Project-Based Learning in IT Skill Development

The Importance of Project-Based Learning in IT and Web Design

Bianca Thomas

The Problem

Most IT courses are taught from the books and not taught in a way for students to identify the problem, to collaborate, to design/develop a prototype, and to get feedback.

The Solution

To have students and professors use the pedagogical approach as in interactions between students and professors where professors can have students to define the problem, generate ideas, prototype solutions, and test to where they can use project–based learning in a classroom setting.

Conclusion

Schools are moving towards Project-Based Learning. Developers really need to work in teams to learn how to use each other skills to create a project.

Research Plan

It's a website that will tackle a little bit on how traditional learning with IT Skill Development doesn't engage with every learning style and how Project-Based Learning help focus on kinesthetic (learning by carrying out physical activities), linguistic (learning by speaking), auditory (learning by listening), and visual (learning by seeing).


UX INTERVIEW

UX Interview

What are the problems with IT 106?

- If students are attempting the problems in class it's easy to know who is falling behind and who is on track
- There should also be pairing with other classmates because they can benefit by learning from one another

UX Interview

- Students have their own strategy and analogies where they can apply what they learned
- Professors can give quizzes and projects after students work together
- College should be more of a flow and not a one-size fit all environment

Alex Mbaziira
Married
Assistant Professor at Marymount University
Fairfax, VA

Goals

- Upbeat Hard Worker
- Career Driven
- Likes to see students succeed
- Encourager
- Motivator

Frustrations

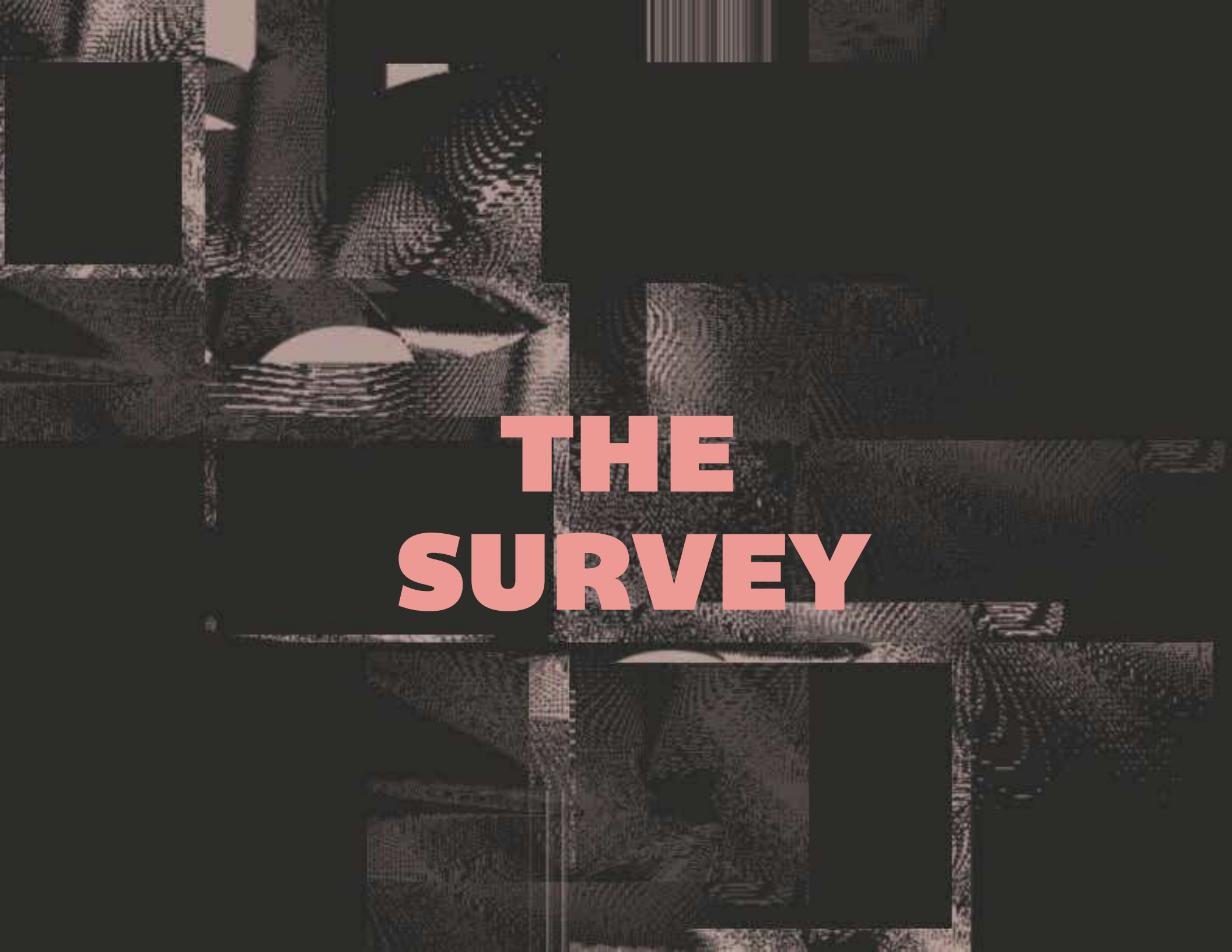
- Student Stress
- High fail rate in the IT department
- One-size fits all

