

2022 Teaching Scholars

- **Loubna Bilali**, Modern & Classical Language Studies, Kent Campus
 - Incorporating Career Development into a Translation Technology Course
- **Daniel Dankovich**, Biology, East Liverpool Campus
 - Flipped Learning Classroom in Anatomy and Student Sense of Academic Belonging
- **Kurtis Eisermann**, Biological Sciences, Tuscarawas Campus
 - Understanding Motivation of Allied Health Students in a Hybrid Learning Environment
- **Marta Guivernau**, Foundations, Leadership & Administration, Kent Campus
 - Students and Teachers in the Classroom: A Motivational Exploration
- **Grace Keenan**, School of Theatre & Dance, Kent Campus
 - Flipped Learning & Its Effect on Student Stress
- **James Redfearn**, Biological Sciences, Salem Campus
 - Connecting Concept to Content in Anatomy and Physiology Courses
- **Joshua Stacher**, Multidisciplinary Social Science & Humanities, Kent Campus
 - Contemplative Practices and Student Sense of Belonging
- **Melanie Tabak**, Psychological Sciences, Trumbull/Stark Campus
 - Benefits and Costs of PowerPoint provision: A Pilot Study

2019-2021 Teaching Scholars

- **Younghun Chae**, Computer Science, Stark Campus
 - Developing effective online discussion environment using Virtual Reality
- **Debra Clark**, Foundations, Leadership & Administration, Kent Campus
 - Anonymous Tweeting for Inclusive, Open and Honest Exchange of Ideas
- **Amy Damrow**, Foundations, Leadership & Administration, Stark Campus
 - Using VALUE Rubrics to Invite Critical Thinking, Creative Thinking, & Support Effective Teamwork
- **Qunxing Ding**, Biology, Salem Campus
 - Promote active learning by retrieval practice retesting
- **Jean Engohang-Ndong**, Biological Sciences, Tuscarawas Campus
 - Effect of reading requirement on student participation in lower division biology classes
- **Jill Kawalec**, Podiatric Medicine, Kent Campus
 - Effectiveness and Student Perception of the Jigsaw Activity for Learning Biostatistics
- **Kiwon Lee**, Foundations, Leadership & Administration, Kent Campus
 - Strategies to reduce off-task tech activities in classrooms

- **Karen Mascolo**, Nursing, Kent Campus
 - Incivility & Bulling in Nursing
- **Thomas Sahajdack**, Economics, Kent Campus
 - Reliability and Validity of Peer Grading in a Large-format Introductory Economics Class
- **Rekha Sharma**, School of Communication Studies, Kent Campus
 - Student Engagement in Communications Grammar Review

2018-2019 Teaching Scholars

- **Joanne Caniglia**, School of Teaching, Leadership, and Curriculum Studies, Kent Campus
 - Effects of a Poverty Simulation on Preservice Teachers' Attributions and Beliefs
- **Valerie Cubon-Bell**, Chemistry, Trumbull Campus
 - I Flip, You Flip, We All Flip for Chemistry
- **Kristina Knight**, Social and Behavioral Science, Kent Campus
 - What's the Problem? Problem-Based Learning (PBL) in Public Health Education
- **Sara Koopman**, School of Peace and Conflict Studies, Kent Campus
 - Using Nonviolent communication to discuss nonviolent activism
- **Seonjeong Ally Lee**, College of Education, Health, and Human Services, Kent Campus
 - Jigsaw Learning Technique on Hospitality Management Students' Learning Experience
- **Bridget Mulvey**, School of Teaching, Learning, and Curriculum Studies
 - Changes Over Time in Teachers' Nature of Science Assessment Knowledge and Skill
- **Elena Novak**, Educational Technology, Kent Campus
 - Promoting Design Thinking and Creative Agency in Instructional Technology Majors
- **Brian Yim**, School of Foundations, Leadership and Administration, Kent Campus
 - Learning Portals: Identifying Threshold Concepts for Introduction to Sport Management
- **Chance York**, School of Journalism and Mass Communication, Kent Campus
 - Descriptive Evaluation of an Efficient Rubric for Minimal Assessment
- **Haithem Zourrig**, Department of Marketing and Entrepreneurship, Stark Campus
 - Effectiveness of Smartphone-Based Virtual Reality (VR) on Students' Learning Outcomes

2017-2018 Teaching Scholars

- **Yijing Chen**, Biological Sciences, Trumbull Campus
 - Cooperative Learning Activities to Improve Student Learning Experiences in an Introductory Biology Classroom
- **Rebecca Chism**, Modern and Classical Language Studies, Kent Campus
 - Helping Pre-Service teachers Understand Data Literacy
- **Dawn Ensminger-Stokes**, College of Nursing Technology, Twinsburg Campus
 - Evaluating Changes in Teaching Styles and in Exam Scores
- **Karen Lowry Gordon**, Nutrition, Kent Campus
 - Assessment of Experience Learning Coursework on Student's Perceptions of Service Learning & Meeting Accreditation Knowledge Requirements and Competencies
- **Pamela Takayoshi**, English, Kent Campus
 - Collaborative Qualitative Research: Lessons in Experiential Learning
- **Kimberly Talentino**, Modern and Classical Languages, Kent Campus
 - Integrated Form-Focused Instruction
- **Derek Van Ittersum**, English, Kent Campus
 - Collaborative Qualitative Research: Lessons in Experiential Learning
- **Cindy Widuck**, College of Public Health, Kent Campus
 - Implementing Service Learning Into the Online Classroom: Finding the Tools for Success
- **Jeremy Williams**, Geology, Kent Campus
 - Does "Hands-on" Learning Promote Proficiency, Competence in Analytical Instrumentation and Statistics in a Geology Classroom

2016-2017 Teaching Scholars

- **Peña L. Bedesem**, School of Lifespan Development and Education Sciences, Kent Campus
- **Edward Dauterich**, English, Kent Campus
- **Marie Gasper-Hulvat**, Art, Stark Campus
- **Insook Kim**, Teaching, Learning and Curriculum Studies, Kent Campus
- **Rui Liu**, Architecture & Environmental Design, Kent Campus
- **Ellen Mulqueeny**, Mathematical Science, Kent Campus

- Joan Meggitt, Theatre, Kent Campus
- Jennifer Metheney, College of Nursing, Kent Campus
- Gabriella Paar-Jakli, Political Science, Kent Campus
- Ashley Reed, Health Science, Kent Campus
- Eric Taylor, Geology, Stark Campus

2018-2019 Teaching Scholars Posters

Effects of a Poverty Simulation on Preservice Teachers' Attributions and Beliefs

Joanne Cappella Ph.D. | Teaching, Learning, and Curriculum Studies | ERHS

Center for Teaching and Learning

Problem / Question

- What were the experiences of preservice teachers while participating in the poverty simulation?
- How did their perspectives, behaviors, and actions due to participation in the Poverty Simulation change in the short and long term?

Materials and Arrangements

Director's Manual
Resource Packets for Community Services
Family Packets
Compact Disc

Your Community

A Large Room

Your Neighborhood

Chairs

Your Community Services

Tables

Results

- 87 preservice secondary teachers participants
- Significant improvements in beliefs were noted in 15 of 21 ATP Short Form items. Improvements in the stigma and structural domains were significant while improvement in the personal deficiency domain was not significant.
- Long-Term Effects: This poverty simulation exercise positively altered preservice student attitudes toward poverty. When combined with didactic and experiential curriculum, this simulation may enhance student achievement of the Ohio Department of Education Standards of Professional Development and the priority of Adult and Young Adolescents (Social Justice Emphasis).

