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Project Title: Content Analysis of IUPUI Capstone Courses

Project Dates: Spring Semester, 2004 through Fall Semester, 2004

Project Checklist:

- ___ Statement of Support from the Chair, by email to esener@iupui.edu
(Letter of support from Capstone Learning Community Chair, Sharon J. Hamilton, is attached to the email submitting this proposal)
- ___ Simple budget
(see page 4)
- ___ IRB approval attachment
Based on the IUPUI/Clarian IRB Exempt Research Checklist, we believe that this project is exempt from IRB review: Does not involve human subjects; uses pre-existing, non-medical, data.

Analysis of IUPUI Capstone Courses

Abstract

The IUPUI Capstone Faculty Learning Community is in its second year of existence. During its first year, a general description of a Capstone course, three distinct categories of Capstones, and key guiding principles for student experiences in IUPUI Capstones, were defined.

The Capstone Community would now like to assess the status of current IUPUI Capstones. In this project, a thorough list of IUPUI Capstones will be compiled. Syllabi will be collected and analyzed to determine which of the key principles for student experiences in Capstones (and which of the PUL's) are readily apparent--providing baseline data for future IUPUI Capstone assessments.

Project Background

Faculty discussions about Capstone courses were first held in the early 1990s. The report generated at that time described a general definition of Capstone courses and how Capstone courses might be implemented at IUPUI. A model Capstone course was also described.

In 2002, renewed discussions about Capstone courses began with the creation of the Capstone Faculty Learning Community. The group was charged with the task of developing models of Capstone courses that captivated, encapsulated, synthesized and demonstrated learning at the Baccalaureate level. By the end of the first year of the Capstone Learning Community, faculty discussions had produced a description of Capstone courses and described three general categories of Capstone courses (Appendix

A). They also articulated the Keys to Student Experiences in Capstone Courses (Appendix B).

This second year, discussions in the Capstone Learning Community, have identified a lack of compiled information on current Capstone experiences at IUPUI. To address this, we have begun developing an informal inventory of IUPUI Capstone experiences offered by IUPUI departments and schools (Appendix C). The proposed project will assist the Learning Community in developing a comprehensive list of IUPUI Capstone courses, as of Spring 2004, and a more thorough understanding of these Capstone experiences through a basic analysis of the syllabi contents.

Purpose of Project

The purpose of this project is to assess the status of current Capstone courses on the IUPUI campus. Syllabi from current Capstone courses will be compared to the Keys to Student Experiences in Capstone Courses (Appendix B). The explicit mention IUPUI Principles of Undergraduate Learning (PUL's) will also be noted. Baseline data will be compiled that can be built upon in future studies.

Intended Outcomes of the Project

1. Develop a *thorough* list of Capstone courses currently offered at IUPUI.

A preliminary list has been compiled based on communications between members of the Faculty Learning Community and academic advisors from each school (see Appendix C). This list is tabulated in an Excel spreadsheet and will ultimately serve as a

web-based repository for information on Capstone syllabi and course instructors/coordinators.

2. Develop a repository of syllabi from Capstone courses at IUPUI.

Based on information obtained through Insite regarding 2003/2004 course coordinators/instructors, faculty will be contacted individually and asked to send recent electronic copies of their syllabi to a designated recipient from this group. Permission will be requested to make such syllabi available to other instructors electronically through the web-based Capstone Inventory.

3. Determine to what extent the Keys to Student Experiences in Capstone Courses are visible in the current IUPUI Capstone courses.

Complete a basic content analysis of all course syllabi to determine whether the Keys to Student Experiences in Capstone Courses are readily apparent in each course syllabus.

4. Determine which of the six IUPUI Principles of Undergraduate Learning are explicitly mentioned in Capstone syllabi.

Complete a basic content analysis of all course syllabi to determine which of the six PUL's are explicitly mentioned in each syllabus.

5. Publish an electronic version of the Capstone Inventory on the Capstone Faculty Learning Community website. Submit a report to PRAC based on results from the content analysis.