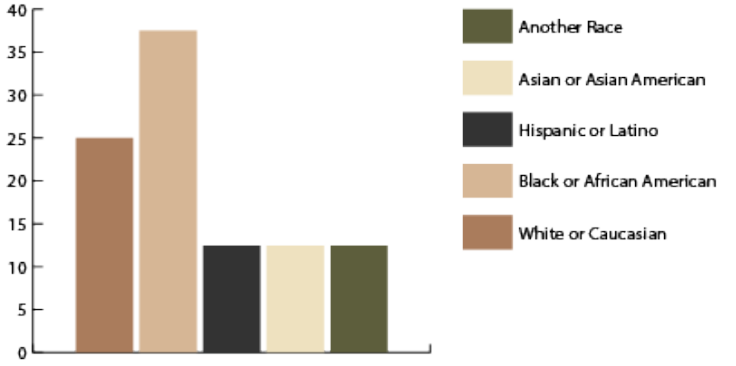
Persona

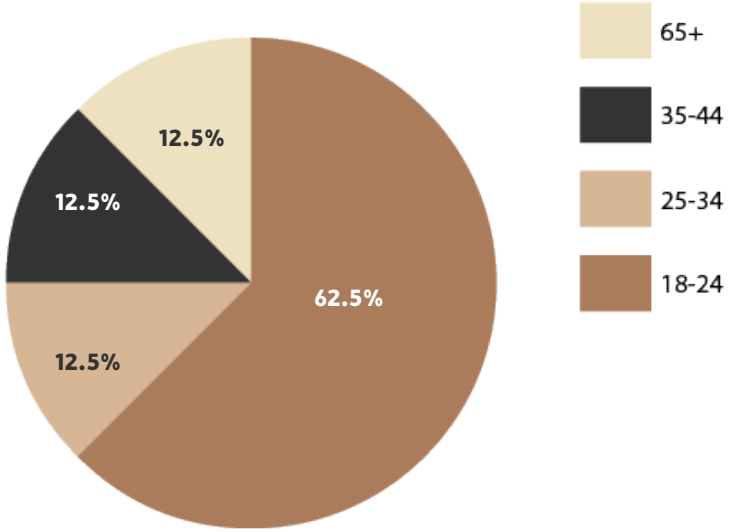
Alex is an Assistant Professor at Marymount University. He is also a professor at George Mason University.

Alex is researching in the following areas: cyber threat analysis, cyber-crime, natural language processing, applied machine learning, and deception-detection.

His way of teaching encouraged me to declare a minor in graphic design (then I later changed it to web design). I realized that his method of teaching helped me understand the fundamentals of web design. I've known Alex for a couple of years. He was my lab professor at the Volgenau School of Engineering here at Mason for Multimedia and Web Design.

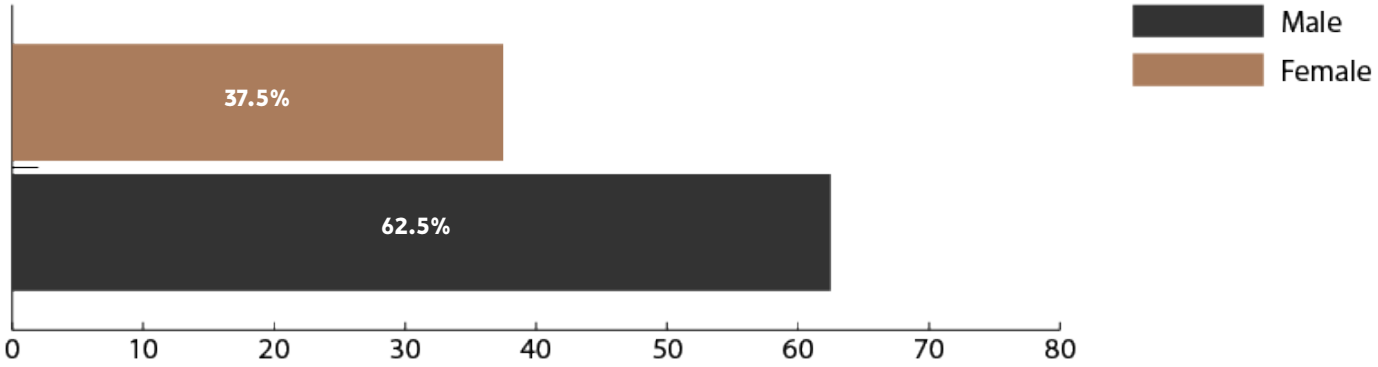

THE
SURVEY



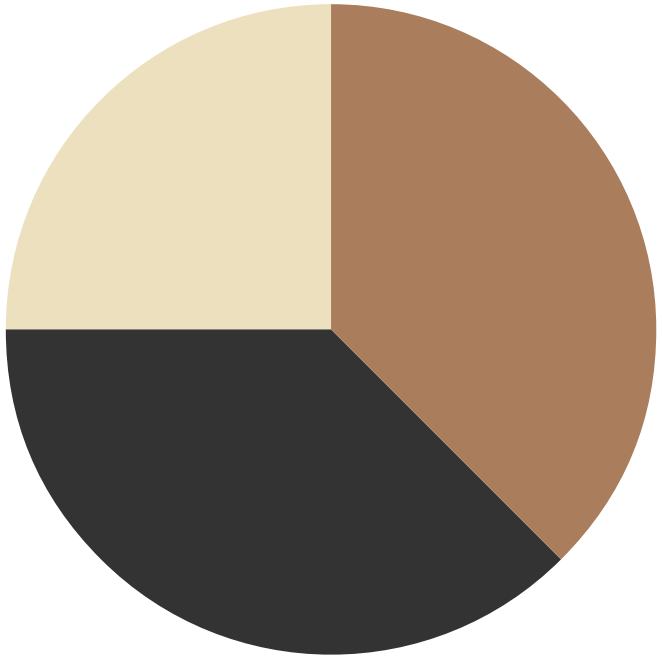


- White/Caucasian – 25%
- Black/African American – 37.5%
- Hispanic/Latino – 12.5%
- Asian/Asian American – 12.5%
- Another Race – 12.5%

DEMOGRAPHICS

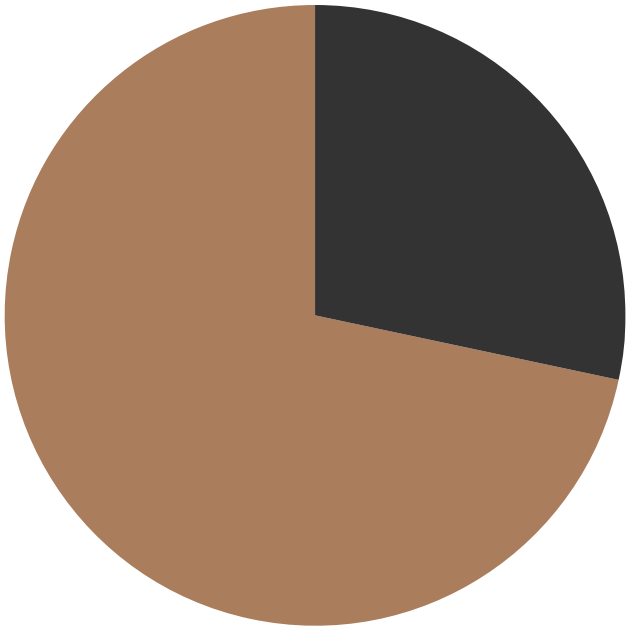


Should IT 106 (Introduction to IT Problem Solving Using Computer Programming – Java Version) be an experimental learning course?