Project Overview

The purpose of the poverty simulation is to allow preservice teachers to gain a greater understanding of what it is like for those who live in poverty, and how the children and adults in this situation may have a different focus than their own.

Living a Month in Poverty...

Procedure for Data Collection

Data was collected before and after the students attended the Poverty Simulation Project and three months later.

Data included...

- Demographic information including a measure assessing a student's past exposure to poverty.
- Beliefs and attributes held toward individuals living in poverty were measured by the
 - Attitudes Toward Poverty Short Form (ATP)
 - The ATP Short Form contains 21 items covering 3 domains: personal deficiency measured by seven items (*Poor people are dishonest.*), stigma measured by eight items (*There is a lot of fraud among the poor.*), and structural perspective measured by six items (*People are poor due to circumstances beyond their control.*)

Conclusion

- Preservice teachers rated the simulation as a valuable part of their program and gave them insight into the plight of students living in poverty. As Sottile and Brozik (2004) noted, "Well-designed simulations and games have been shown to improve decision-making and critical thinking skills" (p. 2).
- Preservice Teachers reported that the simulations required the use of critical thinking, problem solving skills. And most important empathy.



I Flip, You Flip, We All Flip for Chemistry

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Teaching Scholars

Valerie A. Cubon-Bell | Department of Chemistry and Biochemistry | Kent State University at Trumbull

Introduction

A traditional lecture class composed of PowerPoint slides and instructor-led problem-solving on the whiteboard involves few active learning opportunities. Moreover, students must apply class concepts when solving complex, higher-order thinking homework problems by themselves outside of class. It is no surprise that even when students are motivated to do well, regular immersive engagement outside of class with difficult material is often lacking which leaves students unable to attain a thorough comprehension of challenging concepts. This is the case with many popular gateway courses, including chemistry. To combat this problem, the "Flipped Classroom" pushes lecture, which primarily introduces new material, outside of the classroom. Since in-class time is no longer devoted to lecture, instructors can actively engage students with higher-order problem-solving activities to apply newly learned information and strengthen their understanding of the material. In this active learning environment, students work together and ask questions to clarify confusing points and solve novel problems. While many instructors have adopted the flipped classroom model, there are conflicting results with regard to its effectiveness and even greater variability with regard to how the flipped classroom is conducted. Moreover, students often share the attitude that in the flipped classroom the student, not the instructor, is doing the teaching. The current study presented here aims to provide a carefully devised flipped classroom approach that alternates with traditional lecture for students in a non-majors gateway chemistry course for nursing students.

Research Questions

GOAL Project Goal: Evaluate the use of mixed method instruction composed of traditional lectures and flipped classroom modules in a one-semester non-majors chemistry course

Research Questions:

- Will students in a mixed methods course that utilizes traditional lecture and flipped classroom instruction have increased mastery of concepts? **Class Experimental**
- Will a mixed methods course result in greater student retention with fewer withdrawals and less stopped-attendance? **Observation**
- Will students report increased confidence, enjoyment, comfort, and perception of understanding in a mixed methods course? **Surveys**



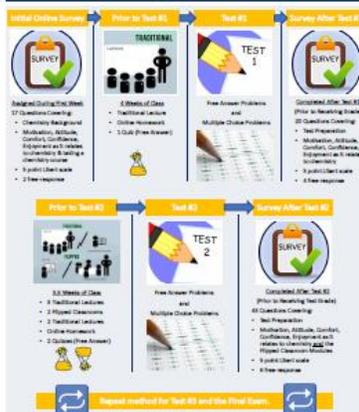
Hypothesis: Flipped classroom modules will increase mastery of chemistry concepts and improve perceptions & beliefs towards chemistry, resulting in greater student success in a chemistry course for non-majors.

Participants

Participant

- Participants: Students taking CHEM-10055-Molecules of Life, a non-majors chemistry course that has no pre-requisites. Approximately 20 students gave signed informed consent to participate in the research study.
- Comparison Group: Previous class of 24 students that received only traditional lecture taught by the same instructor.

Project Design



The Flipped Classroom



In-Class Activity – You've Got Mail!

Instructor Preparation:

- Higher-order free-answer problems with multiple parts are placed into envelopes lined on the whiteboard tray.
- Five different colored envelopes with each color representing a different topic (blind to students) from the pre-class videos.
- ~10 questions total (2 questions per topic)
- Behind each Question envelope is an Answer envelope.



Student Activity (First 50min):

- Groups of 3 with each student having a specific role (shown in the figure below)
- Rotate roles after each question.
- Use Resource Sheets created with content from pre-class lecture videos.



Whiteboard Wrap-Up (Last 25min):

- Instructor randomly selects an answer from each colored set of envelopes.
- Student whose answer is selected writes their group's solution on the whiteboard. (Each group is selected only once).
- Instructor facilitated discussion over the solution presented.
- Students receive a handout with all questions from the envelopes. Fully worked out solutions are provided on Blackboard.

Data Analysis (Work-in-Progress)

- Specific questions from quizzes & tests that directly relate to flipped classroom material will evaluate student learning and success w/ mixed-method instruction vs. traditional lecture.
- Entire quiz, test, and course grades will evaluate whether mixed methods instruction, in general, benefits student success in a course.
- Additional information (i.e. student completion of flipped classroom modules and class attendance) has also been collected and may be useful in explaining any observed results.
- Student motivation, attitude, comfort, confidence, and enjoyment towards chemistry will be evaluated with course progression and correlated to numerical achievement scores.

Conclusion

From an instructor viewpoint, flipped classrooms require students to explore material outside of class and actively engage students to work with difficult material during class, allowing them significant opportunities to seek help, and assess their depth of knowledge and understanding. Moreover, the instructor gains valuable insight regarding students' comprehension through observation of the problem-solving process and by reviewing students' resource sheets. Students, however, report mixed feelings regarding flipped classroom modules with the biggest complaint being the time required to complete pre-class assignments. The instructor of this study is currently limited to the students who have consented to participate until after the semester. Therefore, these preliminary findings are purely observational and will be followed by a more rigorous statistical analysis.

ACKNOWLEDGMENTS

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What's the Problem? Problem-Based Learning (PBL) in Public Health Education

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WHY PROBLEM-BASED LEARNING?

Traditional Learning	PBL	Public Health
<ul style="list-style-type: none"> Told what we need to know Memorize it Problem assigned to illustrate how to use it. 	<ul style="list-style-type: none"> Problem assigned Identify what we need to know Learn and apply it to solve the problem 	<ul style="list-style-type: none"> Problem oriented Practice-based academic process Community

1. ASSESSMENT

Systematic review of the literature. Identification of institutional resources to support adoption of pilot project.

PILOT PROJECT

- Development of a co-curricular workgroup designed to support the efforts of a regional YRBS adolescent health surveillance system.
- Identified problem related to the use of data because of a lack of information about existing dissemination strategies
- Modified PBL approach initiated with a group of 10-15 graduate level MPH students, meeting once per week (1.5 hours), during the spring semester of 2019.
- Group is conducting a systematic review (>250 articles) of the academic literature (from 1990-2018) in order to characterize the presence of YRBS data and identify existing dissemination strategies.