Assessment Methods Used in the Project

The basic content analysis of the results will be conducted by graduate student(s). A capstone syllabus content analysis rubric, listing the “9 Keys” and the “6 PULs”, will be developed by the faculty of the Capstone Learning Community. Evaluators will rate each syllabus in terms of the degree to which each of the items within the rubric is “strongly evident,” “moderately evident,” or “not at all evident” in the target syllabus. A 3-point scale will be used to simplify analyses and enhance reliability of ratings.

Data Analysis

Analysis of the results will be conducted by the Capstone Faculty Learning Community during Fall Semester, 2004. We are interested in determining to what extent Capstone courses, currently offered, are consistent with the Keys to Student Experiences in Capstone Courses. The results from this study will assist the Capstone Learning Community in developing future goals for the Learning Community.

Evaluation and Dissemination of the Project Results

Dissemination of the project results will be determined by the Capstone Learning Community during Fall Semester, 2004. One key goal will be to disseminate the results to the larger IUPUI community. Potentially, this could be accomplished through the Capstone Learning Community website, by a Moore Symposium presentation and/or through Town Hall meetings. Dissemination to the wider academic community could be accomplished through scholarly presentations or publications.

Intended Use of Findings for Program Improvement

The Capstone Learning Community believes this study will provide baseline data for the future work of the Learning Community. This data will also be made available to IUPUI departments and schools for their possible use in program improvement. Future goals of the Capstone Learning Community might include providing additional information and suggestions to departments and schools as they consider program improvement.

Budget

Graduate student support for the project (200 hours @ 12.50 / hour) Total: \$2,500

Under the supervision of the faculty of the Capstone Learning Community, graduate student assistance will be used to amass the inventory (identify faculty instructors through Insite, request and obtain copies of syllabi, and obtain written permission to include such syllabi in the electronic inventory of Capstone Courses at IUPUI).

Under the supervision of the faculty of the Capstone Learning Community, graduate student assistance will also be used to conduct a basic content analysis of the syllabi (apply the Capstone content analysis rubric to the syllabi and enter the results into the inventory).

Appendix A

Outcomes of the Capstone Learning Community from the 2002 – 2003 Academic Year

Description of Capstone courses

Capstone courses should be a culminating set of personal, academic and/or professional experiences. The capstone experience could be one single course or a combination of courses. Each discipline in the academic setting will have different programs of study and as such their capstone courses will be based on the specific needs of the discipline. Since the Capstone course is a culminating experience of the body of study of the discipline, the capstone course should be near or at the end of the program of study. Some disciplines will require successful completion of the Capstone course as a condition for graduation.

Guiding principles for student experiences in Capstone Courses

Student ownership, responsibility and engagement should be the key when developing capstone experiences. The primary focus of student learning should be synthesis, integration and/or application of previous knowledge that students have gained from a program of study. Acquisition of new knowledge would be discouraged in a Capstone experience.

Pedagogical methods for Capstone courses should emphasize collaborative learning. Strategies such as problem based learning or self-directed learning would be appropriate. The student learning outcomes of the capstone experience should utilize critical thinking at

the synthesis level. The learning environment would be learner centered versus teacher dominated.

Faculty members responsible for Capstone courses should be full time, experienced faculty members. This full time faculty member would have the experience, perspective and resource brokering necessary to be advocate for the student. The overall knowledge of the program of study is critical to the outcomes of the capstone experience.

Categories of Capstone experiences

The faculty group defined three major categories of Capstone courses. The categories are named Mountaintops, Magnets or Mandates. Selection of the category is dependent on the discipline and its program of study.

A Mountaintop is a capstone experience that is interdisciplinary in nature and has the main outcome of a synthesizing intellectual experience. Students from two distinctly different disciplines come together at the summit of their educational experience. Students bring their unique disciplinary perspectives to the course.