- Strongly Agree – 37.5%
- Agree – 37.5%
- Neither Agree nor Disagree – 25%

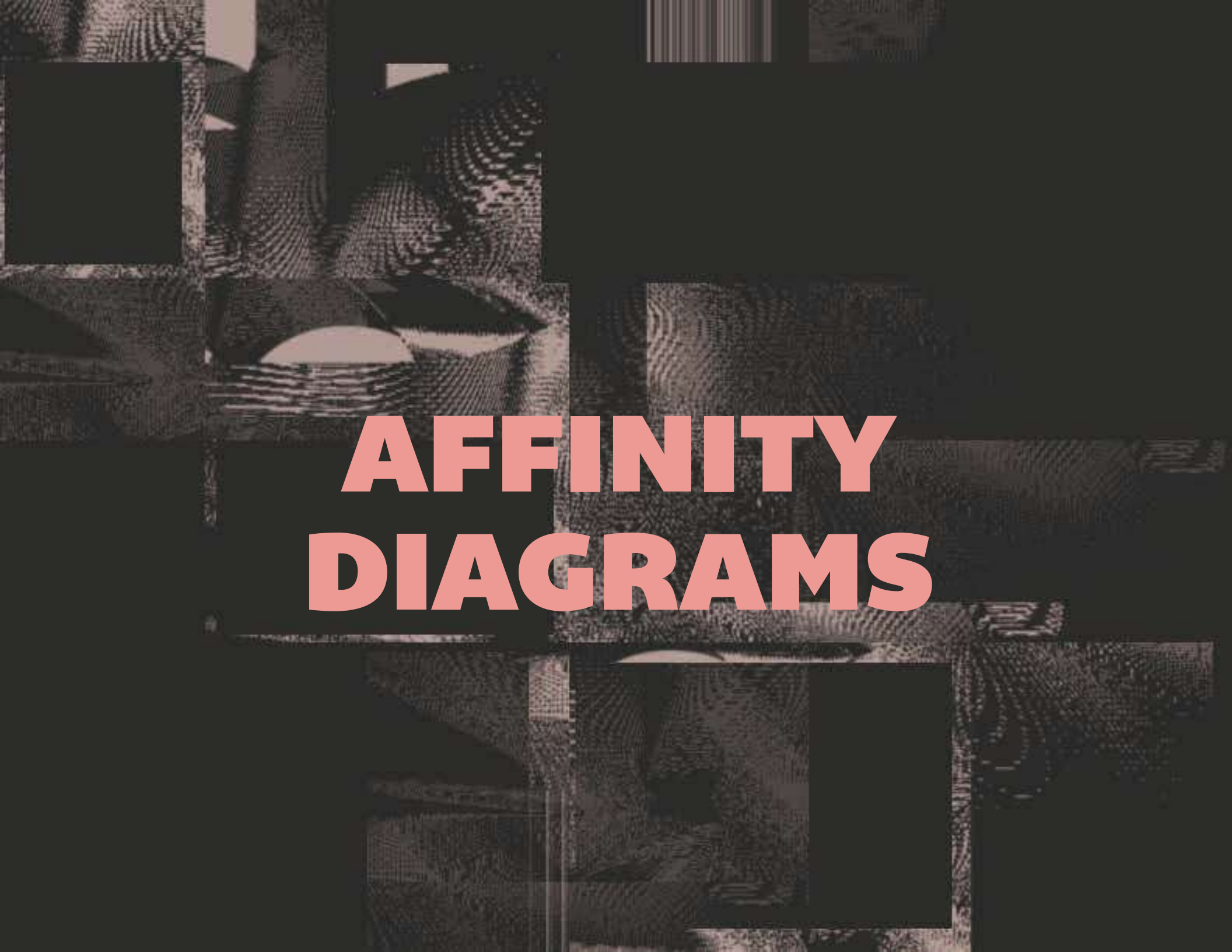
Do you think you would gain more from an experimental learning or traditional course in IT 106? If so, state your reason.