5. DISSEMINATION

Community presentation and national conference abstract submission. Publication of PBL systematic review currently under review.



2. PLANNING

Identify PBL based opportunity with community partner. Develop recruitment, educational, and technology based resources.

PURPOSE

Develop, implement, and evaluate a PBL based learning opportunity for public health students that bridges the research practice gap.

RESULTS

- Ten 90 minutes sessions, 13 students, 80% attendance rate with work occurring during and between each session. BB was primary communication mechanism for the workgroup.
- Pre/Post assessment of public health competencies, self-efficacy, and connectedness (Pre-Test (n=13), Post-Test yet to be administered)
- Abstracted 110/265 articles (42% project completion) with preliminary findings indicating:
 - Data use is primarily national, high school level, non-CDC related, and reports on risk behavior
 - Confirmed existing utilization strategies, and identified 2 new categories of YRBS data use

4. EVALUATION

Process (attendance, discussion boards, memos) & outcome (student competence, connectedness, and self-efficacy) measures.

3. IMPLEMENTATION

Completion of all institutional approvals. Monitor progress, adapt protocol, and effectively communicate changes.

IMPLICATIONS



- Modified, collaborative PBL process so that it occurs over time. Exploration of solutions and prioritization of actions drives the process. Not all solutions are explored simultaneously.
- Create modified guidelines for student participation. Explore minimum hour requirements, groups norms and expectations, curricular and non-curricular options.
- I think this just might work! A mutually beneficial way of meeting the needs of students, community, and faculty as part of an ongoing workgroup.

KENT STATE UNIVERSITY

Using nonviolent communication to discuss nonviolent activism

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Problem

In our current polarized political context, even in a class on nonviolence it has been difficult to discuss current nonviolent campaigns (like athletes kneeling) in a way that meets everyone's needs for respect.

Solution

Nonviolent communication (NVC) is a tool for connecting compassionately across difference, without causing harm. The hope was that first teaching students how to use this tool would then help them discuss controversial nonviolent campaigns in ways that met their needs for respect.

A literature gap

Difficult conversations in the college classroom

A lot of work on this, but does not discuss NVC. Only one unpublished Master's thesis looking specifically at the use of NVC for this.

NVC in the classroom

A fair bit of research on NVC in the K-12 classroom. Only one article on NVC in college classrooms, not focused on difficult discussions.

NVC effectiveness

Some research on the effectiveness of NVC for difficult conversations, but not connected to the college classroom.

Methods

- Survey students at beginning of semester
- Have TA take detailed field notes on dynamics in each class throughout semester
- Take detailed reflective notes after teaching each class
- Train students for two weeks in nonviolent communication (NVC) using Connor and Killian (2012)
- Survey students at the end of training
- Regularly ask students to use NVC in class discussion
- Use NVC to discuss breaking controversial nonviolent actions
- Survey students at the end of the semester

What is nonviolent communication (NVC)?

A tool developed by Marshall Rosenberg (2015) with four basic steps:



Learn more about NVC

- A good short written introduction to NVC: bavnvc.org/what-nvc-is/
- A great place to start learning more NVC are the short videos at cupofempathy.com.
- There is an android app that presents lists of feelings and needs nicely called Pocket NVC
- A useful tool for translating judgement terms (like disrespected) into feelings is at nvcwork.com/em
- KSU Teaching Tool in a Flash on Navigating Difficult Conversations in the Classroom with NVC at kent.edu/ctv/teaching-tools-in-a-flash

Results



The most controversial action that came up was the open carry march on campus in September 2015, which aimed to rally at the site of the May 4th shooting and included two white supremacist militias. It was confronted by counter-protesters that included many black block Antifa. The campus was heavily militarized with police. Students were able to discuss this and other controversial actions in ways that met each other's needs for respect.

Conclusion

Even this fairly quick and superficial use of NVC was appreciated by students and it did help to meet their needs for respect. NVC would likely have been even more effective in the classroom if it was explicitly covered again in small lessons throughout the semester and integrated into discussions with explicit instructions on handouts for small groups. Rather than trying to sneak it in, or use it subtly throughout, NVC works better as a designed exercise in lesson plans.

Works Cited

- Connor, Jane Marantz, and Dian Killian. 2012. *Connecting Across Differences: Finding Common Ground with Anyone, Anywhere, Anytime*. Second edition. Encinitas, CA: Puddlelander Press.
- Rosenberg, Marshall. 2015. *Nonviolent Communication: A Language of Life*. 3rd Edition. *Life-Changing Tools for Healthy Relationships*. Third Edition. Encinitas, CA: Puddlelander Press.

KENT STATE UNIVERSITY

Effects of Jigsaw Learning Technique on Hospitality Management Students' Learning Experiences

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Teaching Scholars

Research Questions

This project aims to explore the following research questions:

- 1) Does the jigsaw learning technique lead to better students' learning processing in a discussion-based course in the hospitality management context?
- 2) Does the jigsaw learning technique lead to better students' learning effectiveness?
- 3) Does the jigsaw learning technique lead to better students' learning satisfaction?

Project Overview

- The purpose of this research is to investigate the effectiveness of jigsaw learning technique on students' learning experiences
- None of the class activities for research participants will be different from the activities that a student would experience in the course
- The only difference is that researchers will be collecting data from students at the end of the class
- A self-administered, paper-pencil format survey
 - Strongly disagree (1) – strongly agree (7)
- Pre-survey, post-survey, three different sessions



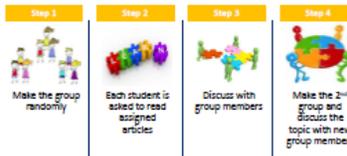
Dependent Variables – Survey Items

Activation of deeper level processing (D1)	Learning effectiveness (D2)	Learning satisfaction (D3)
<ul style="list-style-type: none"> I felt focused. I felt involved in learning the material. I took a critical look at the new material. I tried to distinguish between important and unimportant things. I tried to connect what I was learning with things I already knew. 	<ul style="list-style-type: none"> By participating in a discussion, I am able to <ul style="list-style-type: none"> have adequate resources and tools to learn [discussion topic]. have chances to practice what I learn. improve my understanding of the basic elements of [discussion topic]. 	<ul style="list-style-type: none"> I like the idea of learning [discussion topic] like this. Learning [discussion topic] by participating in a discussion like this is a good idea. My learning experience in this discussion is positive.

Literature Review

Authors	Key Findings
Karacop and Doymus (2018)	The effect of jigsaw cooperative learning and computer animation techniques on academic achievements, targeting first year university students
Berger and Hünze (2015)	The impact of expert students' instructional quality on the academic performance of novice students in 12th-grade physics classes based on 'jigsaw classroom' setting
Kaendler, Wiedmann, Rummel, and Spada (2015)	Teacher competencies for implementing collaborative learning in the classroom

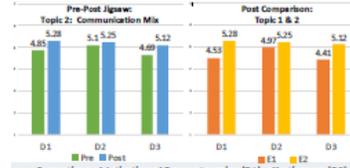
Procedures of Jigsaw Technique



Data Collection

- Data collection 1 – Topic: Service Quality
 - Expert Groups: Reliability, responsiveness, tangibles, assurance, and empathy
 - Data collection: March
 - Post-survey
- Data collection 2 – Topic: Communication Mix
 - Expert Groups: Advertising, sales promotion, merchandising, public relations, and personal selling
 - Data collection: April
 - Pre- & post-survey
- Data collection 3 – Topic: Experience Economy
 - Expert Groups: Entertainment, education, escape, and esthetic
 - Anticipator Data collection: April
 - Pre- & post-survey

Results: Learning Experience



- Perceptions of Activation of Deeper Learning (D1), Effectiveness (D2), and Satisfaction (D3) all increased between pre-post surveys for Topic 2: Communication Mix.
- Even though post comparisons across the two topics were not statistically significant, results suggest higher satisfaction after the second jigsaw than the first jigsaw.
 - The results might be due to students' familiarity with the jigsaw technique procedures.

