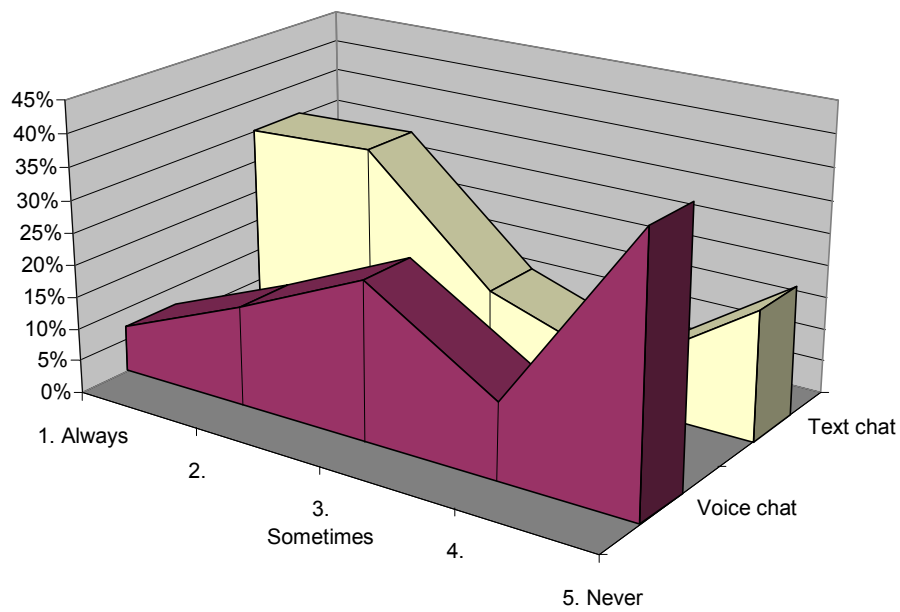
Synchronous Discussion

Types of Communication

Note: results for this question are given relative to the number of people who responded to it.

Question: “How often do you use each type of communication **for educational purposes** in Multi-User Virtual Environments?”

<i>[Scale: 1 = Always, 5 = Never]</i>	1.	2.	3.	4.	5.
Text chat	30.17%	31.03%	12.93%	6.03%	19.83%
Voice chat	7.21%	15.32%	24.32%	11.71%	41.44%

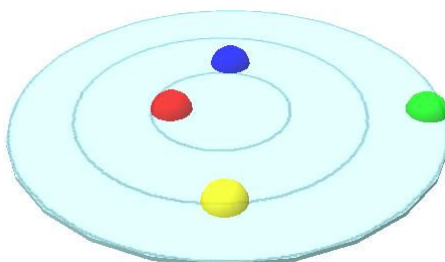


Contribution Visualisation

Note: results for this question are given relative to the number of people who responded to it.

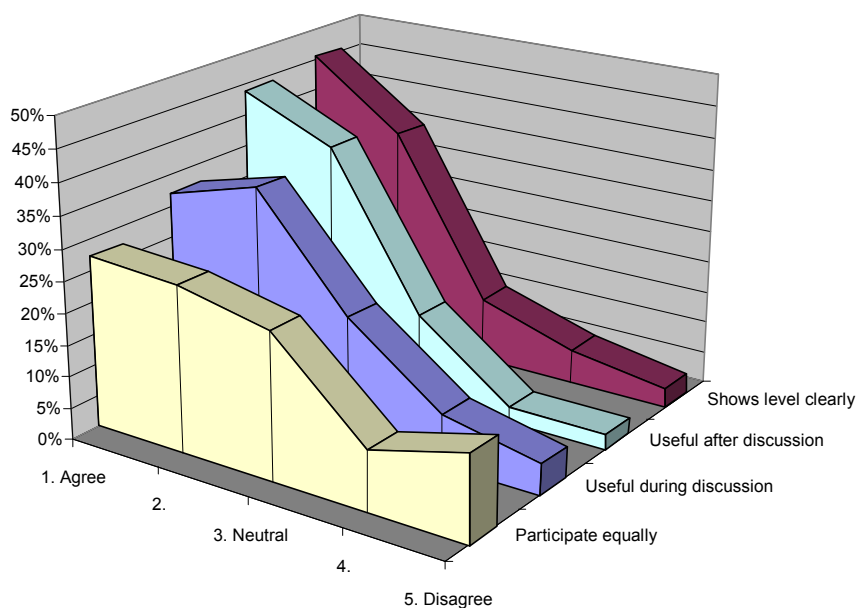
The following introduction and image were displayed to participants prior to answering the subsequent questions:

“Below is a tool which can help visualize the level of participation by each person in a discussion⁵. This could be displayed during a discussion to illustrate recent contributions, or afterwards to show the overall contributions.



Each coloured ball represents a single person (a new ball is added whenever somebody joins the discussion). When a person contributes more to the discussion, the ball moves closer to the middle. It is designed so that you can quickly see who is dominating a conversation, and who is contributing less.”

[Scale: 1 = Agree, 5 = Disagree]	1.	2.	3.	4.	5.
It is important to make sure students participate equally in a discussion.	27.20%	26.40%	23.20%	9.60%	13.60%
This tool shows contribution levels clearly.	45.60%	35.20%	10.40%	5.60%	3.20%
Visualizing the contribution levels during the discussion is useful.	32.00%	36.00%	19.20%	8.00%	4.80%
Analyzing the contribution levels <i>after</i> the discussion is useful.	44.00%	37.60%	13.60%	2.40%	2.40%



⁵ This concept is based on the “Babble Cookie” proposed by Thomas Erickson.

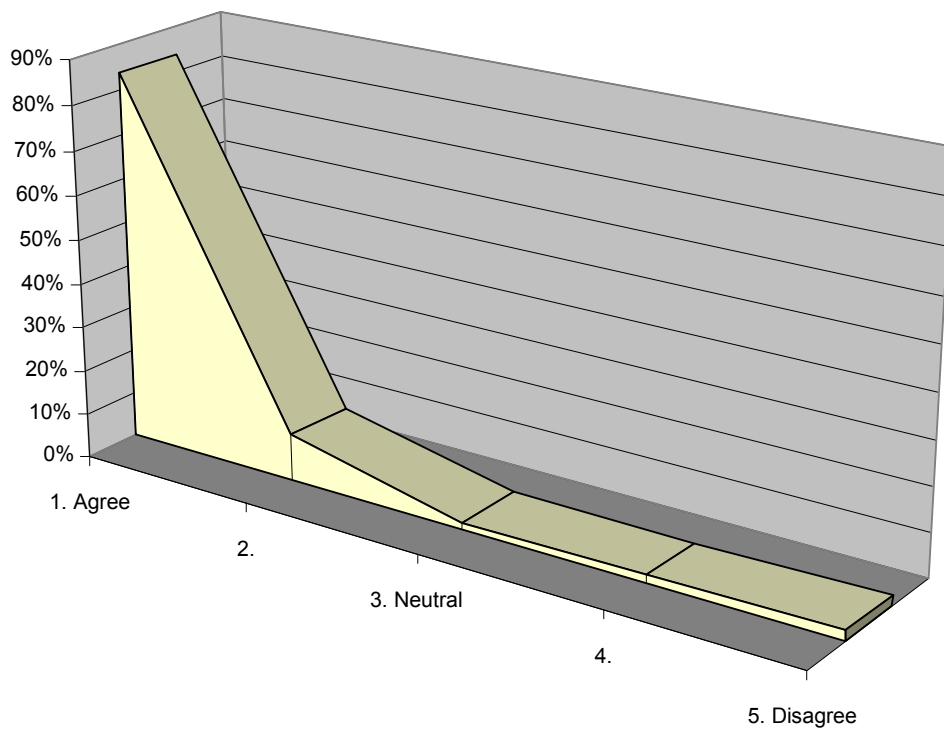
Course Structure

Importance

Note: results for this question are given relative to the number of people who responded to it.