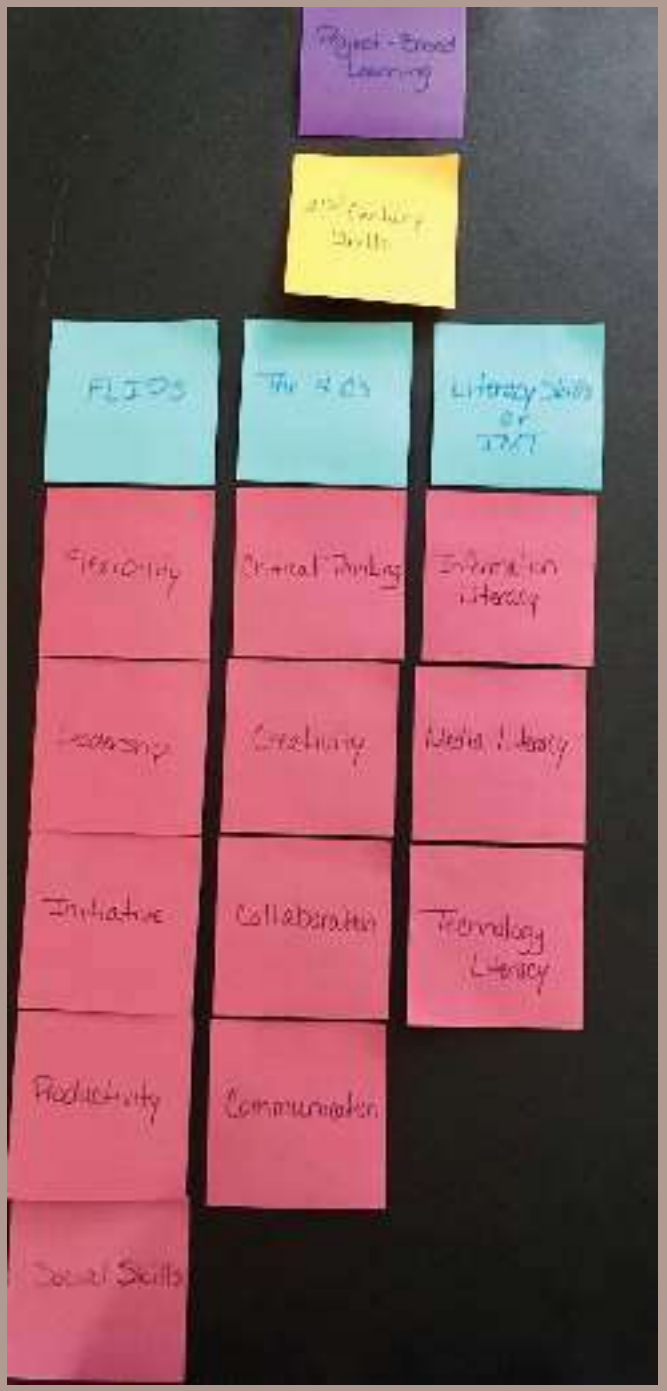


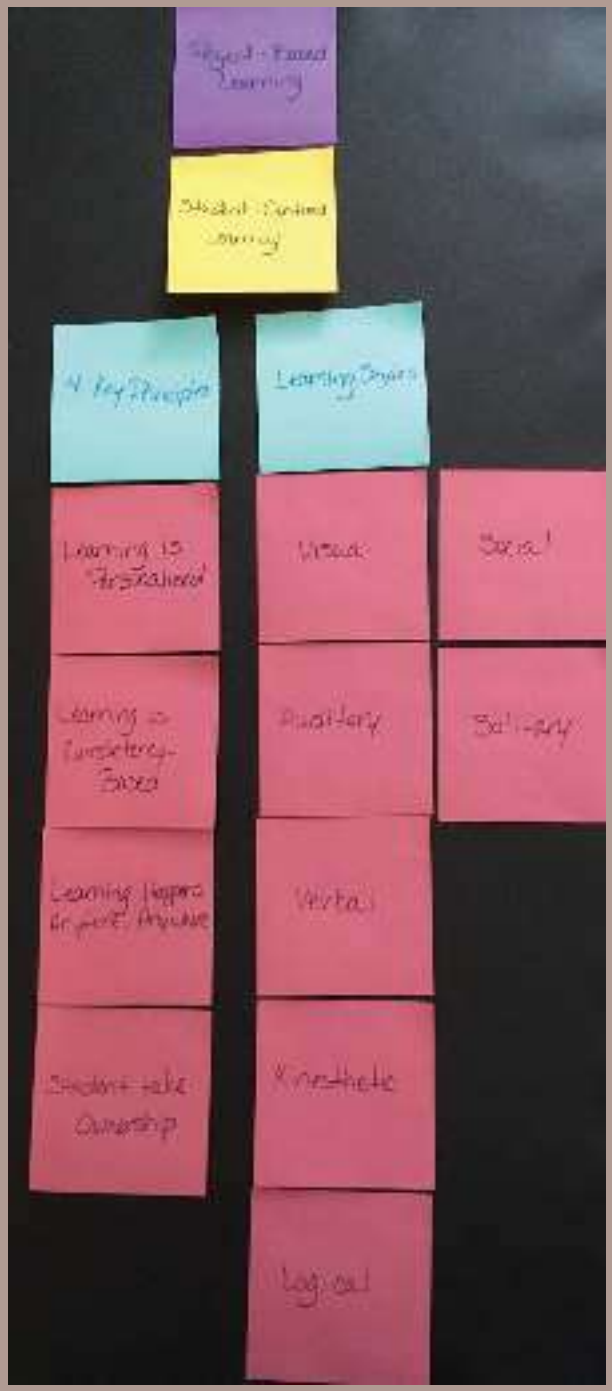
Experimental Learning

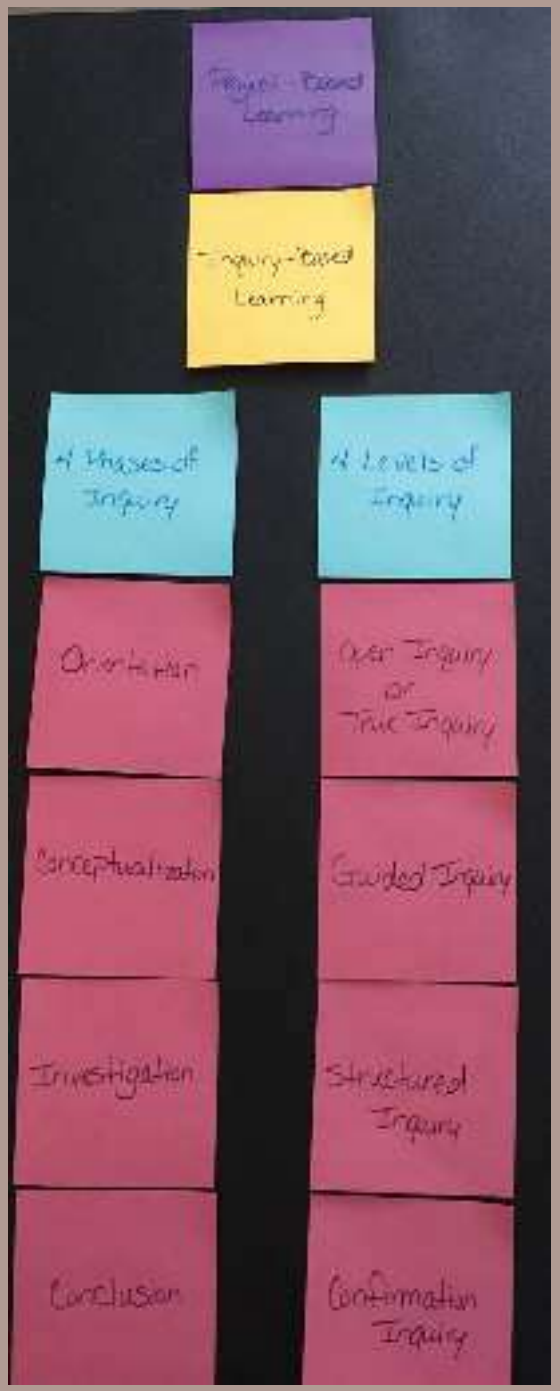
Traditional Learning

- Experimental Learning – 71.43%
- Traditional Learning – 28.57%


AFFINITY
DIAGRAMS


Project-Based Learning
21st Century Skills
FLIPS
The 4 Cs
Literacy Skills or ICT
Flexibility
Critical Thinking
Information Literacy
Leadership
Creativity
Media Literacy
Initiative
Collaboration
Technology Literacy
Productivity
Communication
Social Skills


