IPRO 397: Interprofessional by Design a Prototype Course for IPRO 2.0

AY 2012-2013 Report to the Undergraduate Studies Committee
April 10, 2012

IPRO 397: Interprofessional by Design

with generous support from
Motorola Solutions Foundation &
The Chamberlain Group of Duchossois Industries

- A course iteratively prototyped from Fall 2010 to Spring 2012 guided by an interprofessional instructor team

- Transformative learning via a *collaborative innovation* experience that creates value:
  - **the design thinking process**
  - **the high performance teamwork foundation**
  - **the IPRO project creation process**

IPRO 397 Instructor Team (2010 – 2012):
Jeremy Alexis, Assistant Dean, Institute of Design; **Hanna Korel**, Institute of Design; **Hans Mickelson**, Institute of Design; **David Gatchell**, Research Assistant Professor, Biomedical Engineering & Assistant Director, Pritzker Institute of Biomedical Science & Engineering; **Jim Braband**, Senior IPRO Lecturer, Stuart School of Business; **Jereme Dumm**, Institute of Design; **Linda Pulik**, Institute of Design; **Tom Jacobius**, Director, IPRO Operations; **Steve Stanard**, Associate Professor, College of Psychology; **Danny Gandara**, Ph.D. Candidate, College of Psychology; **Jill May**, Ph.D. Candidate, College of Psychology

Faculty Team, Spring 2012

- Jeremy Alexis, Institute of Design
- Jim Braband, Stuart School of Business
- Steve Stanard, College of Psychology
- Daniel Gandara, College of Psychology
- Hanna Korel, Institute of Design
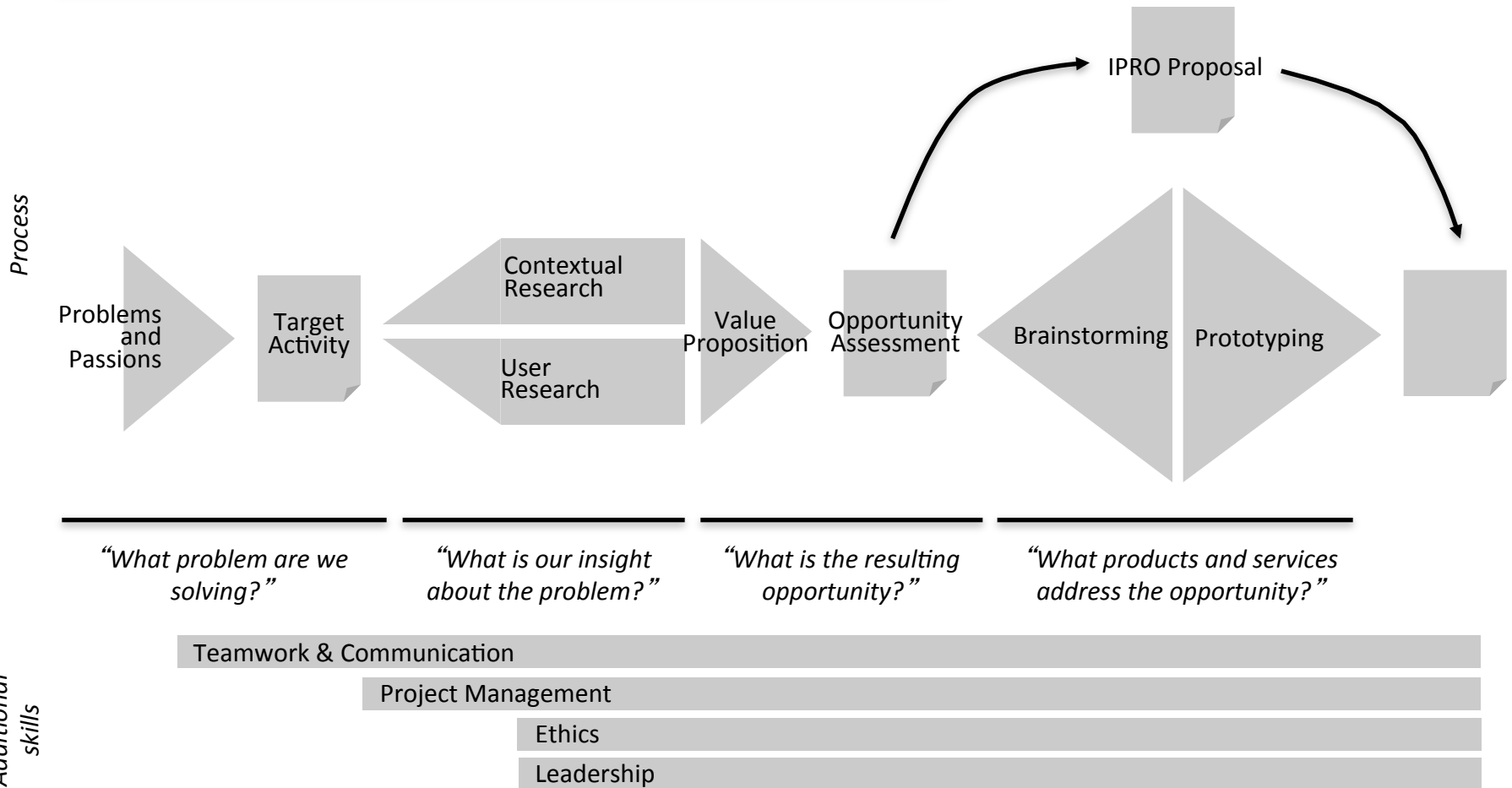- Hans Mickelson, Institute of Design

