

Virtual Learning Spaces: Getting them right for students

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Purpose

- To investigate first year nursing students' experiences with navigating the human-computer interaction (HCI) of the Virtual Learning Spaces (VLS's) in order to reach the learning.
- To understand the links between HCI, Cognitive Load (CL) and Digital Pedagogy in the VLS design to decrease the students mental effort in reaching the learning, optimising their time and effort on the learning.

Methodology & Methods

- Mixed methods using action research design process incorporating 3 surveys.
- Survey One: 1st year, 1st Semester Bachelor of Nursing Program, Semester One, 4 courses VLS experiences (2 nursing; 2 non-nursing).
- Survey Two: 1st year, 2nd Semester BNUR, NUR1099 VLS design only.
- Survey Three: 1ST year, 2nd Semester BNUR NUR1099 VLS design adjusted according to Survey Two feedback.

Participants

- Bachelor of Nursing Program
- 1st year nursing students in their 2ND Semester
- P = 290
 - 275 blended mode
 - 15 on-line
- Selection based on:
 - Convenience
 - To provide valuable student feedback on the VLS's designs.



Response Rates & Demographics

- Response rates:
 - Survey One:11%
 - Survey Two:10%
 - Survey Three 4%

- Survey One Demographics revealed:
 - Spend 10+ hours in the VLS/week: 87%
 - Work 10+ hours/week: 81%
 - Devote 10+ hours family; caring/week:67%

Survey One & Two Results

Survey One

Specific questions related to:
BNUR 1st Semester VLS Courses
(4 courses)

Significant results

Likes: thinly spread across 4 areas:
weekly layout(2); discussion forums
(1), online lectures(1), navigation
buttons(1)

Dislikes

Lack of consistency with appearance
& navigation(12)

Suggested Improvements

A standard format for all study
desks(11)

Survey Two

Specific questions related to:
BNUR 2nd Semester VLS Course:
NUR1099

Significant results

Likes: layout & navigation(9);
weekly layout(1)

Dislikes

Layout & navigation(9)

Suggested Improvements

No changes needed(4)
Buttons or icons for navigation(3)
A standard format for VLS Study
Desks

7. What did you like or dislike about this Study Desk (NUR1099)?

 [Download](#)

Response

Count

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25

Responses (25)

Text Analysis

My Categories (0)

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Showing 25 text responses

No responses selected

I like that is set out week by week

31/8/2012 7:33 PM [View Responses](#)

Having things set out week by week is good. Its simple and clear.

31/8/2012 2:42 PM [View Responses](#)

Sometimes the links are not easily accessible. Some downloads take a long time and it's inconvenient for students with limited study time. eg. mums and workers

29/8/2012 9:54 PM [View Responses](#)

The 1099 study desk was set out really well compated some other subjects, boxes were a good idea.

29/8/2012 2:22 PM [View Responses](#)

I like the overall layout of the study desk - particularly the obvious placement of the assessment details. I like the idea of ticking the boxes once I have completed a learning task.

28/8/2012 9:45 AM [View Responses](#)

I like the way it's set out - very neat and ordered and easy to navigate.


answered question

25

skipped question

3

8. What, if anything, would you like to see changed ?

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Response
Count

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23

[Responses \(23\)](#)

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Showing 23 text responses

No responses selected

Having external forums separate to on campus, to avoid confusion.

31/8/2012 2:42 PM [View Responses](#)

Perhaps some of the materials can be pre-printed and bought from the bookstore? Instead of lining up to use printers and computers?

29/8/2012 9:54 PM [View Responses](#)

The assessment 2 is too large, I would like to see assessment 1 larger so assessment 2 could be smaller

29/8/2012 3:26 PM [View Responses](#)

Some of the links to the readings could have been better.

29/8/2012 2:22 PM [View Responses](#)

Perhaps have each new weekly learning tasks automatically placed at the top on the Sunday of that week (under the assessment details) for that week and have the remaining weeks' learning tasks bumped down (still accessible but not causing a lot of scrolling to get to the week's materials).

28/8/2012 9:45 AM [View Responses](#)

answered question

23

skipped question

5

Survey Three Results

- Response Rate Low = 4%

Response Summary

Total Started Survey: 12
Total Finished Survey: 12 (100%)


PAGE: NUR1099 STUDY DESK SURVEY STAGE 3

1. Ease of Navigation – logging in, finding your way around, locating things (for example weekly study guides, course content, assessments).