Project-Based Learning
Student-Centred Learning
4 Key Principles
Learning Styles
Learning is Personalised
Learning is Mastery-Based
Learning Happens at your Pace
Student take Ownership
Visual
Auditory
Virtual
Kinesthetic
Logical
Social
Solitary


Project-Based Learning
Inquiry-based Learning
4 Phases of Inquiry
4 Levels of Inquiry
Orientation
Conceptualization
Investigation
Conclusion
Open Inquiry or True Inquiry
Guided Inquiry
Structured Inquiry
Confirmation Inquiry


Project-Based Learning
Bruner's Discovery Learning Theory
The 7 Elements of Digital Literacies
The Joy of Learning and Independence
A Greater Sense of Personal Responsibility
Enhanced Problem-Solving Skills
Increased Motivation
Communication & Collaboration
ICT Literacy
Digital Scholarship
Media Literacy
Career & Identity Management
Learning Skills
Information Literacy

Competitive Analysis

Universities	Teams	Labs	Goals
RIT	Yes	Yes	To introduce students to Engineering Problem Solving (EPS)
MIT	No	Yes	To teach students the basics of Java Programming
Caltech	No	Yes	To show the fundamentals of Java Programming
	No	Yes	This course prepares students to program stand-alone applications
	No	No	Introduces students to software testing

Content Strategy

My target audience are professors and students. I am trying to engage to professors as to why project-based learning is more beneficial to students who are struggling the traditional way with some of the IT courses at George Mason University.

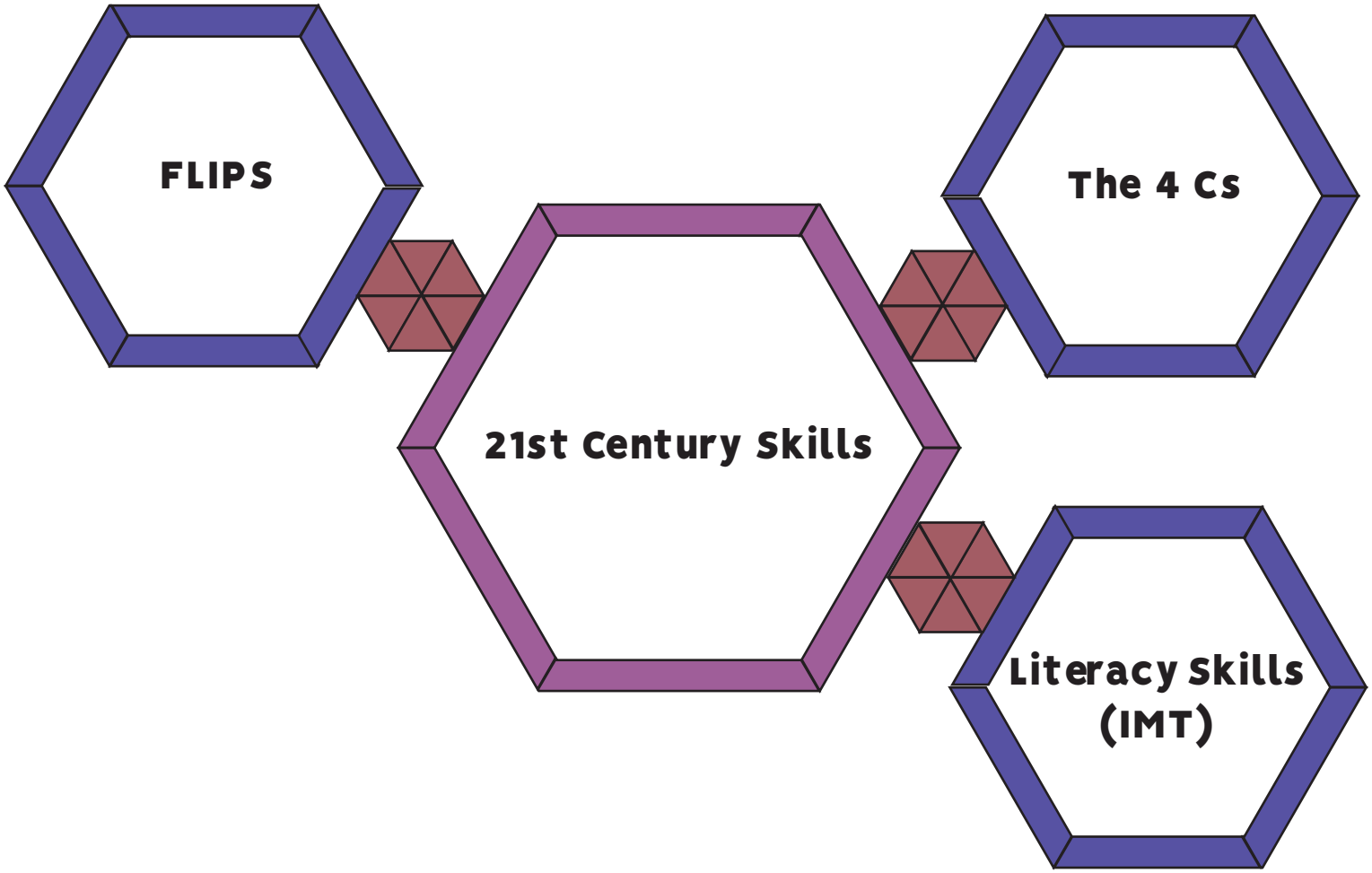
I want to show examples of project-based learning and how effective it is with 21st century skills. There is a breakdown of the 21st Century Skills components which consist of Critical Thinking, Creativity, Collaboration, and Communication (The 4 Cs), Information Literacy, Media Literacy, and Technology Literacy (Literacy Skills/ IMT), and Flexibility Leadership, Initiative, Productivity, and Social Skills (FLIPS).