IPRO
It takes a team
INTERPROFESSIONAL
PROJECTS PROGRAM

ILLINOIS INSTITUTE
OF TECHNOLOGY

Goals of IPRO 397

1. Teach methods and processes that can be used in this course and future experiences

2. Prototype a new workshop-style approach to the IPRO project team course experience

3. Gain prototyping experience to demonstrate the efficacy of an alternative model linking the two-IPRO requirement as a progressive sequence

4. Offer students the option of IPRO 397 to satisfy their first IPRO course requirement

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IPRO 397 Interprofessional by Design – The Process:

Week 1 - 8   *Week 9 - 15*

Process

IPRO Proposal

Problems and Passions → Target Activity → Contextual Research / User Research → Value Proposition → Opportunity Assessment → Brainstorming / Prototyping →

"What problem are we solving?"   *"What is our insight about the problem?"*   *"What is the resulting opportunity?"*   *"What products and services address the opportunity?"*

Additional skills

Teamwork & Communication

Project Management

Ethics

Leadership

Sample: Research Analysis-Week 5

- ## Students will learn
  - How to analyze research and draw conclusions
  - How to find deep, meaningful insights to drive problem solving and innovation
  - How to make facts and research findings usable in brainstorming

- ## Class structure
  - 45 minutes of critique on research data (saw/heard/learned)
  - 45 minute lecture on data analysis
  - 60 minutes studio time – analysis of research

Element	IPRO 397	IPRO 497
Team composition	Faculty supervised pods comprised of 2 teams of 5-6 students each.	Faculty supervised team of 12 students (on average)
Faculty	6 faculty representing 3 different colleges	Typically 1, sometimes 2-3
Objective: Teamwork	Didactic approach (2-3 lectures) to teamwork accompanied by applied experience	Didactic approach (1-2 lectures) to teamwork accompanied by applied experience
Objective: Ethics	Didactic approach (2-3 lectures) accompanied with discussion and activities, NIH training on human-subjects research	One discussion/activity facilitated by the Center for the Study of Ethics in the Professions (CSEP).
Objective: Leadership	Supervised and mentored by instructor; weekly leadership meetings for team leaders to discuss practices	Supervised and mentored by instructor
Objective: Communication	Didactic approach (3 lectures) on communication accompanied by applied experience	Applied experience
Project focus	Largely abstract and undefined until midterm; students define an interdisciplinary problem through research and engage in the early stages of solving it.	More concrete and well defined; the problem has been previously defined
Assessment and evaluation	Standardized across individual and team components	Instructor decides how structured course assessment and evaluation will be; highly varied
Team activities	All students within the team engage in all activities	Students typically subdivided into smaller groups to accomplish different components of the major task

What has been our journey in prototyping IPRO 397?

- Sponsorship
  - Motorola Solutions Foundation -- two or three years of support with various aims

  - Chamberlain Group of Duchossois Industries -- Case study in industry engagement over three semesters between IPRO 397 to 497 to 397

Assessment Plan

- ## Multi-level
  - Team
  - Individual
- ## Multi-source
  - Instructor
  - SME
  - Peer
  - Self

- ## Examples
  - Peer Performance Review (2x)
  - Team Presentation (2x)
  - EOC Ratings

Feedback

- IPRO instructor team self-evaluation
- IPRO 397 student evaluations
- IPRO NxtGen faculty feedback
- ID graduate student driving insights and conceptual solutions

Component	397 (1)	497-1st Term (2)	497-Experience (3)	397 →497 (4)
Overall Satis.*	(2,4)	(1)	n.d.	(1)
Utility of course	n.d.	n.d.	n.d.	n.d.
Design Thinking*	(2)	(1)	n.d	n.d.
Team Knowledge	n.d.	n.d.	n.d.	n.d.
Ethical Thinking	n.d.	n.d.	n.d.	n.d.
Comm. Instruction	n.d.	n.d.	n.d.	n.d.
Overall Learning	n.d.	n.d.	n.d.	n.d.
Critical Thinking	n.d.	n.d.	n.d.	n.d.
Task Conflict*	(2,4)	(1)	n.d.	(1)
Relation Conflict*	(2)	(1)	n.d	n.d.
Counterproductivity	n.d.	n.d.	n.d.	n.d.

*Mean comparisons listed in the appendices

397 is a hard class

- We spend 7 weeks doing research and framing problems

- We teach methods outside of their major

- Students receive feedback from a diverse set of stakeholders

- Culture of critique

- Structured teams and process

IPRO 397 Idea	Spring 2011	Summer 2011	Fall 2011	Spring 2012
Fall 2010				
360: Chamberlain	x		[To IPRO 397]	
361: Lego Art	x		x	x
362: MORE Life	x		x	
363: Language Link	x		x	
364: Ramovation	x	x	x	x
365: Simply Park	x		x	
Spring 2011				
359: BRITE Table				x
366: Repurposing Containers			x	x
367: Test4Life			x	
369: Disease Modeling			x	
Fall 2011				x
371: Inqu				x
372: Global Design Exchange				x
TOTAL	6	1	8	6