Conclusion

- Even though there was no statistical differences between pre-jigsaw technique and post-jigsaw technique, the mean values of students' learning experiences were higher when the jigsaw technique was applied
- Increase sample size might help for the future research
- The jigsaw technique worked well to encourage students' engagement in the discussion-based classroom
- It is important to select the right reading materials (journal articles vs. trade magazine articles) in stimulating students' interests

References

Begeer, S., & Hilson, M. (2018). Impact of expert teaching quality on novice students' performance in the jigsaw cooperative learning method. *International Journal of Science Education, 47*(1), 284-305.

Hilson, M., & Begeer, S. (2017). Cooperative learning, motivational effects, and student characteristics: An experimental study comparing cooperative learning and direct instruction in 12th-grade physics classes. *Learning and Instruction, 57*(1), 28-41.

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Changes Over Time in Teachers' Nature of Science Assessment Knowledge and Skill

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Purpose

Explore changes over time in teachers' knowledge and skill related to nature of science (NOS) assessment during a graduate course on NOS concepts, instruction, and assessment

Hypotheses

- Teachers with more accurate knowledge of NOS and how to teach it, as well as the skill to teach it, will improve more
- Teachers will struggle to move beyond informal whole class discussion as assessment to consider other options

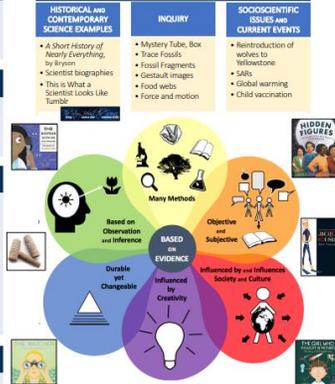
Rationale

- NOS can improve science content understanding, decision making, interest in science and related careers
- Most research focuses on:
 - Pre/post test changes in K-12 teachers' and students' NOS conceptions
- Changes over time during the "messy middle" of an intervention are largely ignored
- Understanding the way teachers' knowledge and skills change over time has implications for improving effectiveness of interventions
- NOS assessment very rarely addressed

Setting and Participants

- Setting**
- Graduate course, Nature of Science in Science Education for preservice, inservice, and past teachers
 - Teachers learn about what NOS is, as well as how to teach and assess it. Many of aspects of the intervention can also be used with teachers' own current or future pre-K-20 students
- Participants**
- Up to 5 participants, based on course enrollment
 - 4 female master's students, 1 male Ph.D. student
 - Two are currently teachers, one plans to teach in future, and two were teachers but now are full-time students
 - Recruitment will occur at end of course

Intervention: NOS Concepts, Instruction



Data Collection and Analysis

- Data Collection (in progress)**
- Written reflection on journal entries
 - Peer teaching with assessment
 - Weekly journal entry
 - Weekly instructor observational notes
 - Weekly post-class instructor reflections
- Data Analysis (in progress)**
- End-of-course interview
 - Constant comparative approach

Pre/Post Survey: Draw-A-Scientist Test Interpretation

- FORMATIVE ASSESSMENT: Talking About Creativity in Science**
- Here are the example statements of what students have said about creativity in science. This is what they said:
- Example Statements Provided to Students:**
- "I think science isn't creative because it follows exact steps of the scientific method and scientists need to be objective."
 - "I think science is creative mostly when scientists need to troubleshoot problems with their equipment."
 - "I think science is creative when scientists come up with questions to investigate."
 - "I think scientists are creative in all parts of science investigations, from questions to research design to interpretation of results."
 - "I think scientists need to avoid creativity because that would change how the science is done. It could introduce bias into investigations and make the results less reliable."

Reflection on Study

- Assessment is focus of last three class sessions
- With such varied background knowledge and skills related to instruction / assessment in general and NOS-specific...
 - I continue to brainstorm differentiated ways to support students' growth
- Explicit, reflective in-class activities have been helpful:
 - Evaluation of example K-12 student responses
 - Modification of example assessments to strengthen
- Difficult for students to move beyond science content to focus on NOS assessment



Promoting Design Thinking and Creative Agency in Instructional Technology Majors

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Center for Teaching and Learning



Abstract

There is growing demand in our society to cultivate creativity and foster innovations. Design thinking has been successfully practiced as an educational framework for supporting innovation in educational and work contexts. This exploratory pre-/post-test mixed methods study explored applications of design thinking to develop designer ability in online graduate students enrolled in an instructional technology course.

Research questions:

1. Does participating in a semester-long blogging assignment on design thinking promote design thinking skills in instructional technology majors?
2. How does participating in a semester-long blogging assignment on design thinking affect students' attitudes toward design thinking?
3. How and to what extent does a semester-long blogging assignment on design thinking support students' short and long-term design practices?

Design Thinking

- Educational framework for teaching design, creativity, and innovation (Cross, 2007; Hayes, 2008, & Horn, 2014).
- Style of thinking that is closely associated with the ability to act with creative confidence.
- Used in this project to support students' design and development of web-based learning materials and tools.



Learners as Designers

- The challenge of engaging learners in authentic design projects:
 - Lack of enthusiasm to create their own learning materials and tools
 - Lack of design experiences
 - Lack of understanding of the design process: Design is ill-defined, reflective problem-solving that allows for failure and redesign.
- Engage students in a semester-long blogging assignment on design thinking and its applications to course design projects

Course Description & Participants

- 10 graduate students (4 males) enrolled in a graduate online course in Instructional Technology
- The course focused on underlying skills, principles, and theories that should guide the use of Internet technologies.
- Encouraged students to become creators of new learning environments, materials, and tools through various course assignments, including WebQuests, audio podcasts, blogs, mobile app prototypes, and web portfolios featuring their course work.

Tasks & Materials

- A semester-long blogging assignment on design thinking
- Students created their own blog and posted blog entries every other week
- Identified and shared resources on design thinking
- Posted reflections on their readings and course projects

Instruments and Data Collection

- | Independent variable | Dependent variables |
|--|---|
| • Blogging assignment on design thinking | • Design thinking
• Attitudes toward design thinking |
- Background survey (e.g., age, gender, science background, academic year, etc.) at the beginning of the course
 - Design Thinking questionnaire (Reavitt et al., 2014) at the beginning and at the end of the course: 11 five-point Likert-type scale questions
 - Attitudes toward Design Thinking questionnaire (adapted from Arbaugh, 2000) at the end of the course: 4 five-point Likert-type scale questions about usefulness and applicability of design thinking to students' workplace.
 - Semi-structured interviews with students: A year after completing the course. Sample interview questions:
 - "What were the most meaningful experiences you had in the course?"
 - "Could you please tell me about your experiences with the blogging assignment on design thinking?"
 - "What is your general reaction design thinking?"
 - "How, if any, did your attitude toward design thinking change over the course of the semester?"
 - "What might you take from these experiences to your professional life activities outside of the program one day?"

