INTRODUCTION

Students can use technology to profit from working together, particularly using peer interactions via online environments. Therefore, educators need to explicitly provide the opportunities and tools that have the potential to lead to collaborative and constructive learning outcomes.

Web-based Learning Management Systems (LMS) are nearly ubiquitous in higher education today. There has been little research on how students use LMS tools to socially interact with each other and arrive at common goals, particularly when the students control the LMS site.

This research study was primarily focused on how LMS supported peer learning. The context was undergraduate biology course that had a required group project.

RESEARCH QUESTIONS

1) What types of online social processes between students take place within the LMS?
2) What factors influence the types of peer interactions between students within the LMS?
3) How can LMS be improved in order to better support student learning?

CONTEXT

Setting:
An upper-division course in Molecular, Cellular, Developmental Biology (MCDB). This was an intense, laboratory experience that the instructor had taught for 8 years.

Participants:
Students formed into self-selected groups of 2-6 students. There were 32 groups formed within the course. Of those, twenty-one groups voluntarily decided to create LMS sites (82 students, mean group size: four students).

ONLINE SOCIAL PROCESSES

BASIC INTERACTION
Any kind of communication that took place within LMS tools.

COLLABORATION
When students used LMS tools to engage in interaction that served to develop and/or sustain shared ideas about a collective problem.

KNOWLEDGE CO-CONSTRUCTION
When either new information was conveyed from one student to another and retained or a new understanding elicited through collaborative interactions.

FACTORS INFLUENCING INTERACTION

LMS Tool Limitations:
Not rich enough for students’ needs
Lack customizability
Lack scaffolds to support collaboration and knowledge co-construction

LMS Problems:
Overwriting of files
Chat delays
Garbled notifications
Software bug

How often did your group meet face-to-face?
- Few Times a Month: 16%
- Once a Week: 14%
- Few Times a Week: 30%
- Never: 3%

Where did you live in relation to campus?
- On Campus: 22%
- 1-10 Miles Away: 12%
- 10-25 Miles Away: 8%
- 25 Miles or More Away: 2%

IMPROVEMENTS TO LMS

Current tools need scaffolding to reduce cognitive load
Question prompts, pop-up examples could help - instructor input?
Allow for greater customizability: On-demand “mashups”
Templates / Examples of prior organization strategies

FUTURE WORK

LMS need continued design improvements AND attention from instructors, instructional designers, and researchers (and collaboration between these groups) in order to reach their potential as a technological facilitator of students’ learning.

Similar findings in different context? (course, discipline, university, etc.)
Identify & test scaffolds for direct impact on collaboration and knowledge construction - Rapid innovation possible in open source LMS (e.g., Moodle, Sakai)

Continue to apply learning technology research to LMS to drive design & innovation