Recognition

- IPRO 497 spinoffs from IPRO 397 achieve successes
    - IPRO 360 Aging in Place -- sponsored by Chamberlain Group of Duchossois Industries, framing problem spaces, inspiring insights with opportunity for innovation and value creation
    - IPRO 361 LegoArt – developed STEM modules being transferred to after school programs
    - IPRO 362 MORE Life: Mobile Bacteria-Resistant Surgical Tent -- participated in two business plan and idea competitions
    - IPRO 364 Ramovation: Renovation of the Ramova Theatre -- YouTube video on WBEZ, Chicago Tribune, University of Chicago's "Chicago Weekly", Ramova included on Preservation Chicago's list of endangered landmarks
    - IPRO 366 Recycling Plastic Bottles -- created awareness about plastic bottle recycling and energized schools and parents to change behavior
    - IPRO 372 Global Design Exchange -- advancing to build a trade school model program in Mexico
- National Academy of Engineering selects IIT's IPRO Program as one of 30 national model engineering education programs that infuse real world engineering experiences

Benefits of offering IPRO 397 as a permanent option

- Taps and cultivates student creativity and incubates ideas in a structured fashion with outcomes that can lead to IPRO formation

- Offers design process and methods that can be transferred to subsequent IPRO projects and other courses

- Accommodates students who enjoy and succeed through a more guided learning experience

- Serves a large proportion of students that is scalable through a consistently delivered approach

- Exposes students to professional perspectives from a diverse faculty team

- Capitalizes on open collaborative space that emulates that of the innovation-driven workplace

Conclusions and Recommendations

- IPRO 397 experience fulfills the IPRO learning objectives that is highly compatible with students progressing to an IPRO 497 team (whether their own or others)

- IPRO 397 offers structured option for students to create IPRO projects via a collaborative innovation process

- IPRO 397 establishes interprofessional user-centered design as a learning framework that adds value to the IPRO experience
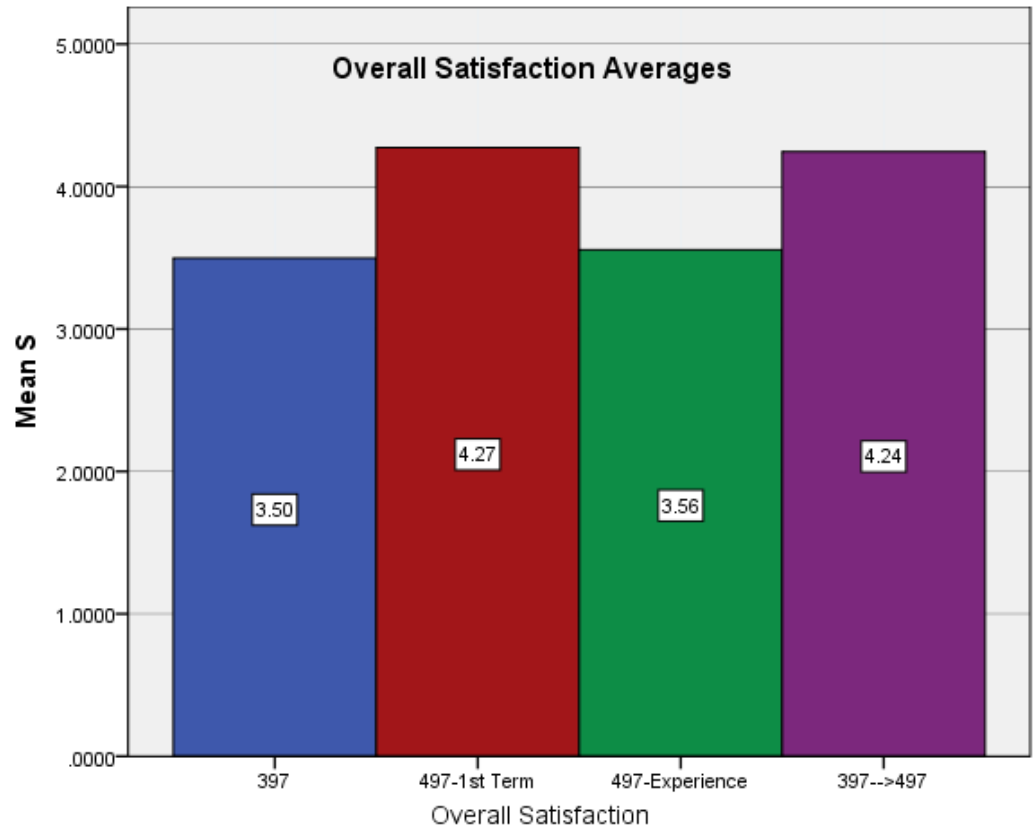
Thank you for your time.

May we have your questions?

APPENDICES

Overall Satisfaction

Faculty teaching IPRO 497 provided insight into some of the reasons for this finding. Experienced students in IPRO 497 carry the majority of the project work where the new students carry much less. Students enter the program expecting an easy experience only to find that their first semester is easy, but the following semesters are more difficult.

Students in 397 enter into a more abstract setting where they learn skills taught outside of their major. Though uncomfortable at first students learn to use these skills in the subsequent semester.