 Create Chart  Download

| | Difficult | Many problems | Some problems | A few minor problems | Easy | Rating Average | Rating Count |
|--|--------------------------|---------------|---------------|----------------------|-----------|----------------|--------------|
| | 0.0% (0) | 0.0% (0) | 8.3% (1) | 25.0% (3) | 66.7% (8) | 4.58 | 12 |
| | answered question | | | | | | 12 |
| | skipped question | | | | | | 0 |

2. Ease of reading content – eg clarity, font size of text, diagrams & pictures documents.

 Create Chart  Download

| | Difficult | Many problems | Some problems | A few minor problems | Easy | Rating Average | Rating Count |
|--|--------------------------|---------------|---------------|----------------------|-----------|----------------|--------------|
| | 0.0% (0) | 8.3% (1) | 0.0% (0) | 41.7% (5) | 50.0% (6) | 4.33 | 12 |
| | answered question | | | | | | 12 |

3. Ease of communication – with your lecturers and other students:

[Create Chart](#) [Download](#)

| Difficult | Many problems | Some problems | A few minor problems | Easy | Rating Average | Rating Count |
|-----------|---------------|---------------|----------------------|------|----------------|--------------|
|-----------|---------------|---------------|----------------------|------|----------------|--------------|

| | | | | | | |
|----------|----------|----------|------------------|-----------|------|----|
| 0.0% (0) | 0.0% (0) | 0.0% (0) | 58.3% (7) | 41.7% (5) | 4.42 | 12 |
|----------|----------|----------|------------------|-----------|------|----|

answered question 12

skipped question 0

4. Ease of interacting with the content (eg clarity of instructions, wiki's, discussion forums, on-line quizzes).

[Create Chart](#) [Download](#)


| Difficult | Many problems | Some problems | A few minor problems | Easy | Rating Average | Rating Count |
|-----------|---------------|---------------|----------------------|------|----------------|--------------|
|-----------|---------------|---------------|----------------------|------|----------------|--------------|

| | | | | | | |
|----------|-----------|----------|-----------|------------------|------|----|
| 0.0% (0) | 16.7% (2) | 8.3% (1) | 33.3% (4) | 41.7% (5) | 4.00 | 12 |
|----------|-----------|----------|-----------|------------------|------|----|

answered question 12

skipped question 0

5. Changes have been made from suggestions made from the Stage 2 (week 4 survey). Can you please comment on whether these changes have improved your Study Desk experience or not.

 [Download](#)

Response
Count

[Hide Responses](#)

7

Responses (7)

Text Analysis

My Categories (0)

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✕

Showing 7 text responses

No responses selected

yes changes have been useful, helped to speed things up.

19/9/2012 7:54 PM [View Responses](#)

changes made have improved visual appeal as well as ease of navigation

16/9/2012 7:30 PM [View Responses](#)

yes helpful

14/9/2012 8:22 PM [View Responses](#)

Pretty good

14/9/2012 1:22 PM [View Responses](#)

The new buttons for navigating to each week's materials has helped a lot.

12/9/2012 4:10 PM [View Responses](#)

They've improved my experience, definitely. I'm very happy with them.

11/9/2012 5:04 PM [View Responses](#)

answered question

7

skipped question

5

6. What further changes, if any, would you like to see?

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Responses (7)

Text Analysis

My Categories (0)

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Showing 7 text responses

No responses selected

would be nice to have answers to online quizzes after marks released to assess where we have gone wrong and as arevision aid.

19/9/2012 7:54 PM [View Responses](#)

It would be a positive change if directions for activities and communication of expectations were more clarified. This is not so much a layout factor. all in all I'm happy with the new page look. I'm not sure however where all the course readings went. As of a few days ago, they were not found in the course reading (direct) link to the left of the course page.

16/9/2012 7:30 PM [View Responses](#)

changes implemented for other subjects

14/9/2012 8:22 PM [View Responses](#)

Greater clarity on what is expected for the assignment.

12/9/2012 4:10 PM [View Responses](#)

I can't think of any.

11/9/2012 5:04 PM [View Responses](#)

