Designing for Participation in Hybrid Delivery of a Large Media Production Course
Phase II Funding
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Purpose and Research Objectives
The proposed study is part of a broader pursuit of diverse learning outcomes in a large undergraduate course using a hybrid lecture, online discussion section format. This pursuit consists of ongoing refinements in IU’s Telecommunications 206, Introduction to Design and Production. T206 is a popular 125-student survey course. It is scheduled every semester and includes six discussion sections, making it ideal for continuing long-term research. The general research question for this larger pursuit is: how can instructors increase learning using hybrid course design features drawn from current theories of the Learning Sciences?

The proposed study will deliver convincing evidence of the diverse learning outcomes this approach can deliver, and compare the impact of different configurations of course design features that foster engaged participation and enduring understanding of targeted concepts. In the process, the proposed study will deliver general and specific course design principles that guide other instructors toward similar outcomes using these methods.

Research Context
This research is currently developing and testing features for online course delivery using Indiana University’s Oncourse framework, an interactive course management software application built on the Sakai open source framework. The research relies on hybrid course delivery, which augments traditional classroom instruction with simultaneous online course delivery, enabling direct comparison of conventional in-person instruction and new online instructional strategies. Specific course features under examination involve only wikis and commenting, which means this feature can be implemented with all major course management systems (e.g., Blackboard, and Moodle), and added to virtually any class with web access via PBWiki.com or other stand-alone wiki tools.

Prior Research
Features studied in this proposal were developed in courses taught in the Learning Sciences program by Associate Professor Daniel Hickey. Mr. Walsh completed these and other courses as part of doctoral coursework in the Learning Sciences program, where he worked closely with Dr. Hickey and other Learning Sciences graduate students refining these features in a variety of course contexts. In fall 2011 Mr. Walsh implemented the features in a novel design for hybrid delivery of T206. The successful candidate of a competitive faculty search, Mr. Walsh accepted a long-term contract as a Senior Lecturer in Telecommunications where he continues his design-based research involving these features. Together the co-investigators draw upon current learning sciences theory to inform course design that improves teaching and learning at Indiana University, which will result in research publication.
Learning Sciences Background
Associated design features emerged in Dr. Hickey’s online graduate course in the School of Education. Most of the students in Cognition & Learning (P540) and Assessment in Schools (P507) are busy practicing teachers. Many are taking two courses and many have families; many find the core course ideas like memory & retrieval and reliability & validity impossibly abstract.

This challenge is addressed with current situative theories of learning that emphasize the importance of context and identity (e.g., Greeno & Gresalfi, 2008) and participatory approaches to education that emphasize the value of shared networked interaction (e.g., Jenkins, 2009). Each student is assigned to one of five primary groups representing the major academic domains (literacy, comprehension, writing, math, or science). Every student is also assigned to one of three cross-cutting secondary groups representing their current or intended role (leader, administrator, or researcher). Students define a personally relevant learning goal and post a weekly wikifolio where they rank the relevance of main ideas in chapter from a challenging textbook for their instructional goal, their domain, and their role. Students review posts within and across groups, posting questions and comments directly on each other’s wikis.

Across five semesters of 540 and three semesters of 507, analysis of the comments and discussion threads reveals engaged participation in discourse around even the most challenging concepts. Time-limited exams with essay and multiple choice items reveal enduring understanding of those concepts and dramatic gains in achievement (Hickey & Soylu, in press; Hickey, Strackljahn, & Barrett, in preparation)

T206 Research Proposal
T206 is a theoretic course with no hands-on production. With little prior experience to draw on undergraduates often find the concepts of cinematic theory impossibly abstract. To situate those concepts in a practical and meaningful context, students assume one of five craft role specializations for reading and synthesizing the course material. These roles are camera operator, lighting designer, art director, audio mixer and picture editor. While students don’t have actual experience in these roles, they are able to identify with the roles from the outset, leveraging contextual clues to situate their understanding of cinematic theory.