Overall Satisfaction Averages

Utility

No differences found

Overall Utility Averages

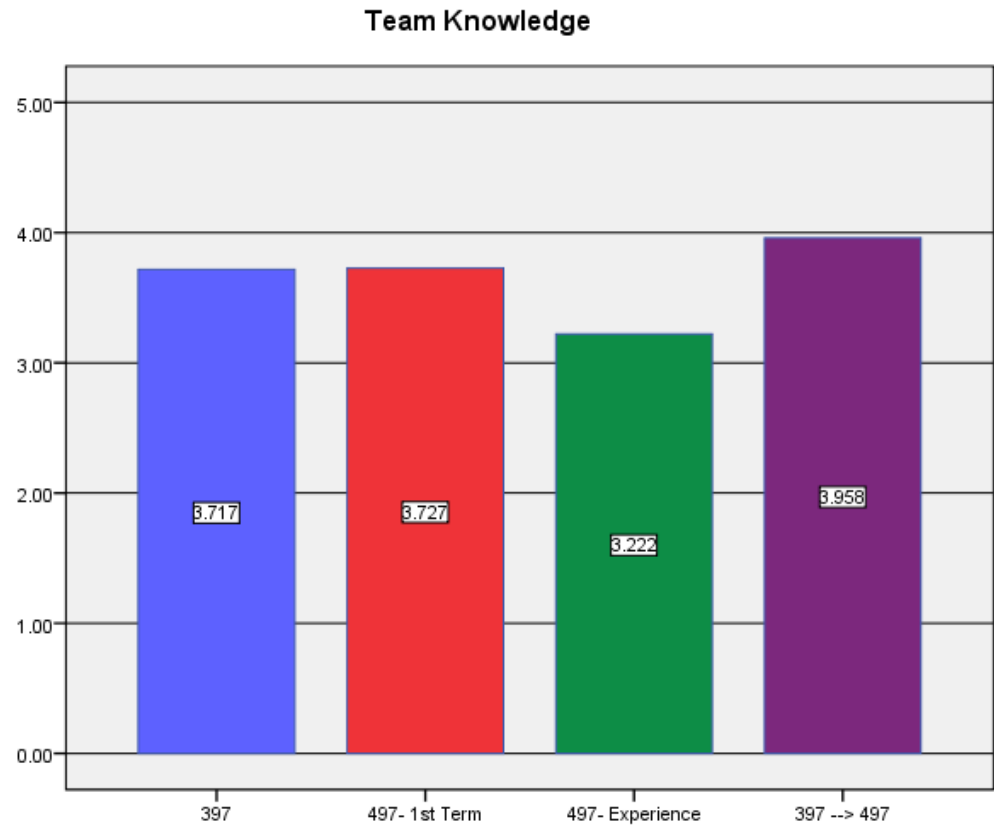|			
3.46	3.94	3.50	4.02
397	497-1st Term	497-Experience	397-->497