Question: “Please indicate how much you agree or disagree with the following statement:”

[Scale: 1 = Agree, 5 = Disagree]	1.	2.	3.	4.	5.
It is important for students to be able to see the structure of their course.	83.87%	10.48%	1.61%	1.61%	2.42%

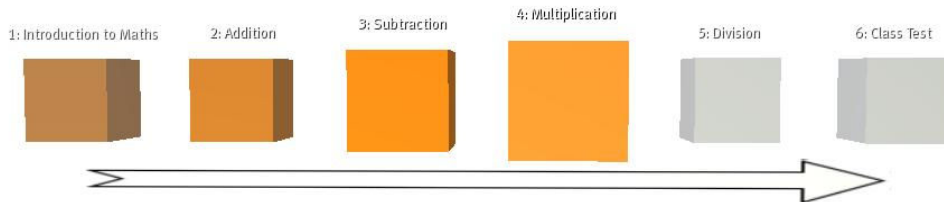


Visualising Structure

Note: results for this question are given relative to the number of people who responded to it.

The following introduction and image were displayed to participants prior to answering the subsequent questions:

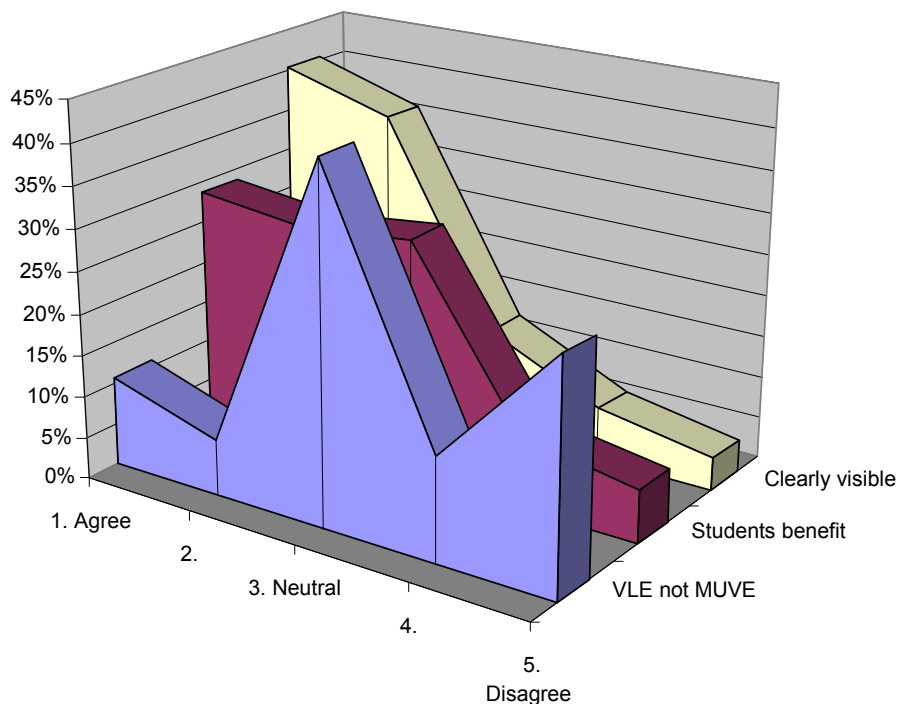
“The following image shows a way in which course structure could be visualised in a 3d MUVE:



Each box represents a topic in the course, with the name of a given topic displayed above the box. The sequence of topics runs left to right, and information about the content of a particular topic will be displayed if a user clicks on the relevant box. The current topic in the course is represented by the largest box.”

Question: “Please indicate how much you agree or disagree with the following statements.”