Results

Variable	Pretest (N = 10)		Post-test (N = 10)	
	M	SD	M	SD
Design Thinking ^a	3.70	.47	3.99	.35
Attitudes toward Design Thinking ^a			3.90	1.19

Note: ^a Scores were calculated by averaging the total number of items; possible score range: 1-5.

- Wilcoxon signed-rank test revealed non-significant differences between students' pre- (Mdn = 3.68) and post-test design thinking scores (Mdn = 3.86), $p > .05$.
- Students' blog entries and interviews were classified by design thinking processes: empathize, define, ideate, prototype and test

Conclusion

- Students rated their design thinking above average – moderately high
- Not all students contributed meaningful blog entries about design thinking
- Design thinking can be potentially used as an educational framework for supporting student design project
- Similarities among Design Thinking processes and Instructional Design processes
- More structured approach to exploring design thinking is needed to guide students' exploration of design processes and their real-world applications

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Learning Portals: Identifying Threshold Concepts for Introduction to Sport Management

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Center for Teaching and Learning



Problem / Question

Ziegler (1994) suggested the need for critical thinking in the curricula for the sport management program and Frisby (2005) also argued for its inclusion. Yet, like many other academic areas, many instructors in sport management academic programs still use the traditional teaching method (i.e., giving lectures about the fundamental contents of sport management) to teach undergraduate students. However, research has shown that lecture-based learning frequently does not encourage students to develop critical thinking (Duron, Limbach, & Waugh, 2006).



Research Questions

1. What are the threshold concepts in sport management the sport management professors are identifying?
2. What are the threshold concepts in sport management the sport management field practitioners are identifying?
3. Are there discrepancies between the threshold concepts the professors and field practitioners are identifying?

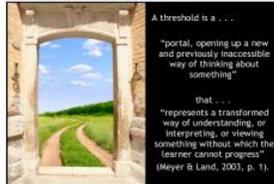
Project Overview



The current college students are millennials. Millennials were born with technology.

Therefore getting engaged and searching for information using technology is natural for them (Bolton et al., 2013; Reisenwitz & Iyer, 2009; Yim & Byon, 2017) but the lecture-based learning requires passive learning methods such as note taking, rote memorization, etc. (Manning, Keiper, & Jenny, 2017).

One of the methods that enables the students to be a critical thinker is the threshold concept.



Threshold concepts act as critical portals in the development of a learner's understanding of a subject but it must be negotiated to arrive at important new understandings (Meyer, 2008).

Five premises of Threshold Concepts (Meyer & Land, 2003)

1. Should be transformative, in that once acquired they should shift perception of the subject
2. They are irreversible that once an individual has begun to perceive the world in terms of a threshold concept they would never return to viewing it in a more primitive way
3. A threshold concept is integrative that the students will obtain capacity of a concept to expose the previously hidden interrelatedness of something
4. A threshold concept is bounded that it helps to define the boundaries of a subject area
5. It is potentially troublesome because a threshold concept may be counter-intuitive, in grasping a threshold concept a student moves from common sense understanding to an understanding which may conflict with perceptions that have previously seemed self-evidently true.

Procedure

- **INITIAL**
Creating the initial items set with panel of experts
- **DELPHI**
Delphi Methods with 25 college professors and 25 field practitioners
- **FINAL**
Two sets of threshold concepts will be compared

Methods

The proposed study uses a Delphi method to answer the research questions. There are three stages for this research project following Beech's (1999) Delphi method procedure.

First stage is identifying the initial items. Four experts in sport management field (college professors who have taught introduction to sport management courses) met and discussed to identify the initial items set. Due to the comprehensive nature of introduction to sport management course content areas include sociological aspect in sport management, management and leadership in sport, ethics in sport management, sport marketing, legal aspect of sport, etc. Total of 148 initial items were generated.

Next, 25 sport management academicians and 25 sport management practitioners will be recruited (50 total) to participate in online Delphi method. They will refine the item set by deleting or adding items through several rounds (3-4) of online discussions and turn-arounds of the surveys. Two sets of data will be obtained (one from the academicians and one from the practitioners) and two sets of the threshold concept list will be created. The two sets will be compared and the final threshold concept list will be created.



Descriptive Evaluation of an Efficient Rubric for Minimal Assessment

Chance York
School of Journalism and Mass Communication
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Problem

Grading is time-consuming, esp. written feedback. Students rarely read written feedback.
Can we grade more efficiently while still providing (verbal) feedback to students who request it?

Research Questions

- How do students who have been assessed on the basis of an efficient rubric evaluate the rubric?
- Are student evaluations of an efficient rubric contingent on student attributes such as GPA?
- Does using an efficient rubric encourage students curious about their summary grade to seek face-to-face instructor guidance and feedback?

Variables

Independent variables	Dependent variables
<ul style="list-style-type: none"> Application of the efficient rubric across three Spring 2018 courses Contexts: GPA, expected course grade, rubric grades 	<ul style="list-style-type: none"> Student evaluations of the efficient rubric Frequency of communication w/ instructor

Procedure

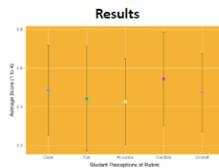
Step 1	Step 2	Step 3	Step 4
LR Review/ Develop Efficient Rubric	Incorporate Rubric in Spring 2018 Course Syllabi	Gather Student Evaluations of Rubric Via Quizzes	Analyze Descriptive Data and Report

Efficient rubrics allow instructors to grade more quickly, freeing time for research and creative activity.

Efficient rubrics prompt students to seek face-to-face feedback rather than written feedback from instructors.



Digital Copy of Rubric



- Average scores high across all eval dimensions (n=34)
- Lowest was accuracy (M = 3.43, SD = 0.64, range 1 to 4)
- Highest was credibility (M = 3.56, SD = 0.69, range 1 to 4)
- Overall eval was (M = 3.47, SD = 0.58, range 1 to 4)

Variable	Mean	SD	Min	Max
Overall Eval	3.47	0.58	1	4
Accuracy	3.43	0.64	1	4
Credibility	3.56	0.69	1	4
Usefulness	3.47	0.58	1	4
Fairness	3.43	0.64	1	4

- Student GPA had null effect on overall eval of rubric
- Expected grade in the course had null effect on overall eval of rubric
- Summary grades from the rubric had null effect on overall eval of rubric

41% of students (n=14) contacted instructor to seek feedback and clarify about summary grades
86% of those students reported helpful feedback
93% reported feedback helped clarify grades

Discussion

- Personal Reflection:** Efficient rubric made grading faster and more enjoyable. Providing verbal feedback was not nearly as onerous as repetitive written feedback.
- RQ1:** Students gave the rubric high overall ratings.
- RQ2:** Ratings were independent of student GPA, expected grade in course, and grades based on rubric.
- RQ3:** Students curious about a grade sought verbal instructor feedback. These questions were constructive.
- Limitations:** Need larger n over multiple courses. Need to compare against "control course" w/ written feedback.

Effectiveness of Smartphone-Based Virtual Reality (VR) on Students' Learning Outcomes

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Problem / Question

Is there any gain in (a) learning concepts (*learning effectiveness*) (b) students' ability to apply concepts (*self-efficacy*), (c) interest in the topic (*motivation*) from a VR simulation, as compared to a conventional learning activity?

