

## Application for Program Review and Assessment Committee (PRAC) Grants for IUPUI

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### Project Title

Assessment of Instructional Collaboration Using the Integrated Longitudinal Case-Based Learning Model to Enhance Teaching and Learning

### Project Dates

January 2012-January 2013

### Abstract

The Department of Physical Therapy investigated the effects of the Integrative Longitudinal Case-Based Learning Model on student learning outcomes associated with individual course objectives during phase 1 of its research supported by PRAC funding. Findings suggest the approach was effective in enhancing learning. This grant is intended to support phase 2 which will be used to enhance collaborative implementation of the model among faculty and courses and to determine its effectiveness in promoting retention of learned material across a progressive curriculum. Outcomes will be used to assess whether this model translates into better student preparedness for clinical practice (phase 3).

### Project Checklist

- Statement of support from department chair
- Simple budget
- IRB approval (submitted)

## Purpose

The overarching purpose of this ongoing research project is to assess teaching and learning outcomes derived from an innovative approach to case-based learning (CBL), the Integrative Longitudinal Case-Based Learning (ILCBL) model, developed by the IU Physical Therapy Department. The initial phase of this study (phase 1) was supported by PRAC funding and was completed over a one year time period (September 2010 – September 2011) with a final report to be submitted to the committee shortly. Preliminary findings reflect the effectiveness of the model in enhancing students' critical thinking and problem-solving within individual courses across a single semester. As a result of our initial investigation, a journal article, "An Integrative, Longitudinal Case-Based Learning Model as a Curriculum Strategy to Enhance Teaching and Learning", was co-authored by all project directors and published in the Journal of Physical Therapy Education, spring 2011 (see attached article).

Based on these initial findings, the case family research team has begun to implement phase 2 of investigation by designing and implementing a longitudinal integrative approach. The ILCBL model incorporates the benefits of progressive case study formats and integrative family dynamics through the use of a text, The IU Doctor of Physical Therapy (DPT) Family Tree: An Integrated Case Series (IU DPT Family Tree), which was co-created by IU DPT faculty and students. Now in its second edition, The IU DPT Family Tree has evolved from 37 to 44 inter-related cases which span 4 generations. The primary aim of the second phase (phase 2) of this project is to enhance implementation of case-based learning by developing structured case matrices that integrate longitudinally within the curriculum. The integrative, longitudinal approach is designed to create evolving case complexity that will challenge student critical thinking and problem solving. The effectiveness of this aim will be measured by studying the retention of course content integrated across the curriculum as well as the development of more complex critical thinking and clinical decision-making.

The Initial structure of this comprehensive paradigm is underway. Funding from this grant will be used to support the primary researchers in the development, analysis of teaching and learning outcomes, and dissemination of findings. Acquired funding will also be used to sustain a student worker to serve as a “case coordinator,” charged with keeping the matrices and case files up to date, as well as communicating with faculty about when targeted cases should be implemented.

### Intended Outcomes

The intent of this research project is to evaluate the impact of the ILCBL model on teaching and learning within a controlled classroom implementation and across a planned curriculum. Phase 1 of this study investigated the the effectiveness of the ILCBL model on enhancing critical thinking and problem-solving throughout a single semester. Phase 2 will focus on enhancing the effectiveness of collaborative implementation and providing a foundation for use of the model as a curricular strategy to enhance retention of learned material throughout the lock-step progressive curriculum. Since the ultimate outcome of our curriculum is to prepare students as health care professionals, the final phase (phase 3) will attempt to determine the effectiveness of this teaching and learning strategy in translating course content into clinical practice. Our group will continue to develop and assess this pedagogical strategy over the next three to four years. Our goal is to disseminate findings on the effectiveness of this model for other professionals to adopt and implement within their respective programs.

### Assessment Methods

Quantitative and qualitative methodology will be utilized in this research project. Quantitative data will be gathered by analyzing student documentation of specific clinical indicators relating to examination and intervention techniques as deemed relevant to a specific case chosen to be integrated across sequential courses within the curriculum. Qualitative data will be gathered from student focus

group discussions and video analysis of student discussion surrounding clinical decision making given a specified case. In addition, research data will be gathered by surveying faculty on the implementation and effectiveness of the model in supporting faculty collaboration and achieving program objectives.

### Data Analysis

Grading rubrics will be used to assess achievement of learning objectives through analysis of student documentation between courses. Group mean differences will be compared to determine if significant difference in critical thinking and problem solving are present during sequential presentation of cases as students progress through the curriculum. Qualitative assessment and video analysis of student focus groups discussions will be analyzed for themes. Likert scale data will be assessed for faculty and student surveys on the impact of this teaching and learning model.

### Evaluation and Dissemination

Preliminary findings have supported the continued use of the IU DPT Family Tree and ILCBL model. The family tree is intended to be published for use by other educational programs. The results of the research project will be disseminated in educational journal publications and conference presentations to impact educational practices in the use of CBL.

### Intended Use of Findings for Program Improvement

Outcomes from phase 2 of this research project will help to identify the potential benefits and limitations of the ILCBL model by comparing learning objectives as specified case matrices are developed, coordinated and progressed throughout courses in a spiraling curriculum. Findings will also determine the impact of the integrative, longitudinal approach on progressive and complex critical thinking and clinical decision-making. Furthermore, the successful implementation of this project

requires collaborative faculty integration; consequently, analysis of this process from a faculty perspective will be used to facilitate program and curricular development. In the future, ongoing refinement and assessment will focus on the impact of the model towards student clinical performance. Continuous development of the case family teaching tool and the ILCBL model and its effectiveness will be disseminated on a local and national level as a means to foster best practice in healthcare related education.

Proposed Budget

Qualitative and quantitative assessment of the effectiveness of ILCBL as a strategy in promoting retention and application of material learned across a progressive curriculum will be supported by this grant. Furthermore, sustained and collaborative implementation of the model and its dissemination will benefit from financial support.

Budget Item	Proposed Cost	Total (\$2500)	Rationale
Student worker	\$10/hr x 100 hrs (2hr/wk x 50 wks)	\$1000	Data entry, tracking case coordination between faculty, and file maintenance
Copies and Supplies	\$200	\$200	For distributing copies of text to students and faculty
Stipend	\$800	\$800	Support efforts in the summer of primary researchers to progress project and analyze outcomes
Dissemination of findings	\$500	\$500	Support for poster development, publications and presentations