answered question

7

skipped question

5

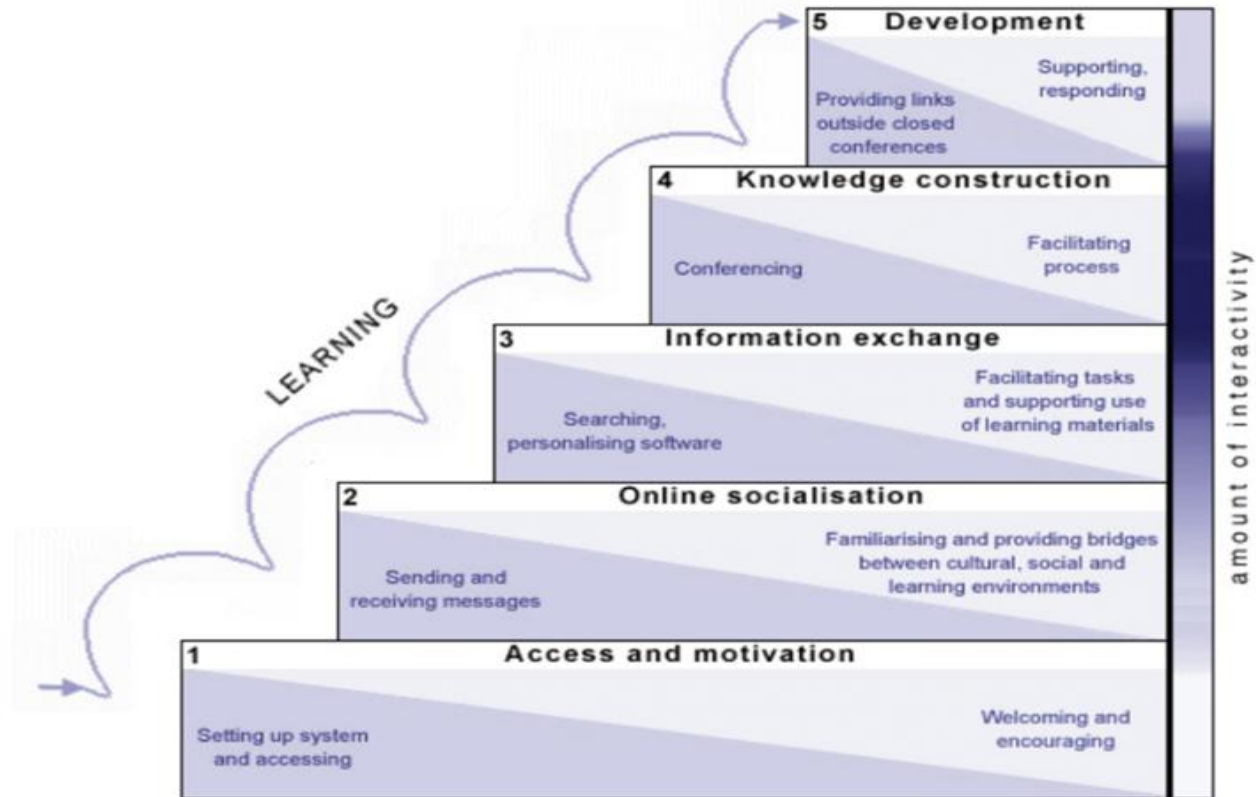
Study Conclusions

- Respondents preferred consistent VLS screen design and structured navigation schema for the explicit and considered placement of course learning material, social learning tools and associated activities to support ease of navigation.
- Revealed a need for further investigation and validation in relation to effective HCI, CL & DP for the VLS design.
- The need for a method/tool to reliably assess VLS's.

Discussion – Design principles

- VLS design based on pedagogical best practice principles. For eg:
 - Backward design
 - Bloom's taxonomy
 - Gardner's multiple intelligences
 - Social constructivism
 - Situated learning
 - Laurillard's theory of conversations
 - Salmon's 5 stage model
 - TPCK Framework and context

5 stage model (Salmon 2011)



- E-Moderating
- Technical support



Discussion – Cognitive Load & HCI

- Cognitive Load
 - Reaching the learning = extraneous cognitive load
 - Actual learning = germane cognitive load
 - Ways of working = intrinsic cognitive load

HCI

- Usability: Reflection on screen artefact
- Utility: Reflection on efficiency of interaction
- Functionality: Reflection on outcome v's motive
- Usefulness: value



Discussion

Reducing extraneous cognitive load

- Human Computer Interaction (HCI) and Digital Pedagogy are equally important parts of VLS design.
- Cognitive Load (CL) also needs to be considered as user fatigue can set in before the learning is reached.
- Focus in this study was on the extraneous CL and its relationship to HCI and Digital Pedagogy.
- To reduce extraneous CL (mental effort to reach the learning), thereby **optimising student effort on learning** (Germane CL).

Conclusions

- Respondents are busy people who want:
 - Clear & consistent VLS design
 - Uniform icons, buttons & terminology
 - Minimised navigation within VLS

- Students are busy juggling:
 - Study
 - Work
 - Personal Life

Therefore **'Getting the VLS Just Right'** is paramount **to support their effort on the actual learning.**

Future Research



- Focusing on thoughtful HCI, Digital Pedagogy considerations to reduce Extraneous and Intrinsic cognitive load in order to optimise the learning (Germane cognitive load).
- To validate a tool that optimises student learning in the VLS called **Reedy's Virtual Learning Optimiser**



Alice: "Would you tell me, please, which way I ought to go from here?"

The Cheshire Cat: "That depends a good deal on where you want to get to."

Alice: "I don't much care where."

The Cheshire Cat: "Then it doesn't much matter which way you go."

Alice: "...So long as I get somewhere."

The Cheshire Cat: "Oh, you're sure to do that, if only you walk long enough."