[Scale: 1 = Agree, 5 = Disagree]	1.	2.	3.	4.	5.
The course structure is clearly visible.	40.48%	36.51%	12.70%	6.35%	3.97%
Students would benefit from seeing course structure illustrated in this way.	28.80%	27.20%	28.80%	8.80%	6.40%
Course structure should be left in the VLE, not brought into the MUVE.	10.83%	6.67%	42.50%	12.50%	27.50%



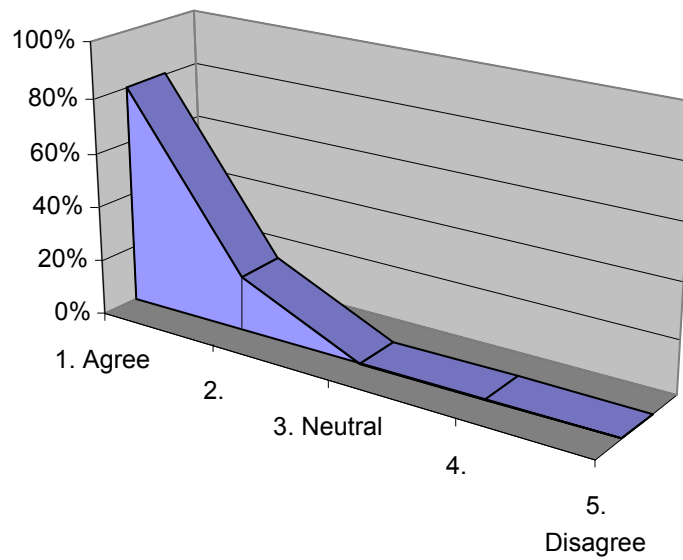
Peripheral Information

Importance

Note: results for this question are given relative to the number of people who responded to it.

Question: “Please indicate how much you agree or disagree with this statement:”

<i>[Scale: 1 = Agree, 5 = Disagree]</i>	1.	2.	3.	4.	5.
It is important for courses to provide supplementary material to students.	80.34%	19.66%	0.00%	0.00%	0.00%



Peripheral Display

Note: results for this question are given relative to the number of people who responded to it.

The following introduction and image were displayed to participants before attempting the subsequent questions:

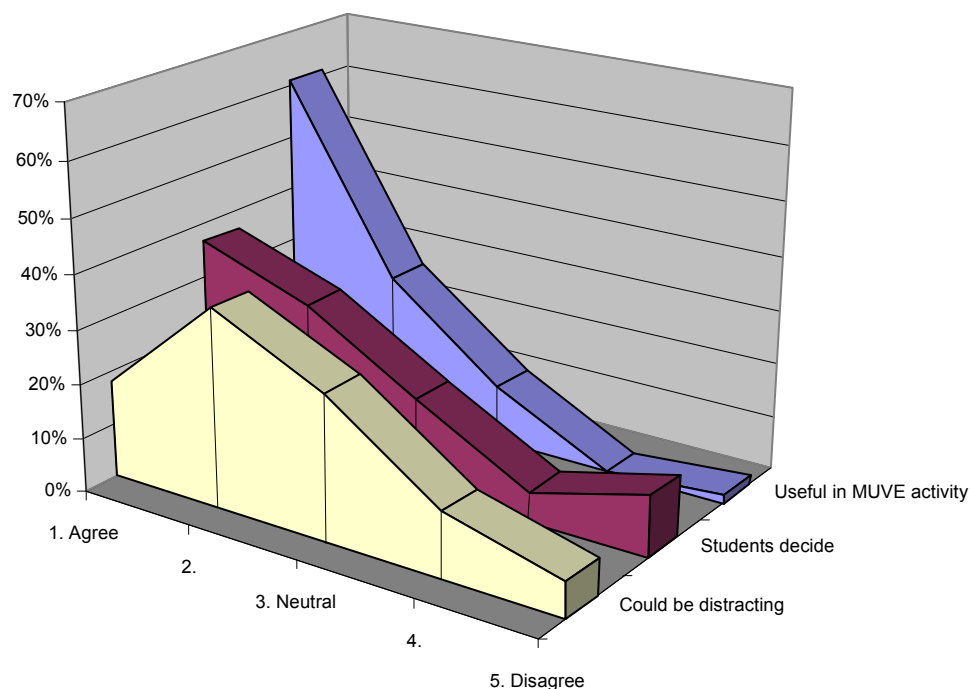
“The following image shows an example of how peripheral information could be shown alongside a class activity.