Organized into craft specialization groups for the semester, students post weekly wikifolios on weekly readings and comment on peer wikifolios from the contextual perspective of their individual specialization. A feature for which significant data was collected in fall 2011 involves the analytic nature of the digital writing assignment. In these assignments students rank the big ideas for each particular chapter in order of relevance to their craft role specialization, while generating arguments to support those rankings. Student discourse occurs in the online component of hybrid delivery, providing an available record for discourse analysis and close examination of the effect of craft role specializations on learning. Initial review of exchanges shows elements of productive disciplinary engagement (Engle & Conant, 2003). This engagement is crucial because it simultaneously fosters professional interests and identities, while leaving behind enduring understanding of targeted concepts.
From the open and conversational nature of the wiki assignments, an exciting new course feature spontaneously emerged and spread among across the class. Students began embedding hyperlinks to YouTube videos to help illustrate their points and warrant their arguments. We suggest student use of external references and hypertext is the epitome of productive disciplinary engagement. This practice was encouraged via instructor modeling during lecture. When students viewed examples of their own wikifolio writing projected on the large screen in front of the lecture auditorium, they became actively engaged. Bringing students’ online comments into the classroom fused their online experience with the traditional classroom experience, which increased student participation in subsequent wikifolio writing.

These developments were exciting because they emerged naturally while addressing an underlying challenge of effective hybrid delivery: how can instructors combine real-world classroom experience with virtual online experience? Another noteworthy finding concerns what happens when students are required to explain why certain big ideas were not relevant to their craft role. This course feature is accessible by most undergraduates in large 100-200 level courses, while promoting intense engagement and professional identity associated with upper-level courses. These and other insights were presented at the Spotlight on Innovation Poster Session organized by IU CITL in October 2011 -- CITL Press Release
Methodology and Measurement for Success

The proposed study request resources needed to allow us to more systematically investigate some of the initial findings introduced above, and to empirically examine a quasi-experimental manipulation included in T206 in Spring 2012. In order to identify the impact of commenting patterns on disciplinary engagement, emerging identities, and enduring understanding, the six discussion groups were assigned to one of three conditions for commenting on classmate’s wikis.

**Homogeneous** commenting requires students to post at least three comments within their craft roles. This is expected to build stronger identities, with unknown consequences for engagement and understanding.

**Heterogeneous** commenting requires students to post at least three comments to *other* craft roles. This is expected to support more enduring understanding (from seeing the relevance of concepts in multiple contexts), but might result in less engagement and identity construction.

**Mixed** commenting requires students to post at least three comments, but do so both in one’s own group and in at least one other group. This condition is hypothesized to lead to the strongest identities, most engagement, and most enduring understanding.

These expectations will be explored using a range of analyses, mostly carried out during Summer, 2012:

**Counts** of the number and length of both the comments and the threaded discussions that emerge. Student can and do make more than the required number of comments, particularly when engaging threads emerge. The length of all posts and the number of posts beyond the three required offers and objective indicator of student engagement. This is a straightforward analysis and can be carried out by an hourly assistant with relatively little supervision.

**Contents** of the comments and threads will be analyzed according to both a-priori and emergent codes. The a-priori codes will concern features associated with productive disciplinary engagement (e.g. external references, craft role adoption), while the emergent codes will presumably reference the projection of nascent professional identities. This analysis will be carried out by an hourly research assistant who is experienced with coding qualitative data; codes and inter-rater reliability will be established in collaboration with the investigators.

**Discourse** in all of the threaded discussions will be analyzed using grounded theory methods in order to understand how the three different contextual configurations shaped the discourse that emerged in this setting. This analyses will be carried out by a doctoral level hourly assistant with experience analyzing discourse using grounded theory methods.
**Conceptual understanding** will be analyzed using scores on the exams of the students who provide informed consent for using their results. Analysis of Variance (ANOVA) will be used, and self-reported GPA will be used a covariate to reduce the amount of unexplained variance. These analyses will be carried out by the investigators.

**Interest and Identity** will be analyzed using items added to the anonymous course evaluations. These will consist of Likert-scale (agree-disagree) items paired with open end questions that invite students to provide rationale for the things they agreed and disagreed with. The interest items will ask students about their interest in (a) their assigned craft role (b) cinematic theory, and (c) the telecommunications field. The identity items will ask students about how personally and professionally connected the student felt to their group members.

Confirmation of our expected outcomes will help bolster the emerging theory around our design principles for having students reflect on course concepts from different context. Regardless of the outcome, the experimental manipulation will give us access to empirically oriented journals for publishing our work.

