

Designing Shape-shifting Collaborative Laboratory Spaces to Facilitate Game-Design Education

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Microsoft Academic Days On Game Development
in Computer Science Education
February 25, 2007

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Overview

- Background
- Design and Development Process
- Results
- Recommendations
- Q/A

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The Grand Idea

- **Our axioms:**
 - Student Teams
 - Faculty and Peer Facilitation
 - Games and Computers
 - Flexibility
- **How to merge all of these?**

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CL3 Preview



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Team-Based Learning

- **Learning models:**
 - Collaborative Learning
 - Cooperative Learning
- **Original inspiration:**
 - Academic Excellence Workshops
 - Pairs collaborating
 - Pilot, Co-pilot
 - Idea: pair-programming tables

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Another Preview (Pairs)



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Game Design and Development

- **Common features:**
 - Interdisciplinary, Multidisciplinary
 - Student Teams
- **GDIAC (gdiac.cis.cornell.edu):**
 - Fall 2001 → Minor in Game Design (Fall 2006)
 - Art, music, writing, programming
 - All do design
 - Where to house?

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Library As Space

- **Neutral**
- **Familiar**
- **Non-threatening**
- **Cultural expectations**
- **Other shape-shifting spaces**
- **Centrally located**

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Cornell Campus



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Design Process

- **Collaboration for collaboration:**
 - Computer technology people
 - Computer science people
 - Library people
 - Construction people
 - Many other people

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Prototyping

- **Fall 2002**
- **Full-scale mockup**
- **Testing by using**
- **Construction process helped!**



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More Pink Foam



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Implementation

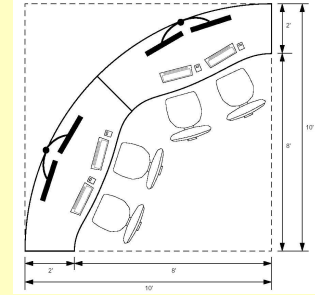
- **Collaborative team:**
 - CUL, CS, CIT
- **Weekly meetings**
- **Design and Build**
Fall 2003–Spring 2004

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Final Table Concept

- **Curved 1/8 circles**
- **Inside curve**
- **Dual monitor**
- **Single CPU**
- **Wheels**
- **UPS**

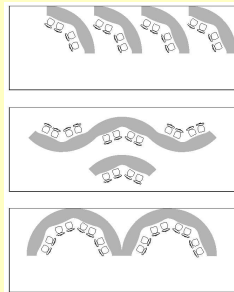


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Configurations

- **Shape-shifting lab**
- **Plug-n-play tables**
- **Student/teacher driven**



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Operation

- **Lab Manager**
- **Student Lab Operators:**
 - Training by librarians and support staff
 - Security
- **Circulation staff assist with checking out equipment**
- **Librarians are responsible for special services and faculty contact**

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Evaluation

- **Two course studies:**
 - Human-Computer Interfaces
 - Ergonomics
- **Collaborations with faculty**
- **Full reports on CL3 website**

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HCI

- **38 responses**
- **55% game students**
- **Some data:**
 - 30% moved tables
 - 46% struggled over the mouse
 - 39% struggled over the keyboard

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Ergonomics Study

- 55 users
- 43% move tables
- 37% non-movers unaware of mobility

How Important Are the Following Items for Collaborative Work?

	Not important	Somewhat important	Important	Very important
Ability to customize work area by moving chairs, tables, and computers	7	16	12	10
Ability to work with others on the same computer	3	11	19	12
Ability to work with others on multiple computers	2	13	20	10
Quiet conditions to help with concentration and conversation	5	18	14	8
Ability to discuss projects freely without fear of disrupting others	2	6	21	17
Having partitions (such as screens or movable walls)	18	14	7	5
Having open space	2	14	19	9
Having dry erase boards	6	12	19	6
Having 2 screens	6	16	16	7
Having 2 keyboards	6	28	8	3
Having 2 mice	6	22	12	4
Being able to overhear other groups	24	16	2	3
Being able to see other groups	24	15	3	3
Being visually removed from other groups	28	12	5	2

Key Comments

- **HCI:**
 - No need to move (found suitable arrangements)
 - Unaware of mobility
 - Fear of breaking something
- **Ergonomic:**
 - Confused about public hours
 - Noise level (not quiet!)

Recommendations

- Advertising
- Training
- Occasionally shift/reset configurations
- More surveys

Future Work

- **What's next?**
 - More extensive evaluation
 - Adaptation in other units and schools
 - Other kinds of courses
 - Shape-shifting use and technology
- **Next version...?**

Acknowledgements

- (CL)³ development team
- FABIT
- Electronic Arts
- Intelligent Information Systems Institute

Questions?

<http://www.cs.cornell.edu/dis/CL3>

<http://CL3.library.cornell.edu>

<http://gdiac.cis.cornell.edu>

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