Hypothesis

H1: VR simulation would enable a better understanding of concepts than a conventional learning activity.
H2: VR simulation would increase students' interest in the topic as compared to a conventional learning activity.
H3: VR simulation would have a higher impact on students ability to apply concepts than a conventional learning activity.

Project Overview

The current project aims to assess learning outcomes' gains when using VR simulations, as compared to a conventional learning activity. VR could be used as a means of:

- Increasing students' understanding of key concepts,
- Improving their ability to apply concepts,
- Motivating and stimulating their interest in the topic,
- Enhancing students' learning experience.

Variables / Research

Controlled variables	Independent variables	Dependent variables
<ul style="list-style-type: none"> Participants: students enrolled in my marketing research class. VR simulation 	<ul style="list-style-type: none"> Experiment condition No VR simulation (critical review of an article) 	<ul style="list-style-type: none"> Learning effectiveness, 4 items (Lee et al., 2010) Self-efficacy - 2 items (Merchant et al., 2012) Intrinsic motivation, 3 items (Lee et al., 2010)

Materials

Procedure

- Brief (10 min):** Review of key concepts and types of walk in a VR space
- Step #1 (15 min):** Initiation to VR simulation and time measurement
- Step #2 (5 min):** Assigning student into control and treatment groups
- Step #3 (15 min):** Taking part of the VR simulation and critical review of an article
- Step #4 (15 min):** Rotating roles (treatment group)
- Step #5 (10 min):** Collecting Data (short survey), Data analysis (t-test), Results
- Debrief (5 min):** Linking VR simulation and Critical review activities to the course objectives and learning outcomes

Data / Observations

Descriptives	95% Confidence Interval for Mean									
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound	Minimum	Maximum		
Self-Efficacy	3.00	10	1.1000	0.3464	0.3500	1.6500	4.0000	5.00	3.00	5.00
	2.00	8	0.8710	0.2833	1.0570	3.9440	4.2400	3.00	4.00	
Total	18	4.0000	0.9857	0.2393	3.5160	4.4840	3.00	5.00		
Intrinsic Motivation	3.00	10	0.6000	0.5889	1.0550	5.3400	0.2100	6.00	0.00	6.00
	2.00	8	1.1200	0.6937	2.0550	3.9440	4.7000	3.00	6.00	
Total	18	9.0000	1.0584	0.2552	4.5300	5.9600	3.00	6.00		
Learning Effectiveness	3.00	10	0.8710	0.2833	1.0570	3.9440	4.2400	3.00	5.00	
	2.00	8	1.4000	0.6141	3.0400	3.9440	5.2000	3.00	5.00	
Total	18	9.1111	0.8719	0.2167	4.6300	5.9200	3.00	6.00		

Results

Variable	Treatment Group (VR Simulation)	Control Group (Critical review activity)
Self-Efficacy	~4.0	~3.5
Intrinsic Motivation	~4.5	~3.5
Learning Effectiveness	~4.0	~3.5

Conclusion

- H1 and H2 are supported but not H3.
- Compared to conventional learning activities, the use of virtual reality (VR) would result in a better understanding of concepts and would motivate students to learn more about the topic.
- However, the use of VR may not lead to a better ability to apply concepts over the conventional activities.

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Cooperative learning activities to improve student learning experiences in an introductory biology classroom

Yijing Chen | Department of Biological Sciences | Kent State University-Trumbull



Project Background

Biological Foundations is an entry-level gateway course required for all biology majors. It is also a Kert Core course taken by non-major students, who typically constitute the majority of enrollment on Trumbull campus. Since this is a foundational course for biology majors, maintaining the rigor of the course is essential for major students' future success in upper level courses. Meanwhile, it's equally important to find a balance that would ensure a positive learning experience for the non-major students who take this course primarily to satisfy the general education requirement. The goal of the project is to implement cooperative learning strategies to create a supportive learning environment that bridges the gap between two distinct student populations.

Cooperative Learning

Learning is a social activity. Cooperative learning involves the instructional use of small groups where students become each other's resource and partners in learning. Through collaboration and peer-instruction, students maximize their own and each other's learning.



Overview of Project Design

- Sample**
- Students enrolled in Spring 2018 Biological Foundations course (BSC 10120-700)
- Approaches**
- Form groups of 3-4 students with periodic mix-up of group members
 - Implement a variety of group-based activities with elements of peer-instruction pre-, admits or post-lecture.
 - Pre-, post-test results and surveys are used to assess the effects on student's academic achievements and attitude toward learning and science in general.



Examples of Cooperative Learning Activities

Hands-on modeling of dynamic biological processes



Group problem-solving exercises with rotating roles



Think-Pair-Share



Group-testing



Assessment and Surveys

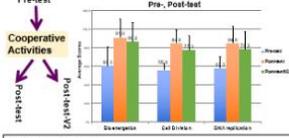
The impact of the cooperative learning activities on students learning is assessed by comparing the pre- and post-test scores of selected key concepts questions.

- To confirm that the improvement in post-activity scores reflects true improvement in learning, students are asked to answer on their own a paired concept question (Post-testV2) that is similar but not identical to the original question.

Student's perception and reflections on the cooperative activities are collected through surveys.

The Colorado Learning Attitudes about Science Survey (CLASS) for use in Biology are done in the beginning and end of semester to measure novice-to-expert-like perceptions about biology (Semler, et al., 2013).

Results



Sample concept question pair

- Pre-Test Q: During DNA synthesis, the DNA polymerase elongates the chain in this direction.
- Post-Q V2: During DNA synthesis, the DNA polymerase adds new nucleotides to this end of the elongating chain.

Students' Reflections on Cooperative Learning Activities (n=12)	Agree and Strongly Agree
The group activities helped me better grasp key concepts and fill in gaps in comprehension.	83.3%
The group activities helped me identify and clarify your misconceptions.	83.3%
I learn more through group activities than working on my own.	75.0%
Explaining what I know to my peers strengthens my own mastery of the subject.	83.3%
The group activities motivated my interest in the subject by learning.	83.3%
I enjoyed the social interactions that occur during the group activities.	75.0%
I'd be interested in participating more cooperative learning activities in the future.	83.3%

Conclusions and Future Directions

- Cooperative learning activities are effective in enhancing student learning in an introductory biology course with diverse student bodies.
- Most students reflect favorably on the activities and perceive them as teaching tools that helped them learn and increased their interest.
- I will continue to use cooperative learning activities in my classes with a focus on improving implementation and to address potential pitfalls.

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K. Semler, J. K. Knight, G. Bintl, M. K. Smith. The Colorado Learning Attitudes about Science Survey (CLASS) for use in Biology. *CBE—Life Sci Educ.* 10, 268–278 (2011).



Helping pre-service teachers understand data literacy

Rebecca L. Chom | Modern and Classical Language Studies | College of Arts and Sciences



What is data literacy?

The ability to collect, analyze, interpret, convey, and consult information used for continuous improvement.

Why is data literacy relevant?

The role of assessment and data in informing instruction

The impact of the instructor

Increased accountability

Aspects of data literacy

Planning of instruction	Assessment of instruction	Interpretation of instruction
<ul style="list-style-type: none"> Essential questions Role of precursor conditions Inquiry process 	<ul style="list-style-type: none"> Type of data needed Means of data collection Analysis of data 	<ul style="list-style-type: none"> Use of research evidence Impact on planning instruction, programs.

Research Question

How can blogs help pre-service teacher candidates understand and interpret student data?