An example of the mountaintop category is shown in the capstone class for the Construction Technology Department (CNT) Bachelor of Science degree. The students in the course are from two different Associate degree tracts, Civil Engineering Technology (CET) and Architectural Technology (ART). During their capstone course, the students, in groups of three or four, initiate, organize and present the outcomes of developing a construction project utilizing the strengths of drawing from the ART students and the scientific analysis from the CET student.

The magnet category of a capstone experience describes a capstone course where the student's use prior knowledge from the program of study to bear on an in depth study of one unique topic. The capstone experience in Organizational Leadership and Supervision (OLS) is organized under this category. During this course, the OLS students must pull together what they have learned in all of their previous classes and use the integrating capstone experiences to demonstrate that they possess the knowledge, skills, and abilities required of a baccalaureate-level, college-educated student of leadership.

The last category of capstone experience is the mandate. In this instance, the Capstone experience meets the need of an external constituency. Particular performance outcomes need to be mastered and/or demonstrated in order to be eligible to take licensure or certification exams. The School of Nursing is a good example of this category of Capstone courses. School of Nursing students are expected to clinically demonstrate Baccalaureate Program Outcomes in a clinical setting during the last four weeks of the Baccalaureate Program. Students are matched one to one with a staff nurse in the clinical setting. The students' clinical hours are the staff nurse's regular work hours. The capstone experience lets the School of Nursing document effectiveness of the curriculum and at the same time gives the students a realistic job preview of the work setting.

Appendix B

Keys to Student Experiences in Capstone Courses

1. Discussion, reflection and/or demonstration of the IUPUI Principles of Undergraduate Learning (PUL's) should be evident in the capstone experience.
2. The primary focus of the capstone experience should be on synthesis, integration, and application of previous knowledge rather than on acquisition of new knowledge and skills.
3. Capstone experiences should be a culminating set of personal, academic, and professional experiences.
4. The rationale for the capstone experience should be based on the specific needs of the discipline.
5. Capstone experiences need not be thought of as a single course.
6. Capstone experiences should be structured near the end of the program of study.
7. Satisfactory completion of capstone experiences should be required for graduation.
8. Capstone experiences should be facilitated, mentored, and/or coordinated by full time, experienced faculty
9. Student ownership, responsibility, and engagement should be central to the capstone experience

Appendix C

Preliminary List of Capstones at IUPUI -- as of January 2004

School	Department	Degree	Course Number	Title
Education	(any)		M 470	Practicum
Education	Early Childhood		M 423	Student Teaching: Early Childhood
Education	Elementary Education		M 425	Student Teaching: Elementary
Education	Junior High/Middle School		M 451	Student Teaching: Junior High/Middle School
Education	Kindergarten-Primary		M 424	Student Teaching: Kindergarten-Primary
Education	Secondary School		M 480	Student Teaching in the Secondary School
Engineering & Technology	Computer & Information Technology		CIT 484	
Engineering & Technology	Computer & Information Technology		CIT 440	
Engineering & Technology	Computer & Information Technology		CIT 490	Senior Project
Engineering & Technology	Computer Graphics Technology		CGT 411	Group Senior Design Project
Engineering & Technology	Computer Graphics Technology		CGT 415	Individual Senior Design Project
Engineering & Technology	Computer Graphics Technology		CGT 416	Individual Senior Design Project
Engineering & Technology	Construction Technology	BS	CNT 447	Construction Project Management
Engineering & Technology	Electrical and Computer Engineering		ECE 492	Senior Design
Engineering & Technology	Electrical Engineering Technology	BS	ECET 490	Senior Design Project Phase 1

