TEACHING AS INQUIRY: Integration of Teaching & Scholarship

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Teacher’s Seminar
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OBJECTIVES

• Provide examples of SoTL work.

• Energize participants to pursue SoTL in their “real” or “virtual” classroom

“The pursuit of original discovery is not limited to our main expertise gained in graduate school or clinical residencies.”

MY BACKGROUND

• Basic Scientist (Toxicology)

• Attending American Association of Colleges of Pharmacy Annual Meetings (1995-present)
  – Teaching as scholarship

• Bench research vs. classroom research
  – Same rigor

• Basic/Clinical Science Research and SoTL: A winning combination
SCHOLARSHIP OF TEACHING & LEARNING (SoTL)

• DEFINITION
  – A perspective on teaching and learning in higher education: their relationship, how our understanding of them is deepened and shared
  – A range of practices, techniques, for inquiry into teaching and learning
  – Ongoing learning about teaching and the demonstration of such knowledge.
  – A body of work

ASSESSING SCHOLARSHIP OF TEACHING & LEARNING (SoTL)

• Boyer’s work
• Glassick Work
• Six standards for evaluating all scholarly work including SOTL

ASSESSING SOTL
• Clear goal
• Adequate Preparation
• Appropriate Methods
• Significant Results
• Effective Presentation
• Reflective Critique

TRADITIONAL RESEARCH
• Identifying a Research Problem
• Developing a hypothesis
• Formulating Specific Aims
• Methods and Techniques
• Handling Results
• Draw Conclusions
I. ASSESSMENT OF INSTRUCTIONAL METHODOLOGY

• Pedagogy: Methodology to provide relevance to teaching a basic science course
  – Structurally-Based Therapeutic Evaluation: A Therapeutic and Practical Approach to Teaching Medicinal Chemistry (AJPE)
  – Teaching Medicinal Chemistry to Meet Outcome Objectives for Pharmacy Students (AJPE)

I. ASSESSMENT OF INSTRUCTIONAL METHODOLOGY

• Content Sequencing: organize and design the content to transition the students to higher level of thinking and to appreciate the discipline
  – Bloom’s Taxonomy
  – Krathwohl’s Taxonomy
  – Evaluation of an Instructional Model to Teach Clinically Relevant Medicinal Chemistry in a Campus and a Distance Pathway (AJPE)
    • Innovation in Teaching Award Winner, AACP 2006.
  • A Standardized Patient-Oriented Approach to Teaching Clinical Toxicology (AJPE)
  • Medicinal Chemistry and Therapeutic Relevance of Angiotensin-Converting Enzyme Inhibitors (AJPE)

SoTL: I. INSTRUCTIONAL METHODOLOGY


Objectives: To describe and evaluate an instructional model to teach clinically relevant medicinal chemistry.

Methods: An instructional model that uses Bloom’s cognitive and Krathwohl’s affective taxonomy, published and tested concepts in teaching medicinal chemistry, and active learning strategies, were introduced in the medicinal chemistry course for second year professional doctor of pharmacy students (campus and distance) in the 2005-06 academic year. Evaluation tools were developed to assess student learning and overall effectiveness of the instructional model. A temporal comparison of the student performance after introducing the instructional model was compared to prior years. Both quantitative and qualitative analyses were combined using a quantitative, qualitative mixed methods triangulation design to evaluate the effectiveness of the instructional model.
SoTL: I. INSTRUCTIONAL METHODOLOGY

Results: Student performance improved compared to previous years. Students expressed overall enthusiasm about the course. The students’ perceived the value of medicinal chemistry to clinical practice, likely because of the students’ enhanced ability to envision how they will apply the science of medicinal chemistry in clinical practice.

Conclusion: The explicit integration of the cognitive and affective learning objectives improved student performance, student ability to apply medicinal chemistry to clinical practice and student attitude towards the discipline. Testing this instructional model provided validation to this theoretical framework. The model is effective for both our campus and distance-students. This instructional model may also have broad-based applications to other science courses.

I. ASSESSMENT OF INSTRUCTIONAL METHODOLOGY

• Content Integration and Use of Technology: Importance of prerequisite content, relate it to the current content, integrate to future content
  – See the big picture
  – Integrate basic and clinical sciences
  – Overall curriculum and discipline integration
  • Electronic Integration of Prerequisite Course Content (AJPE)
  • Personal Response System and Student Learning: A two year study!

INSTRUCTIONAL MODEL

True integration is done purposefully by drawing on content from several subjects to focus on a particular concept or topic.
SoTL: TECHNOLOGY AND STUDENT LEARNING
Evaluation of Electronic Integration of Prerequisite Information on Second Year Doctor of Pharmacy Student Learning. Naser Z. Alsharif, Brian Henriksen.

Objectives. Evaluate the effect of electronic integration of embedded prerequisite information (EPI) into the online content of a second year required course on campus- and distance- pharmacy students learning.