Data tells us where we are. Student work tells us where to go next. —Michelle Bily

Why blogs?

A blog is a web log where students can post their thoughts and display the ontogenesis and progression of approaches to data literacy.

For students, blogs provide an opportunity to practice with online tools and to practice critical thinking skills

For instructors, blogs provide a means to document development of data literacy.

Class Activities & Research Procedures



Sample blog prompt and response #1

Emergence of key concepts

How do you go about setting proficiency-based communication goals for your students? Will everyone have the same goals? How do you plan for this?

To set proficiency-based communication goals, I would have students set goals for themselves. This allows students to self-differentiate at a level they feel to be most appropriate and often times, I believe to be fairly accurate. Students would have to demonstrate what level they think they are at by being able to demonstrate certain ACTs. I can statements and use them in appropriate context. Students would definitely not all have the same goals for each other.

Proficiency Self-differentiate
Communication I Can statements

Sample blog prompt and response #2

Emergence of key concepts

From your pre-assessment, you find that students vary in their world language knowledge, proficiency, and skills. How does this information inform your next steps?

Small groups
Expectations
Learning
Differentiate

Lessons Learned

- Establishment of a point of reference
- Students need more direction and practice
- Consideration of different aspects of data literacy
- Blog prompts should be discussed in class
- Broader view of the role of data

Future Directions

- Increase class discussion
- Opportunity for students to solve problems together
- Sequencing of aspects of data literacy across multiple courses

Reference

Mandinach, E. & Gummer, E. (2013). Navigating the landscape of data literacy: It is complex. Education Northwest/WestEd. Portland, OR. https://www.wested.org/online_pubs/resource3304.pdf



Evaluating Changes in Teaching Styles and in Exam Scores

Dawn Exuminger-Stokes, MSN, RN, CNS, Nursing Technology, Kent - RAC

Center for Teaching and Learning



Problem / Question

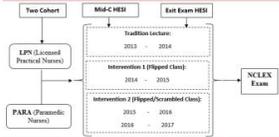
Do changes in teaching methods improve performance on Health Education Systems, Inc (HESI) standardized testing in the Associate Degree Nursing (ADN) program?

Hypothesis

Flipping/scrambling the classroom is more effective at improving nursing student performance on HESI exams.

Project Overview

- Retrospective review of results of mid curricular (mid-C) and exit HESI exams in the ADN program at Kent State Regional Academic Center for 4 graduating groups.
- HESI exams timed, computerized standardized tests administered to assess student competency and evaluate the nursing curriculum and program outcomes.
- Teaching methods changed to post narrated lectures online and utilize more interactive methods of learning in the classroom.
- Goal to improve critical thinking, problem solving and clinical decision making in the graduate nurse, facilitate better transition to the role of professional nurse



What is Flipping & Scrambling

Flipping – “moving class materials to prior to class time”
 My Implementation: lectures taped and posted first to class

Scrambled Classroom Techniques - Unfolding case studies, Core Measures & QSEN group projects/presentations, Critical Thinking as pre-class assignments, Adaptive Quizzing, Unscheduled quizzes in class

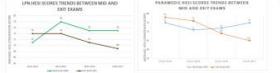
Classroom Techniques



Study Design

- General HESI Exams (~150 components)
- Sample of HESI components taught in my class
- Cardiovascular
 - Endocrine
 - GI/hepatic
 - Neurological
 - Oncology
 - Renal
 - Respiratory

General HESI Results



General HESI scores decreased for both cohorts between Mid-C & Exit each year

Other Preliminary Results

Pending statistics evaluating/comparing changes in individual HESI components, focused in second year Medical/Surgical courses with the expectation that there is an increase in scores with consecutive years. (Traditional and intervention years with flipped/scrambled teaching)

Summary & Reflection

- General HESI exit scores lower during flipped/scrambled curriculum
- My class isn't the only course influencing overall scores
 - Other influences on student scores (time)
- Individual total scores decrease after instruction
- Instruction may or may not have prompted change in score
 - Areas of decreased scores
 - What teaching changes were made?
 - How can the instruction be improved?
 - Areas of increased scores
 - What was different about these lessons?
- Other variables that may influence HESI scores
- student differences not accounted for
 - hours working is correlated with scores
 - Exit exam validity
 - How serious student is in answering questions, no grade or points assigned for completion

Future Directions

- Analyze third and final cohort to see if trends are the same
- Flipped classroom: students not doing pre-class work
 - now pop quizzes
 - alignment with literature
- Review grades across class (course performance to HESI performance)
- Compare Course exam grades between cohorts
- Compare HESI results with results of NCLEX & number of times they took the NCLEX
- How does increased simulations- support case studies within simulation and lab environment : increase hands on part

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Collaborative Qualitative Research: Lessons in Experiential Learning

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 Dr. Derek Van Ittersum, dvanitte@kent.edu
 Department of English



Research Question(s)

- What are the value and limitations of an experiential approach to student learning at the graduate level?
- Specifically, what happens when students and teacher in a research design graduate course work together on a common research project?
- How does this experience shape students' critical engagement with qualitative / empirical research that they read?

Study Design

In the Spring 2018, Dr. Van Ittersum taught English 75044: Research Design with 7 Master's and doctoral students researching literate practices at a social service agency.

Dr. Takayoshi researched the students' processes of learning about research. Data includes:

- Students' initial (first-week) reflections on their understanding and experience with research design
- Students' weekly reflective research journals
- Students' final-week reflection about research design.
- Individual interviews with each student at beginning, middle, and end of the semester
- Survey results from multiple surveys of students' learning
- End-of-semester student focus group discussions
- Class observations and transcriptions of class discussion

Tentative findings

Our findings are mapped at processedword.net/teachingscholars. These site maps reveal that experiential learning environments draw in and weave together a dense network of components which are interdependent on one another. As one component is drawn to the foreground, other components in the network are shifted in terms of their influence and their relationship to one another. We believe that the differences in the three maps of research design courses (a conventional approach, an experiential course, and an experiential course with a service-learning component) suggest the ways that in experiential learning environments,

- the research site exerts a strong pull on student learning and engagement with the course goals (in Dr. Van Ittersum's class map, the site shapes/influences the ways students experience course goals).
- the instructor remains a shaping force for student learning but becomes one of many significant influences on student learning,
- the complexity of human interaction and feedback loops allow for more learner individuality (for better or worse); in the experiential class, students are called upon to bring more of their identities into the relationships and conduct of the work. The students act and are constructed as individuals more than as an autonomous whole ("students").

Integrating Form-Focused Instruction

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Center for Teaching and Learning



Problem / Question

Can attention strategies during grammar instruction facilitate more frequent and correct usage of targeted form in second language learning?

Hypothesis

Students who focus on form during grammar instruction will use the form more frequently and correctly as compared to those who are not taught these strategies.

Project Overview

The present study attempts to help students in Elementary Spanish II courses:

1. Notice grammar form through attention strategies
 2. Practice the grammar form
 3. Utilize the grammar form more frequently
 4. Demonstrate correct usage of grammar form
- The instructor will then analyze frequency of usage as well as correct usage of grammar form.

Form-Focused Instruction Attention Strategies



Designing and Presenting Guidelines for Attention Strategies (Focus on Form)



Procedure - Modified PACE Model



Attention Strategies Used

Receives direct benefits of form in class. Students practice in an unscripted in-class. Sample prompt is used in the activities. Strategies used in class:

- Let's talk about "he"
- El Centro Comercial

Distribution of Attention Strategies and Practice

Attention strategies that focus on grammar forms will be used in two Elementary II Spanish classes.