Engineering & Technology	Electrical Engineering Technology	BS	ECET 491	Senior Design Project Phase 2
Engineering & Technology	Interior Design	AS	INTR 298	Contemporary Issues for Interior Designers
Engineering & Technology	Mechanical Engineering Technology		MET 414	Design of Mechanical Projects
Engineering & Technology	Organizational Leadership and Supervision		OLS 410	Survival Skills in Organizational Careers
Engineering & Technology	Organizational Leadership and Supervision		OLS 490	Senior Research Project
Herron/Art	Art Education		(uncertain)	
Herron/Art	Art History		(under development)	
Herron/Art	Fine Arts		HERRON J400	Practical Concerns for Studio Artists
Herron/Art	Fine Arts		HERRON J410	A Critical Approach to Art: Seminar
Herron/Art	Visual Communication		HERRON A402	Visual Communication 6
Informatics	Informatics	BS	INFO I450/I451	Design and Development of an Information System
Informatics	Informatics	BS	INFO I420	Internship in Informatics Professional Practice
Informatics	Informatics	BS	INFO I460/I461	Senior Thesis
Informatics	Media Arts and Science	BS	NEWM N499	Capstone: Portfolio or Project
Journalism	Journalism		J410	Media as Social Institutions
Kelley School of Business	(all)		J 401	Administrative Policy
Kelley School of Business	(all)		J 402	Administrative Policy (Honors)
Kelley School of Business	(most)			

Kelley School of Business	Accounting		A 380	Professional Practice in Accounting
Kelley School of Business	Finance		F 480	Professional Practice in Finance
Kelley School of Business	Human Resource Management		Z 480	Professional Practice in Human Resource Management
Kelley School of Business	Management		W 480	Professional Practice in Management
Kelley School of Business	Marketing		M 480	Professional Practice in Marketing
Kelley School of Business	Operations Management			Professional Practice in Operations Management
Liberal Arts	Anthropology		A412	
Liberal Arts	Anthropology		A413	
Liberal Arts	Communications		many	variable (C322, C328, C392, C482, C499, R330, M462, G300, G391)
Liberal Arts	Economics		E406	
Liberal Arts	English		E450	
Liberal Arts	French		F497	
Liberal Arts	Geography		G491	Capstone Experience in Geography
Liberal Arts	Geography		G439	Seminar in Geographic Information Science
Liberal Arts	German		G498	
Liberal Arts	History		J495	
Liberal Arts	Museum Studies		MSTD A408	Museum Internship
Liberal Arts	Political Science		Y490	Senior Seminar
Liberal Arts	Religious Studies		R433	Senior Capstone Tutorial
Liberal Arts	Sociology		R481, R490, R493	
Liberal Arts	Sociology		R494	
Liberal Arts	Sociology		R497	
Liberal Arts	Sociology		R495	
Liberal Arts	Spanish		S498	
Physical Education / Tourism	Exercise Science, Pre-PT, Fitness Studies, Sports		HPER P393	

Mgmt	Management			
Physical Education / Tourism Mgmt	Teacher Education			
Science	Biology	BA	BIOL K490	Capstone in Biology
Science	Biology	BS	BIOL K893	Independent Research
Science	Chemistry		C495	Capstone in Chemistry
Science	Computer Science		CSCI 495	Explorations in Computing
Science	Geology		G420	Regional Geology Field Trip
Science	Geology		G460	Internship in Geology
Science	Geology		G495	Senior Thesis in Geology
Science	Mathematics		Math 492	Capstone Experience
Science	Physics		PHYS 490	Undergraduate Reading and Research
Science	Psychology	BA	B454	Capstone Seminar in Psychology
Science	Psychology	BA	B462	Capstone Practicum in Industrial/Organizational Psychology
Science	Psychology	BA	B482	Capstone Practicum in Clinical Rehabilitation Psychology
Science	Psychology	BA or BS	B471	Capstone Lab in Social Psychology
Science	Psychology	BA or BS	B425	Capstone Lab in Personality
Science	Psychology	BA or BS	B461	Capstone Lab in Developmental Psychology
Science	Psychology	BA or BS	B481	Capstone Lab in Clinical Rehabilitation Psychology
Science	Psychology	BA or BS	B497	Capstone Individual Research
Science	Psychology	BA or BS	B499	Capstone Honors Research
Social Work	(all)	BSW	S442	Practice-Policy Seminar in Fields of Practice