Overall Utility
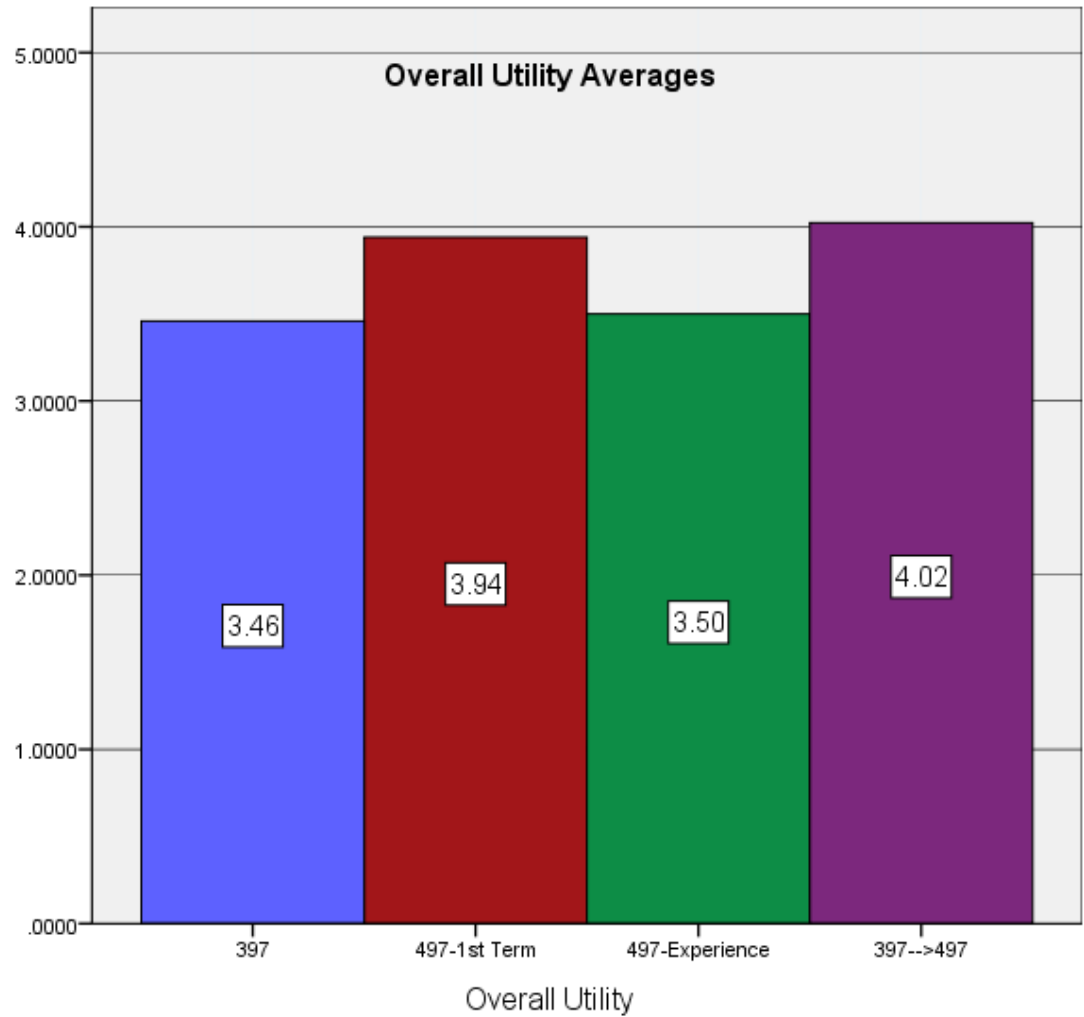
Design Thinking

Students go through more activities oriented around design concepts than students in their first IPRO 497 experience. As a result they move on with more experiences in brainstorming, prototyping, and ideation
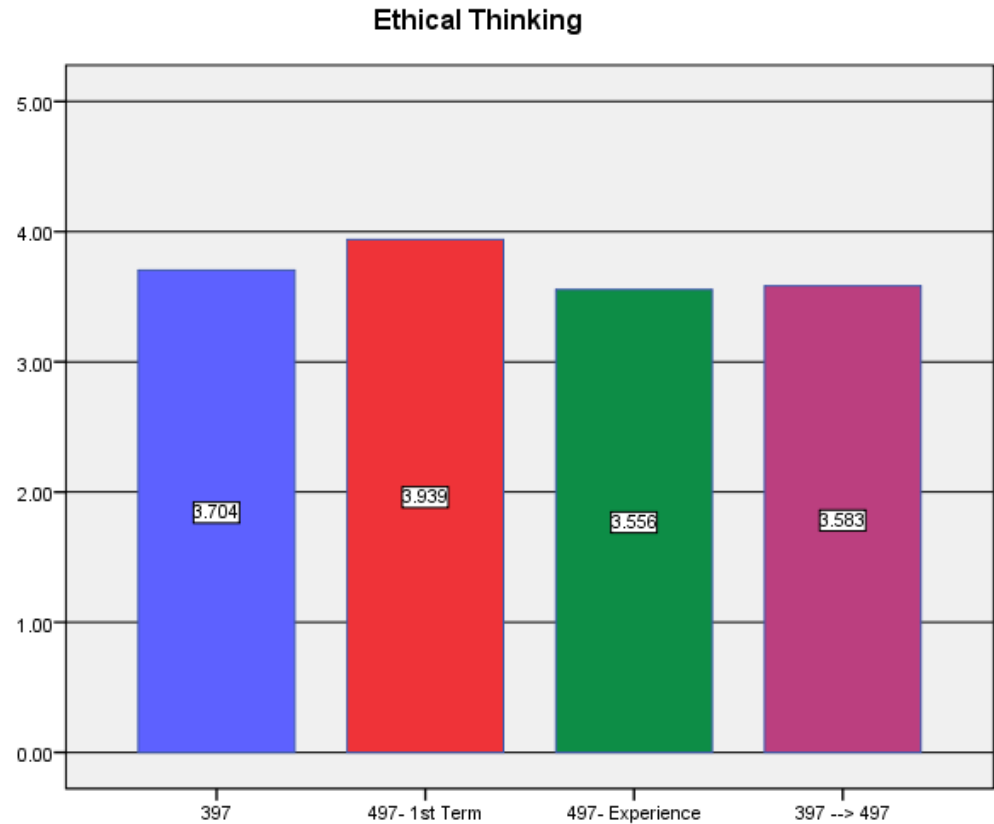