As design-based research, our primary measures of success are the specific principles that emerge and the evidence that those principles resulted in substantial learning gains. Because the mid-term exam, final exam, and core questions on the course evaluation will be constant from the previous semester, the project will be provided with one very salient measure of success. For example, evaluation of the qualitative and quantitative data for each particular design cycle will provide specific results associated with particular design features under examination for each cycle. For instance, the degree to which student commenting inside and outside craft role specializations correlates with increased performance on midterm and final exams compared to a control group which comments only inside their craft role group will provide evidence of success with that particular design feature.

**Significance and Impact**
This project expands a growing collaboration between Learning Sciences, Telecommunications, and CITL with the potential to improve teaching and learning at Indiana University. Discourse analysis of online writing in courses administered through Oncourse has generated increased interest. Advanced application of Oncourse in this project leverages information technology provided by UITS. Given the significant number of large undergraduate courses taught through Oncourse, improvements to hybrid course design stand to benefit many IU students and faculty. Significance within the university community is framed in global development of digital technologies and rapid uptake of social media and new media among youth, which highlights its potential in education.
Outcomes, Contribution, and Dissemination

A central outcome of this research involves improving student participation and increasing learning in large Telecommunications courses. Weekly wikifolio writing in the online portion of the course promotes critical thinking and media analysis through participatory frameworks. As Telecommunications curricula embrace new media technologies, it’s natural to increase student use of online technology as part of the learning experience. In addition, instructional features that engage students, promote collaborative learning and increase understanding can be transferred to other content areas.

A secondary outcome involves publishing research results in a peer-reviewed learning sciences journal. The specific research objectives outlined above promise further synergy between the SOTL and the Learning Sciences communities. By presenting and publishing the resulting paper in SOTL contexts, the SOTL community will be provided with a concrete example of the relevance of the theories and methods associated with the Learning Sciences. By presenting and publishing the results in the Learning Sciences context, the Learning Sciences community will better appreciate the value of SOTL contexts for advancing theory and methods in the Learning Sciences. Likewise, results will be submitted for presentation in various forms at relevant education, digital media, learning science conferences, and broadcast education conferences. Finally, results will be disseminated through the Scholarship of Teaching and Learning community. A definitive goal of this project is research publication.

Given sufficient resources beyond the $5,000 grant, we hope to engage a programmer with CITL to design research-specific metadata tool that supports discourse analysis in the Sakai framework. For instance, we could design a simple app that automatically monitors wiki and comment word count and the number of comments every student makes each week. In addition, the tool might detect questions in comments and/or quantify hypertext links to external sites. This basic tool would vastly increase the efficiency of research within Sakai and would be immediately useful by everyone conducting similar research at Indiana University. Indiana University could contribute such a tool to the larger Sakai open source community.

Reflective Teaching Practices

The design and implementation of this project brought several surprises. For instance, though students are familiar with the use of social media and collaborative networks, their overall understanding of associated computer technology is basic. For example, the majority of students are unfamiliar with simple scripting required in the wikifolio writing, experience significant difficulty submitting projects electronically and are mystified by the procedure required to nest hypertext in their online writing. On the other hand, motivated students learn these skills quickly.

Secondly, questions in the final evaluation of the first T206 iteration revealed students did not enjoy participating in the online portion of the course to the degree expected. If the response was valid, some students claim they prefer to sit in a traditional transmission style lecture than participate actively in online social collaboration for learning. Investigators suspect students have been conditioned to such a degree they are resistant to change, despite its appeal.
References


Budget Narrative
Over the past two semesters a large amount of data has been compiled. A modest $5,000 grant will allow co-investigators to hire associated graduate students over the summer months to code data for analysis. Because learning science graduate students are familiar with this project and methods for coding discourse, these resources will generate efficient results.

In addition the tiered structure of IU’s Scholarship of Teaching and Learning grants invites recurring application, well-suited to the progressive development of design-based research predicated on iterant design improvements over subsequent semesters.

Budget Outline

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Research Plan and Time Line
Usable data has been generated in fall 2011 and spring 2012. This data is ready for coding and analysis in summer 2012. Research results should be completed in the fall 2012. Research results will be submitted for publication 2012-2013.