TASK ANALYSIS

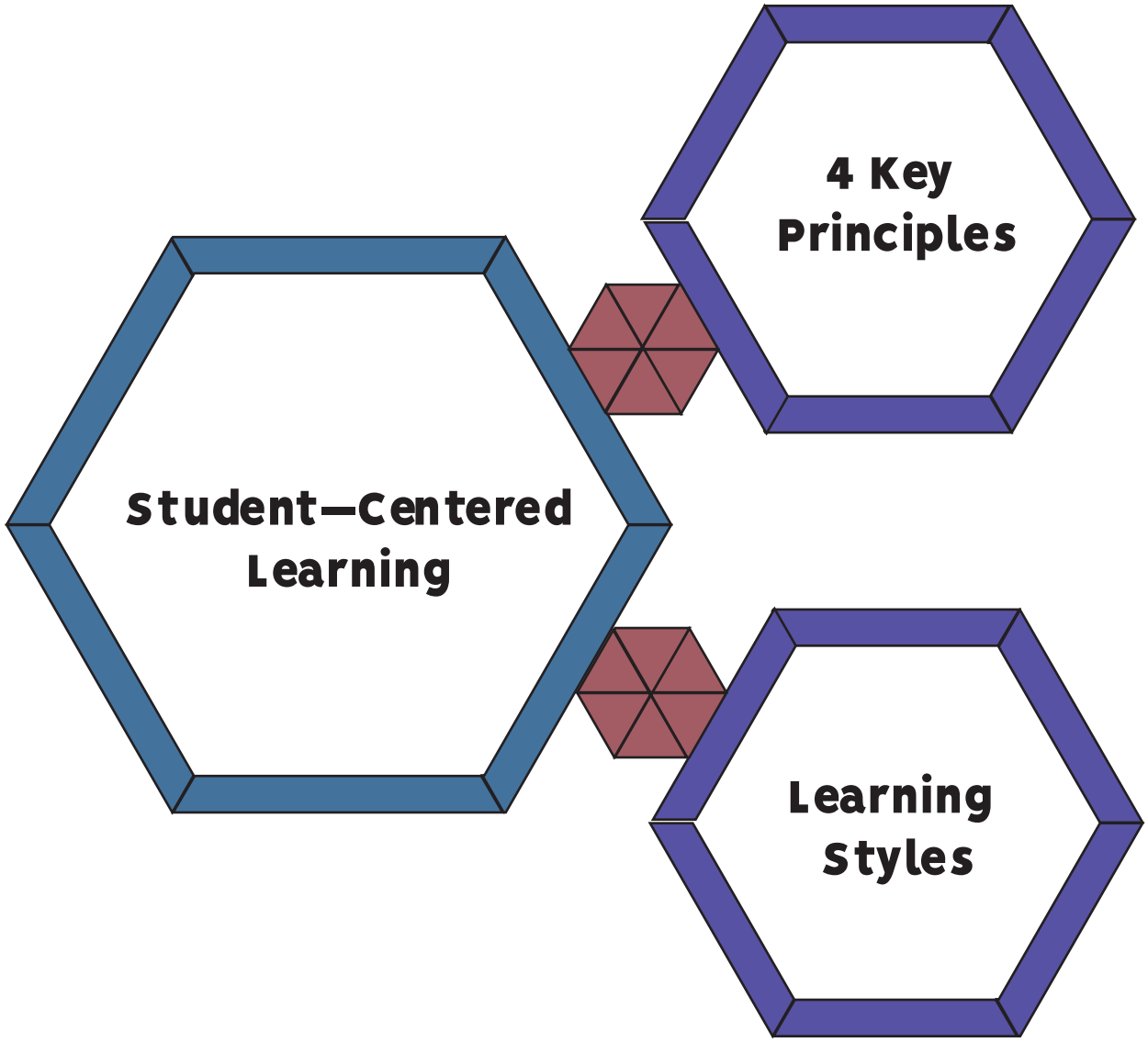

HOME
Project-Based Learning
The Problem
The Solution
Conclusion
Next Steps
Research
Survey
UX Interviews
Literature Review
Research Methods
UX Process
Persona
Content Strategy
Competitive Analysis
IA/Sitemap
Task Analysis
Wireframe
User Flow
Visual Design
Infographic
Affinity Diagrams
Infographic
Thesis Project