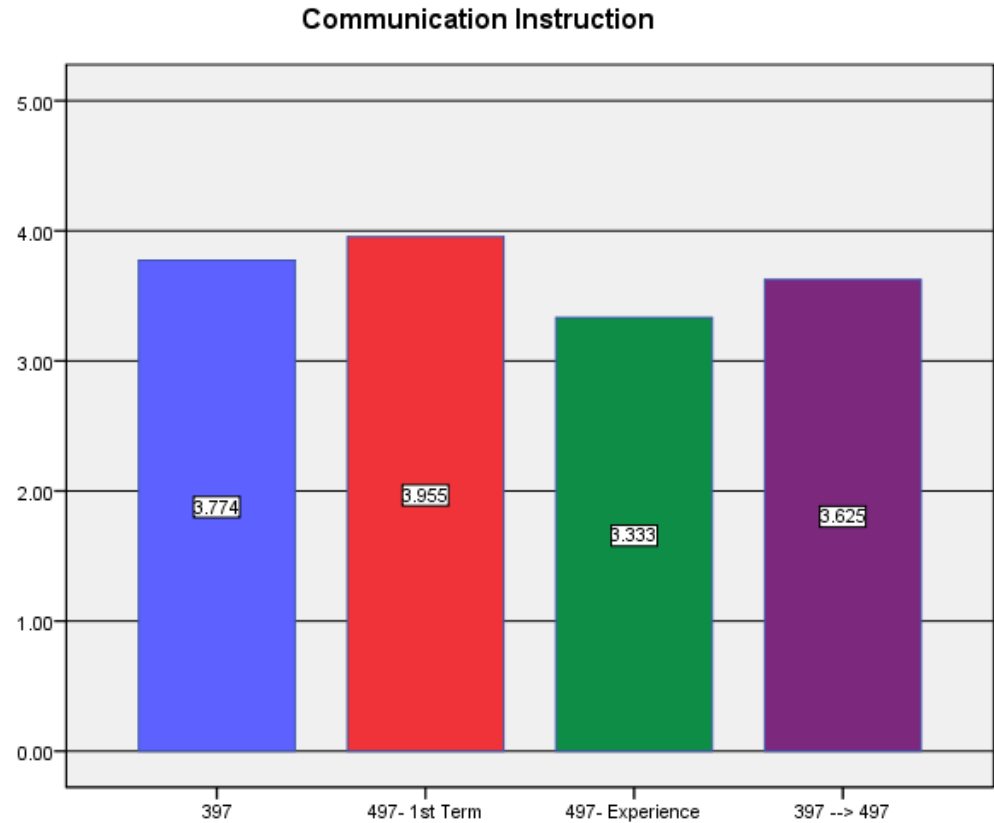Design Thinking
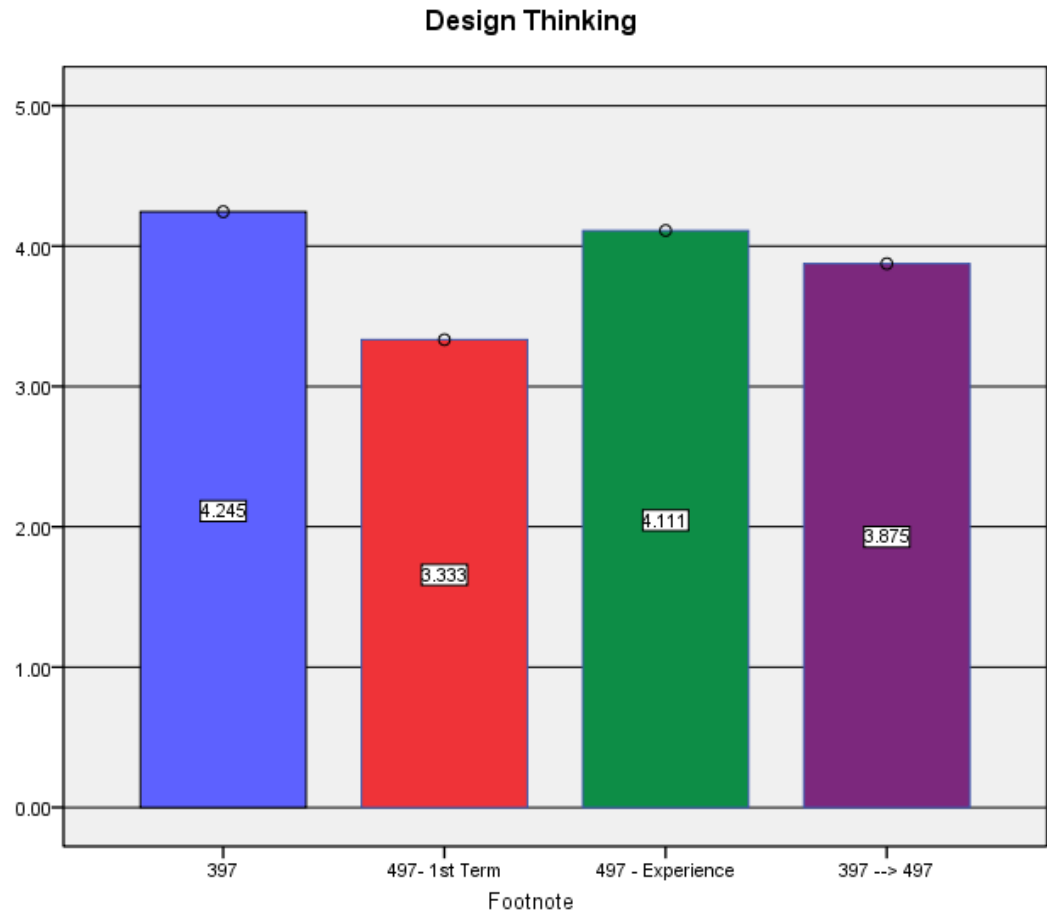
Team Knowledge

No differences found

Team Knowledge

Ethical Thinking

No differences found

Ethical Thinking

Comm. Instruction

No differences found

Communication Instruction

Category	Value
397	3.774
497- 1st Term	3.955
497- Experience	3.333
397 --> 497	3.625