Design. A select number of students who have successfully completed the Chemical Basis of Drug Action (PHA447) course collaborated with the instructors to identify specific prerequisite information deemed important for understanding new topics presented in 11 sessions in April of the spring semester of the academic year 2007-08. The prerequisite information was embedded within the course’s online content via hyperlinks and pop-up information in the lesson handout. Topics covered earlier in the semester in 11 sessions were presented as in prior years without hyperlinks and pop-up information.

Results. Employing the Lickert scale, 75% and 87% of the campus (n=102) and distance (n=53), students rated the impact of the EPI on their learning slightly positive-positive, respectively. Approximately 50% of both student cohorts answered that the EPI should be in every course in the curriculum. In addition, 53% and 73% of the campus and distance students respectively indicated that the EPI sessions are more helpful. The majority of the campus and distance students rated the EPI sessions more helpful than the sessions without EPI.

Conclusions. This project can potentially serve as a model in conjunction with mapping a curriculum vertically and horizontally, to optimize the sequencing of the content, and to reiterate and integrate critical knowledge and educational outcomes.

SoTL: TECHNOLOGY AND STUDENT LEARNING

Objective: To document lessons learned during two academic years from utilizing different strategies in incorporating the Personal Response System (PRS) in teaching a medicinal chemistry course.

Design: The PRS was incorporated over several sessions of a medicinal chemistry course in the spring semester of two consecutive years (2006-07 and 2007-08). Sessions were taught by the same instructor utilizing the same set of activities in a standardized approach over the same topics with the exception of not utilizing the PRS in one of the sections in the first year. As part of in-class PowerPoint presentations, five-PRS multiple choice questions were carefully authored and delivered in a variety of ways to assess student understanding of current and prior content and to engage the students. Students were trained in using their PRS in a demonstration which mirrored a classroom session.
SoTL: TECHNOLOGY & STUDENT LEARNING

**Results:** Class-cumulative performance on PRS questions, performance on course examinations and correlations between PRS performance and examination performance will be analyzed over the two years. Campus and distance student perception from an evaluation tool developed to evaluate how modifications to PRS sessions based on the experience of the first year will be analyzed. Lessons learned for best practices with using the PRS will be presented.

**Implications:** Established best practices in use of technology can be very valuable to enrich the learning environment and to enhance both campus and distance student learning and performance.

II. DISTANCE EDUCATION

- Evaluation of Performance and Learning Parity Between Campus-based and Web-based Medicinal Chemistry Courses (AJPE)

- Educational Mentor Program in a Web-based Doctor of Pharmacy Degree Pathway (AJPE)

- Promoting Interactions in campus and distance education (currents in pharmacy teaching and learning, 2010)
  - Program/Pathway Specific Strategies
  - Course Specific Strategies

III. REFLECTION ON TEACHING

- A Winning Combination: Basic/Clinical Science Research and the Scholarship of Teaching and Learning (AJPE, viewpoint)

- Faculty Members’ Enthusiasm: A Blessing or a Curse? (AJPE, viewpoint)

- Attending to Classroom Diversity (in preparation).
PRACTICAL TIPS ON IMPLEMENTING SoTL

• Clear goals
• Involve the students and share results
• Answer the question “what is going on here”?
• SOTL as a scholarly work
  – Read literature
  – Recognize that teaching is challenging, intellectual work
  – Teaching poses interesting and consequential questions
  – Teaching allows inquiry into what matters for student learning

EXERCISE

• Keeping the definition of SoTL in mind, please take time to format a question related to your course that you would like to answer
  – Identify key steps to help you fine tune formatting your question
  – Identify an assessment tool to answer your question
  – Identify any resources needed to analyze your data
  – Identify avenues to…………………………

POST COURSE OFFERING
ASSESS/CQI
- Evaluate need for any modifications of the course web site or the course in general
- List throughout the course all the identified logistical problematic issues and develop an action plan to address them for the next offering
- Look and address themes from student evaluations
- Establish trends over several offerings of the course
- Consider possible scholarly work

SoTL
- SoTL as a scholarly work
  - It is highly gratifying
  - Great personal satisfaction
  - You are in control
  - Highly vested in the process
  - Improve teaching
  - Increase student satisfaction and learning
  - Enhance student experience
  - Does count

OUTCOMES
- Enhanced campus and distance student satisfaction and learning experience
- Personal satisfaction
- Several posters and presentations at national meetings
- Several manuscripts published and in preparation
- National Innovation in Teachings Award, AACP
- Collaboration opportunities with faculty and staff
- New grant opportunities
- Does count in promotion (may vary from one institution to another)
SUMMARY

• Whatever your discipline,
  Consider Scholarship of teaching and learning (SoTL)
    – Design a study
    – Format a question
    – Test a hypothesis synthesized from the teaching model or components of it
    – Answer a key question based on the offering of your course or program

– Share your findings