Class	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 10
Class 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Class 10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Sample of Padlet



Continuation of Study

- Analysis of frequency of usage of targeted grammar form through transcription and word count
- Analysis of correct usage of targeted grammar form through transcription and word count
- Compare results

Readdress research question: Did attention strategies during grammar instruction facilitate more frequent and correct usage of targeted form in second language learning?

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Implementing Service Learning into the Online Classroom: Finding the Tools for Success

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Why Service Learning?



Impact

The Student:

- Develops enhanced critical thinking skills, citizenship, and career readiness. Evidence suggests improved commitment for community.
- Develops responsibility and experience and puts knowledge into practical use, solidifying theory, best practices, and creativity.

The Community:

- Receives direct benefits of best practices and volunteers.

The University:

- Receives benefits of well-trained students, good community relations, extended opportunities for students through internships and practicums and independent investigations.

A brief, simple definition of service-learning: "Service, combined with learning, adds value to each and transforms both."

Research Question

1. What protocols and methods can be used to incorporate service learning into the online classroom while keeping within the confines of the expected teaching load?
2. Does service learning enhance the student learning experience?

Course Elements - Service Learning

COMPETENCY FOR EMERGING ISSUES IN PUBLIC HEALTH: Describe methods of addressing emerging social and behavioral issues in public health.

Examples suggested:

- Creating infographics for a topic to share with community
- Plan an Earth day event
- Work with the Public Health Student Alliance to plan National Public Health Week activities
- Help a community plan an activity

Methods

Monitor & Evaluate Teaching load

- Monitor via weekly journaling
- Tracking
 - # of course announcements made
 - # of Emails related to course
 - # of Meetings with students
 - Time for reviewing/grading assessments

Assess Student Learning Experience

- Community Engagement@USF Service Pre and Post Surveys using a Likert scale survey
- Pre service survey (n=19)
- Post service survey (n=11)

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The work I will accomplish in this course will make me more prepared to meet the needs of my community.	1	2	3	4	5
My participation in the community project will enhance my learning in this course.	1	2	3	4	5

Other data sources:

- Emails
- Student reflections for class
- Student meetings

Service Learning Course Design

Week 1: Students assigned to small groups. IRB approval obtained to administer Pre and Post survey to students. Instructor begins journal of weekly activities.

Weeks 2 & 3: Students receive guidance about service learning, group work and reflection. Recruitment Script and online consent presented to students along with Pre Survey n=40

Week 4: Groups choose one or two topics and reach out to community. They provide a reflection of their experience

Week 5 & 6: Continued work and discussion, file share and blogs with groups.

- Examples of projects:
- Fact sheets
- Infographics
- Planning and helping with community activities
- Individual reflection in required to reflect group work and community experience.

Week 7 - Week 10: Students continue discussions and community work while continuing review of emerging issues in public health.

Week 11 - 13: Students complete work and submit the Post survey & Reflection about service and public health. Data entered and analyzed.

Results

Teaching Load

- Course changes were limited due to workload and lack of development time
- 60% Increase in announcements made
- 50% Increase in email responses to students
- Increased meetings scheduled with students
- No change in assessment time

Overall teaching load increased due to students generally not understanding expectations and what service learning is.

Student Learning Experience

Pre-survey results indicated students value service learning

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The work I will accomplish in this course will make me more prepared to meet the needs of my community.	1	2	3	4	5
My participation in the community project will enhance my learning in this course.	1	2	3	4	5

Post-survey results indicated students value service learning but with a decrease in strength of agreement.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The work I will accomplish in this course will make me more prepared to meet the needs of my community.	1	2	3	4	5
My participation in the community project will enhance my learning in this course.	1	2	3	4	5

Recommendations

Address Student Challenges

- Group work did not "go well" for most
- Confusion, indecisiveness and frustration
- No time due to job & family constraints
- Activities were more volunteer rather than service learning

Decrease Teaching Load

- Develop module describing what service learning is and its benefits for student learning
- Provide more detailed instructions & clearer expectations
- Assign topics or case studies
- Provide detailed Group Instructions and role assignments
- Have weekly online meetings with groups

Increase Student Satisfaction

- Improve instructions and information for service learning assignments and reflection
- Assign projects to reduce indecisive behavior
- Increase group organization and expectations
- Use case studies



Does "hands-on" learning promote proficiency, competence in analytical instrumentation and statistics in a Geology Classroom?

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Introduction

Hands-on learning is a pivotal tool used to teach Geology students critical field techniques; however, very few have the statistical and instrumentation skills needed to be competitive for their post-graduate career.

- GEOL 40/50095 Special Topics: Instrumentation and Techniques in Geology (3 credits)
- In this study, students are exposed to laboratory instrumentation and techniques along with statistical analyses in a classroom setting to "boost" their professional skills for a post-graduate career.
- The objective is to monitor the comfort level of students in statistics and instrumentation, through short reflection and surveys through the duration of the class.



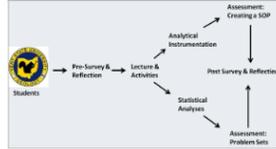
Population

- 15 Students
 - 9 Graduate Students
 - 6 Upper Division Students
- Statistical and Analytical Instrumentation General Background
 - 1 semester of statistics
 - Experienced in descriptive statistics
 - Very little experience with non-parametric and parametric testing
 - Very little experience with analytical instrumentation and creating a standard operation procedure (SOP) for instrumentation



Based on a 45 question 7-scale Likert survey taken before class

Procedures



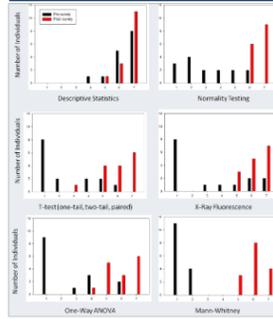
Statistical Analyses

- Descriptive (mean, mode, median, range discrete, and continuous data)
- Outliers
- Parametric Test:
 - Independent: T-test (one tail, two tail), ANOVA (one way, two way, post hoc testing)
 - Dependent: T-test (paired)
- Non-parametric Test:
 - 1 sample kolmogorov smirnov test (normality)
 - Independent: Mann-Whitney, Kruskal-Wallis
 - Dependent: Wilcoxon Sign Rank, Sign Test
- Software: IBM SPSS 24 Statistics

Equipment & Instrumentation



Results



- 7 Point Likert Pre and post survey results: Descriptive, Normality Testing, T-test, X-Ray Fluorescence (ED-XRF), One-way ANOVA, Mann-Whitney, Likert Scale: Strongly Disagree (1-5), Neutral (4-5), Strongly Agree (5-7).

Discussion

- Wilcoxon Sign Rank test suggest that hands-on learning is effective in students' understanding of analytical instrumentation and stats (Descriptive Stats $p < 0.025$, Normality Test $p < 0.001$, T-test $p < 0.001$, ED-XRF $p < 0.001$, One-way ANOVA $p < 0.001$, two-way ANOVA $p < 0.001$).
- Student express excitement and confidence after learning a new laboratory technique or statistical analysis. Moreover, they recognize the benefits of a class dedicated to hands-on learning in relation to their future post-graduate careers.
- The results and feedback from this study will be used to make the class more effective, break the class into two semesters or turn the class into a 4 credit course.