Overall Learning

No differences found

Overal Learning Activities

|	397	497- 1st Term	497- Experience	397 --> 497
Value	3.791	3.659	3.521	3.719
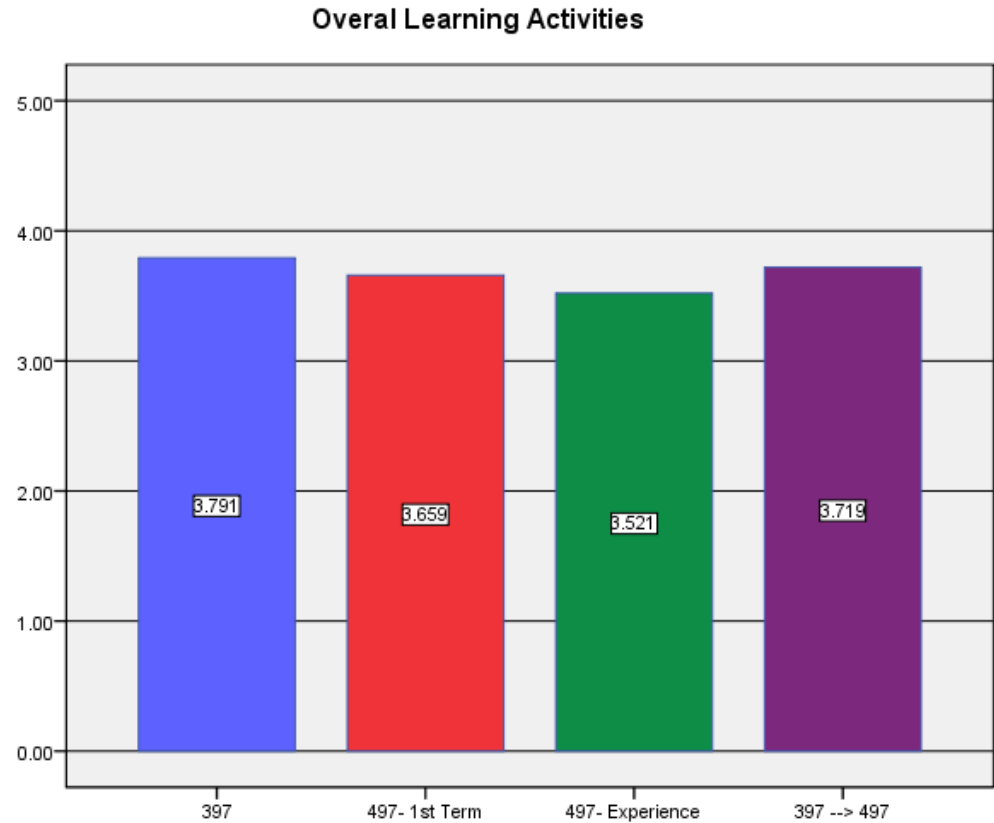
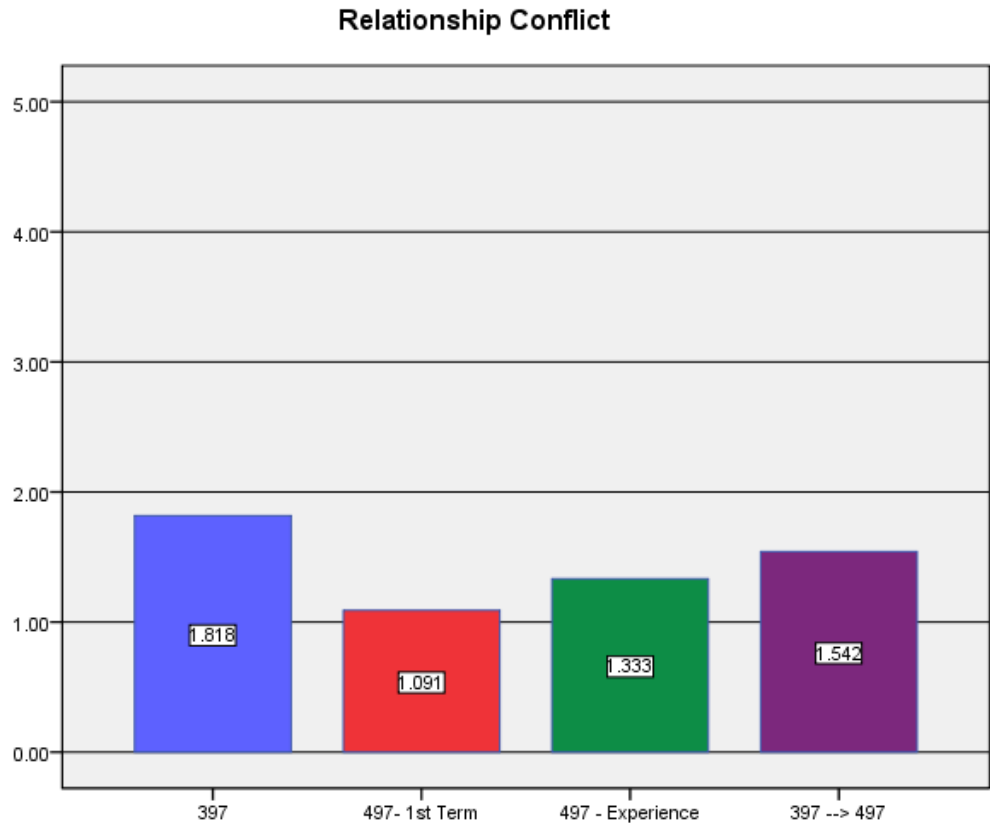# Critical Thinking