Normally, the display will be on the edge of the class activity area. It will never guide the activity or discussion directly, but if it contains useful information, then it can be brought temporarily into the centre of attention.”

Question: “Please indicate how much you agree or disagree with the following statements.”

[Scale: 1 = Agree, 5 = Disagree]	1.	2.	3.	4.	5.
Supplementary information would be useful in a MUVE activity or discussion.	60.98%	26.83%	10.57%	0.00%	1.63%
The information display could be distracting.	17.89%	36.59%	26.83%	12.20%	6.50%
Students should be able to decide whether or not to see the display.	36.59%	29.27%	17.07%	5.69%	11.38%

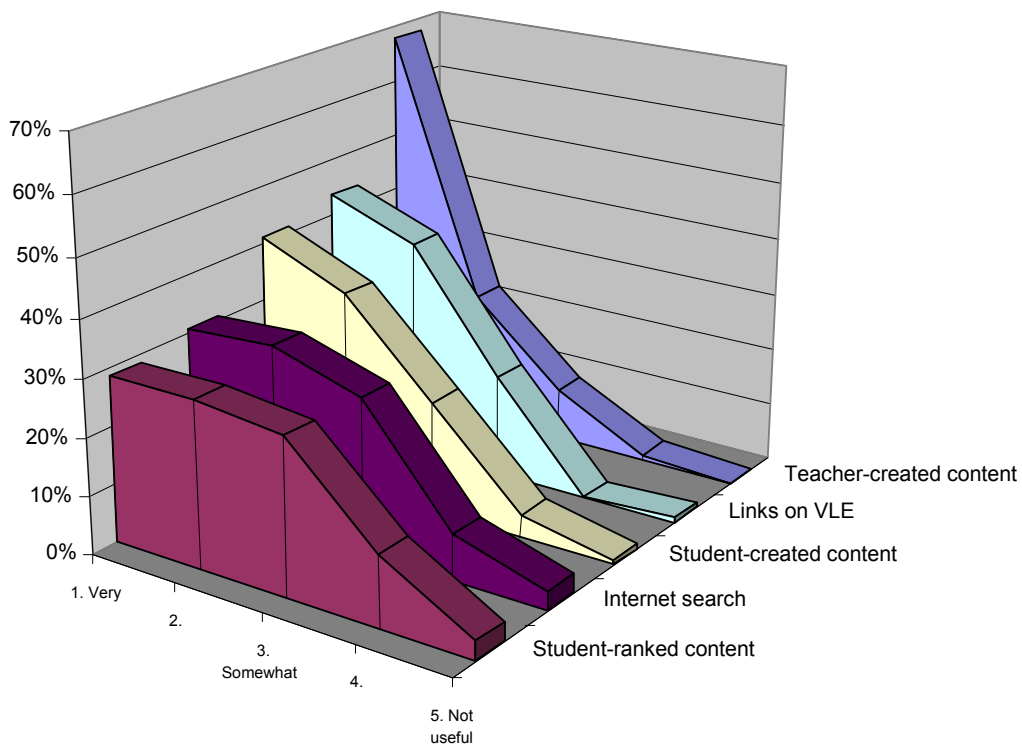


Information Source

Note: results for this question are given relative to the number of people who responded to it.

Question: “The information displayed could come from several sources. Please indicate how useful you think each source would be.”