INFOGRAPHIC

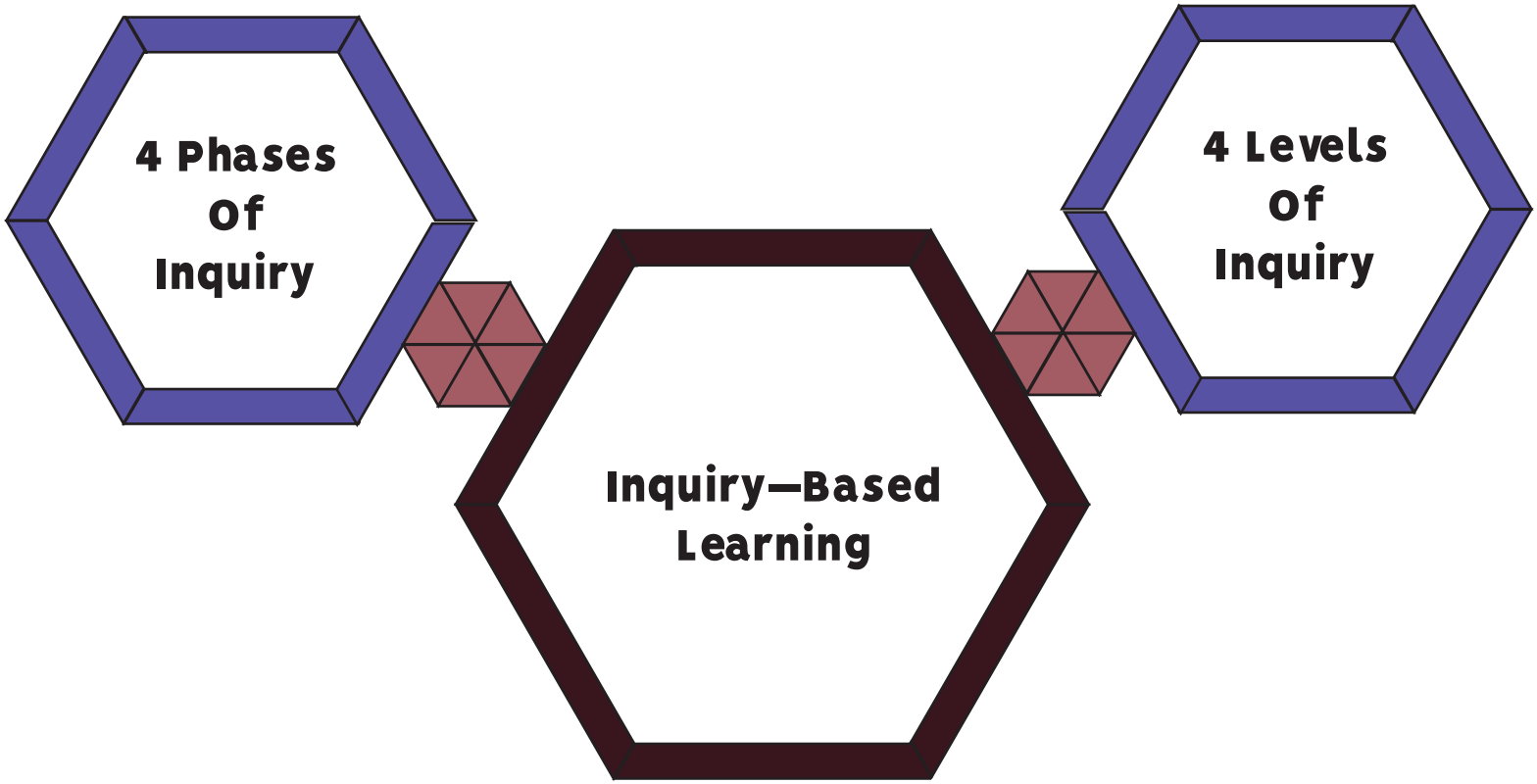
21st Century Skills



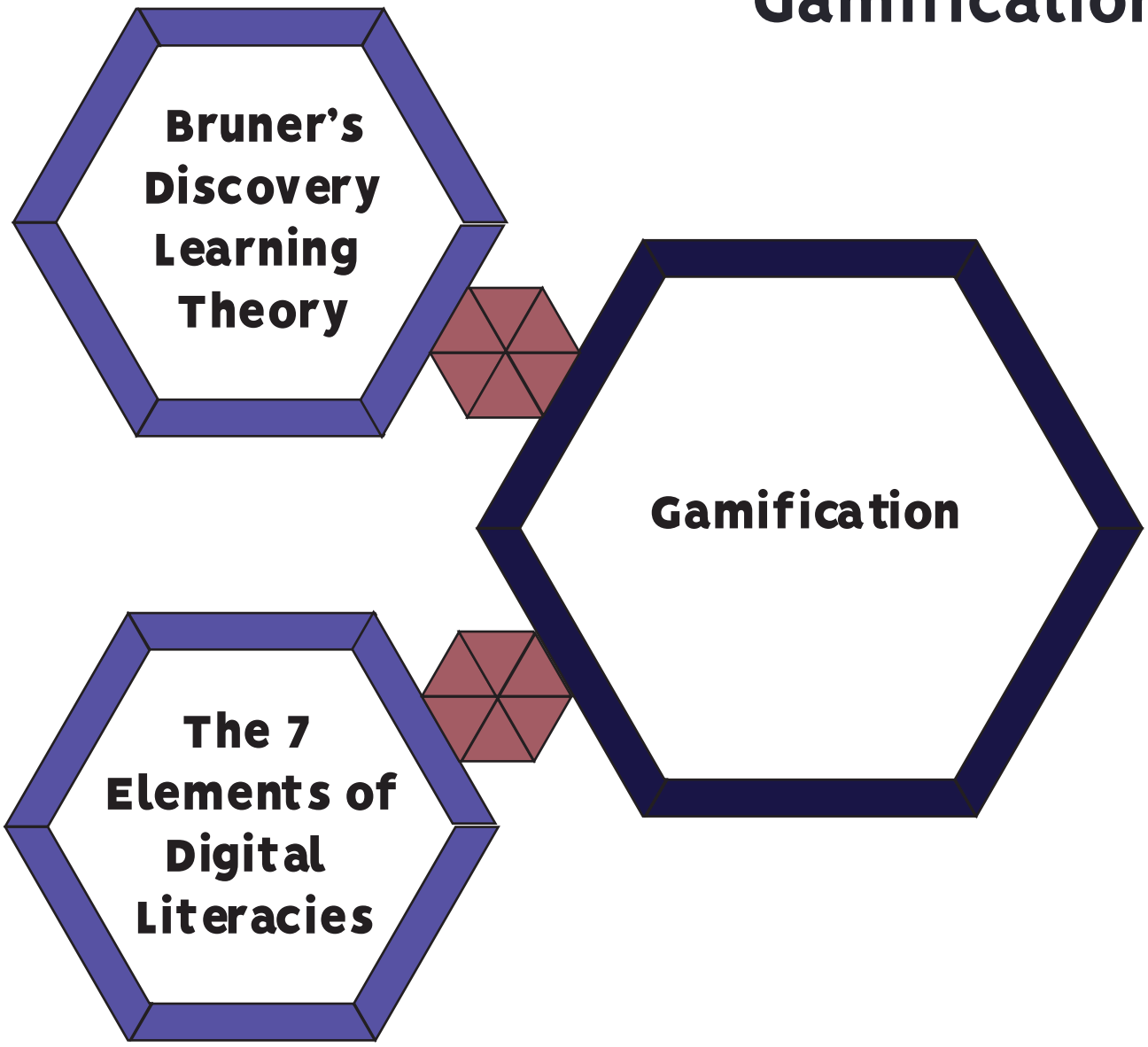
Student-Centered Learning



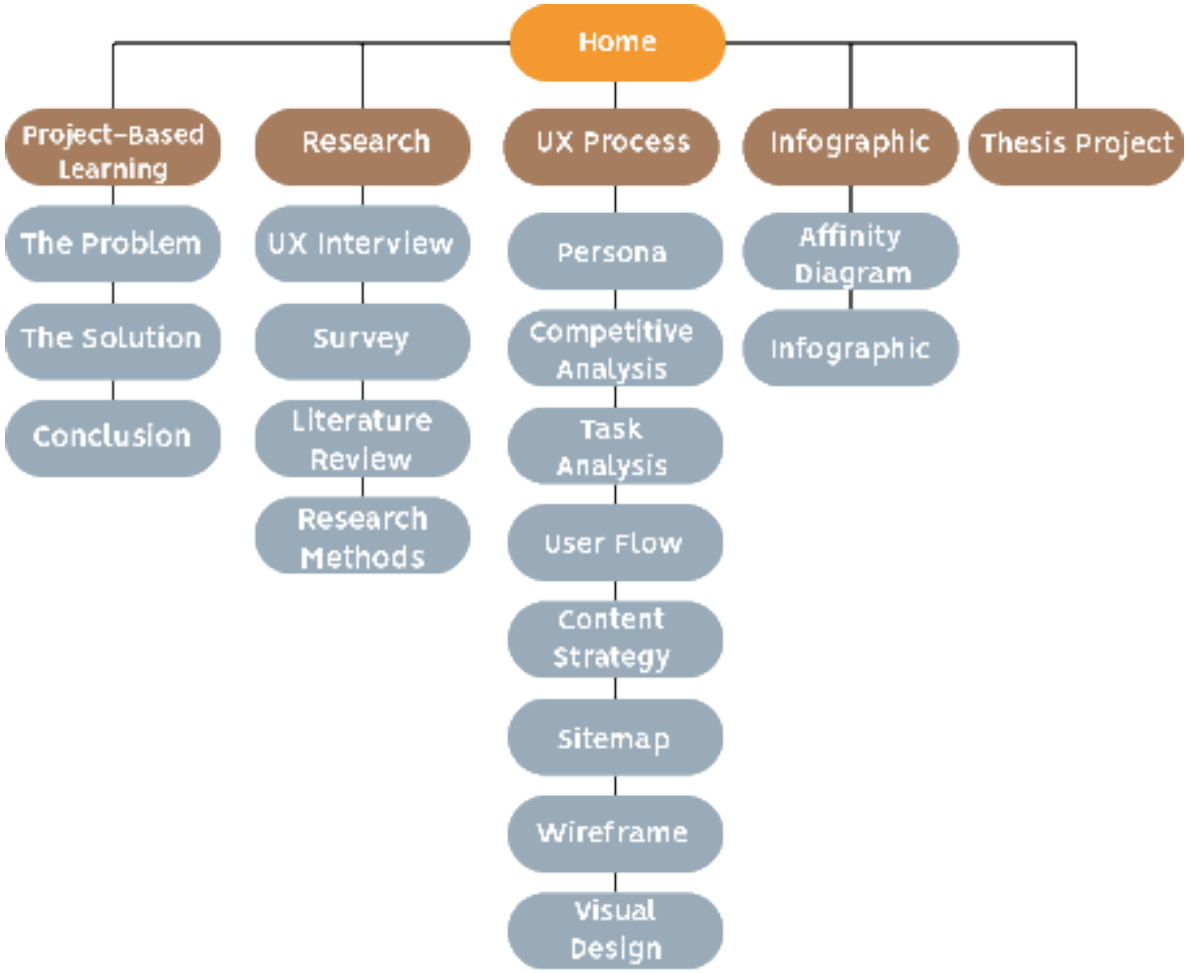
Inquiry-Based Learning



Gamification



Sitemap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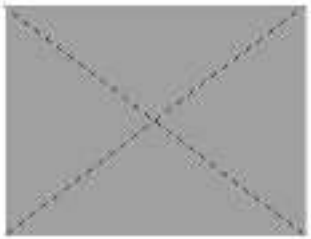
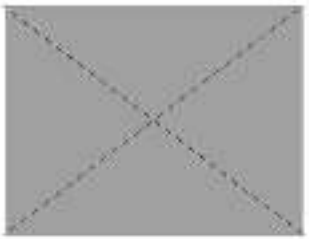
LOW-FIDELITY
WIREFRAME

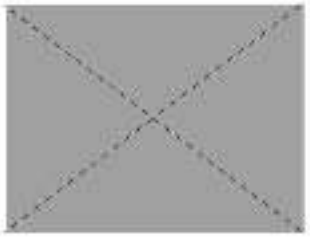
Project-Based Learning in IT Skill Development



The Problem



Task Analysis



Infographic


HIGH-FIDELITY
WIREFRAME

Project-based Learning Research UX Process Infographic Thesis Project