No differences found
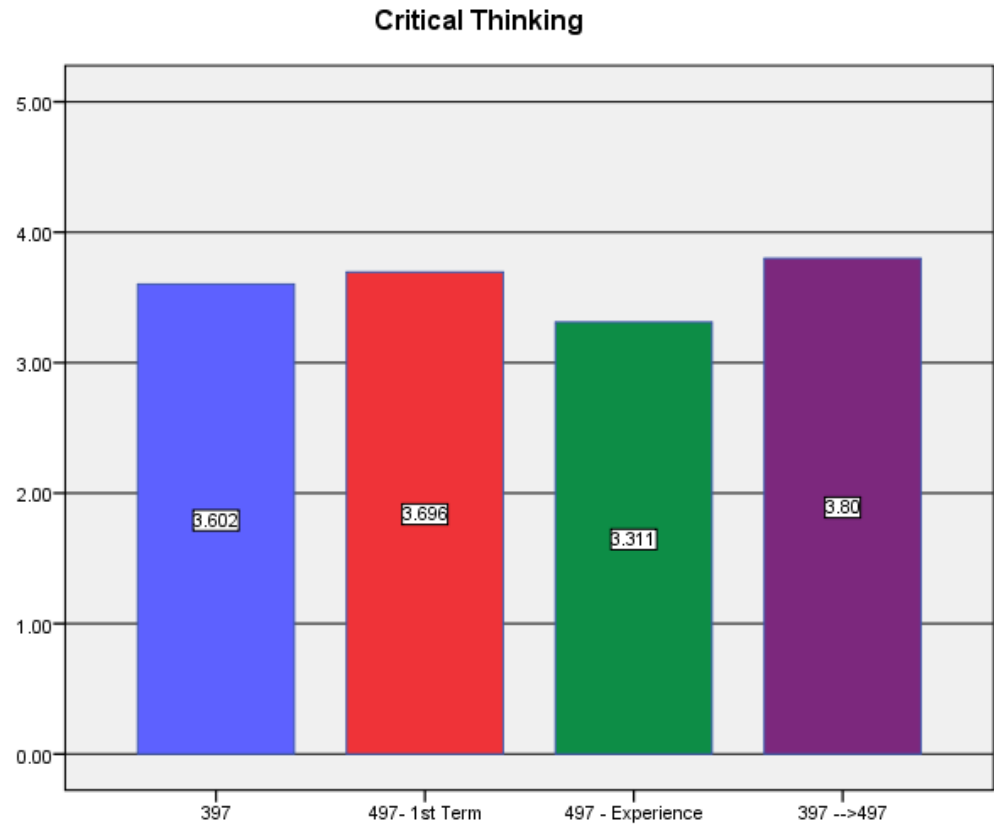
Task Conflict

Task-based conflict is encouraged in IPRO 397. Students are taught that conflicts of ideas are healthy for project development.

On the other side, individuals who have not taken 497 may hold a stigma toward conflict (i.e. all conflict is bad), so it may be discouraged. Likewise, those students who move from 397 to 497 may be changing their conflict behaviors to accommodate the faculty and other students who discourage idea-based conflict. Therefore, they engage in their behaviors less frequently. Similarly, many of the major decisions regarding the direction and purpose of the project have already occurred during the team's time in IPRO 397.

Task Conflict

	397	497- 1st Term	497- Experience	397 --> 497
	2.639	2.091	2.111	2.00
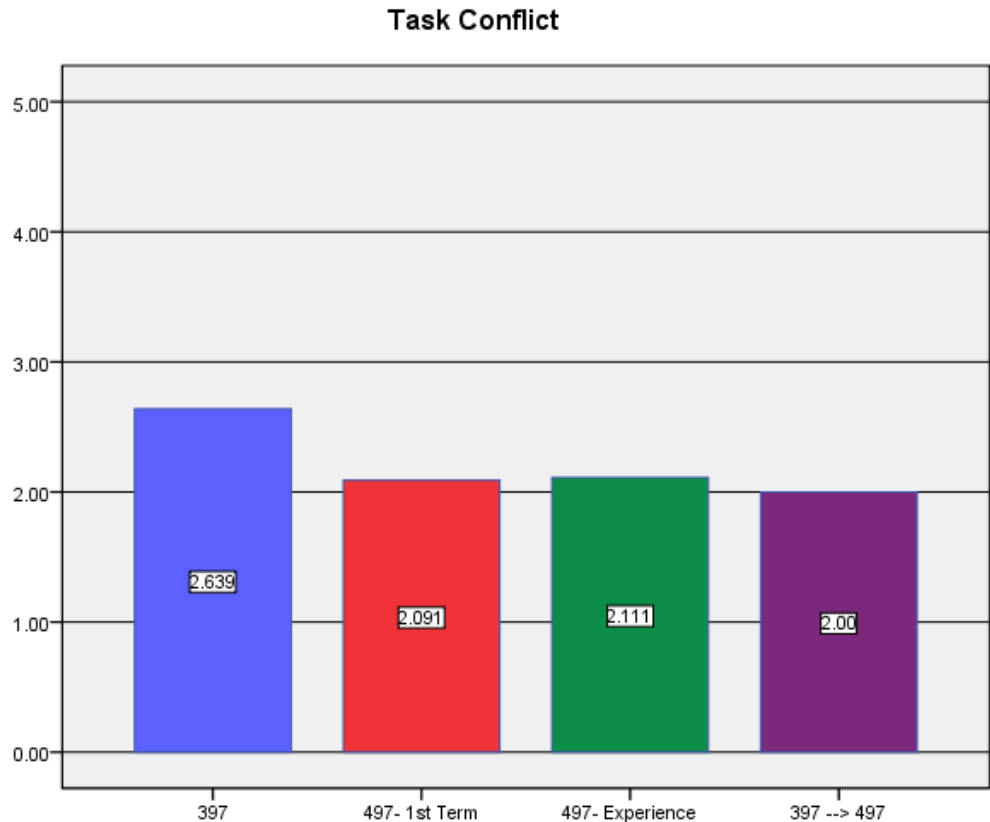
Rel. Conflict

The difference in relationship conflict between 397 students and first time 497 students may occur because of differences in familiarity. Students in IPRO 397 come into the course not knowing many people in a class of 50, and they are assigned to work with people from different majors. Therefore, it is unlikely that they will know their team members. Students in IPRO 497 may sign up to work with their friends, so it is more likely that their teammates will not be strangers.

Relationship Conflict

Category	Value
397	1.818
497- 1st Term	1.091
497 - Experience	1.333
397 --> 497	1.542

Counterproductivity

No differences found

Counterproductive Team Behaviors

Category	Value
397	1.576
497- 1st Term	1.202
497- Experience	1.815
397 --> 497	1.597