<i>[Scale: 1 = Very Useful, 5 = Not useful at all]</i>	1.	2.	3.	4.	5.
Teacher-created content and resources on the VLE (e.g. lecture notes).	67.74%	22.58%	8.87%	0.81%	0.00%
Student-created content on the VLE (e.g. forum, wiki and blog posts).	41.13%	34.68%	19.35%	4.03%	0.81%
Student-ranked content on the VLE.	28.69%	28.69%	27.05%	12.30%	3.28%
Links on the VLE to other Internet resources.	43.55%	37.90%	17.74%	0.00%	0.81%
Internet search (using specific keywords).	30.65%	31.45%	26.61%	8.06%	3.23%

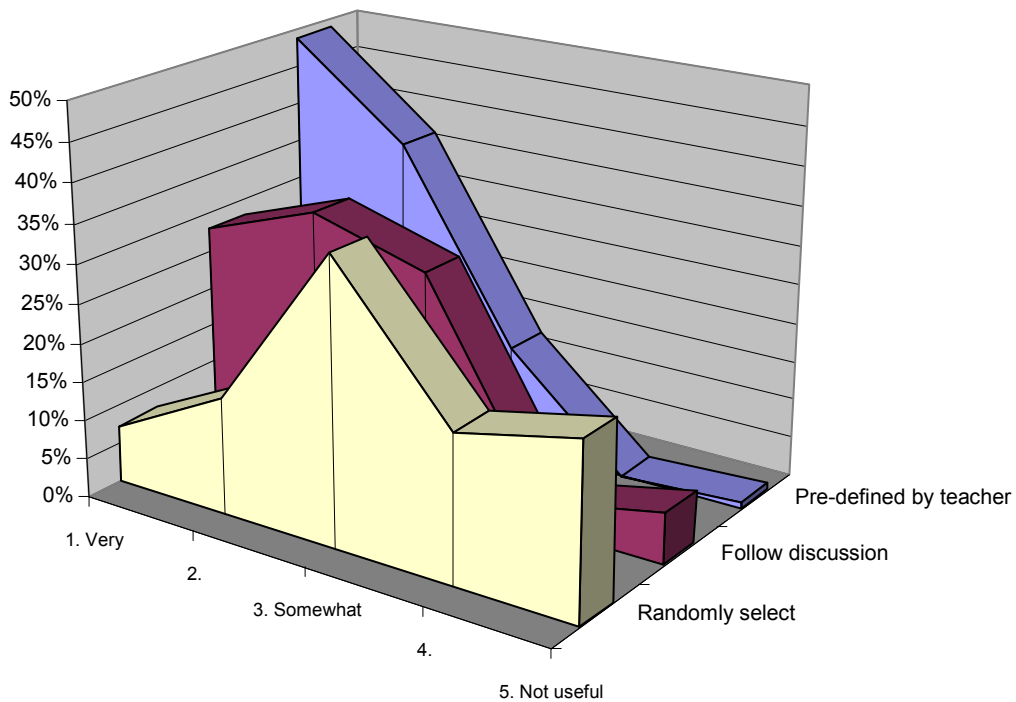


Information Selection

Note: results for this question are given relative to the number of people who responded to it.

Question: “The system could use several methods to select which information it will display. Please indicate how useful you think each of the following selection methods would be.”

<i>[Scale: 1 = Very Useful, 5 = Not useful at all]</i>	1.	2.	3.	4.	5.
Selections pre-defined by teacher.	48.76%	37.19%	13.22%	0.00%	0.83%
Randomly select from available sources.	7.44%	14.88%	36.36%	19.01%	22.31%
Automatically follow the students' discussion.	27.97%	33.05%	28.81%	3.39%	6.78%



Future Work

Further publications will contain analyses of the data presented here, and will incorporate the data which have been omitted. The next stage of research is to identify the most important (and useful) tools for the integration, and begin developing interface prototypes. These will be evaluated and refined iteratively, keeping users involved throughout.