Project-Based Learning in IT Skill Development

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The Problem

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Task Analysis

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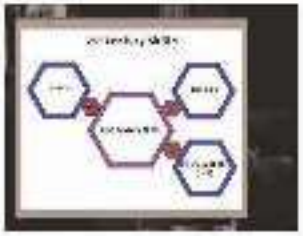
Infographic



Learning Skills
Critical thinking: Finding solutions to problems
Creativity: Thinking outside the box
Collaboration: Working with others
Communication: Talking to others


VISUAL DESIGN

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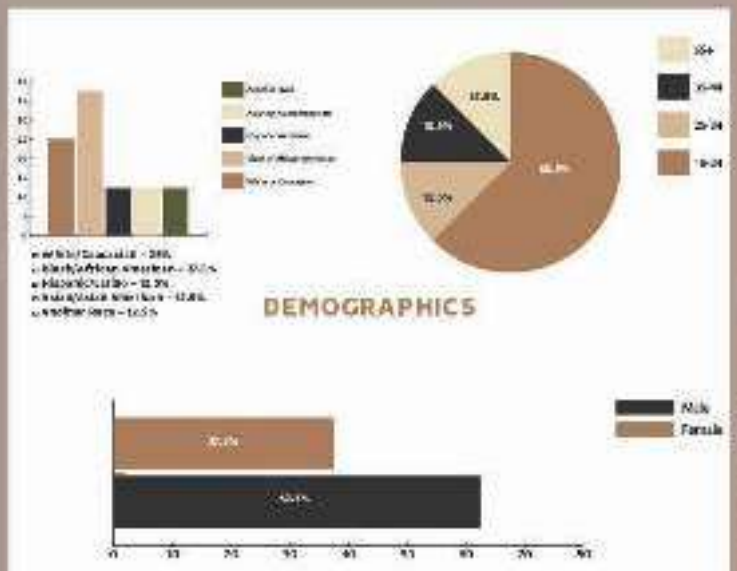

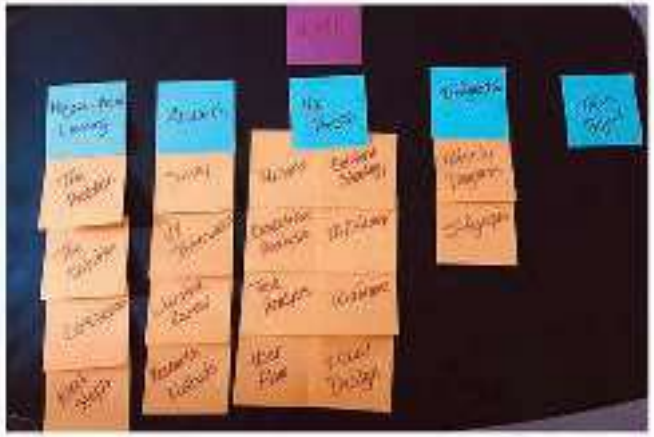


THANK YOU!