



VCU

College of Engineering

CS 25-313 Gamification of Extracurricular Participation in CS [Preliminary Design Report]

Prepared for

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Executive Summary

The Gamification of Extracurricular Participation in CS project aims to encourage student involvement within the Computer Science Department among clubs and department events by applying gamification principles. The project is meant to encourage more students within VCU's college of engineering by incentivizing proactive engagement through challenges, reward systems, and tracking participation. This initiative is designed to support current club members in strengthening their connection to the clubs while providing non-members with an accessible entry point to begin participating in extracurricular activities.

The primary objective of this project is to utilize data collected on the current participation level to develop a platform that encourages engagement within the Computer Science extracurricular department. By analyzing the involvement data and common trends seen within the student population and faculty, the platform would be tailored more towards specific aspects that would increase engagement among both club members and non-members.

To date, the team is in the phase of surveying students and faculty about the current participation trends within clubs and CS coordinated events. With this, the upcoming milestones involve developing a prototype that would tailor towards the current situation as what would encourage more involvement within the department.

The deliverable for this project would be a prototype of a gamified platform, that would acknowledge certain achievements when students have engaged with CS clubs or events and report a measurable participation rate among the activities.

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Section A. Problem Statement

The Department of Computer Science at VCU has provided on how there is a want for more participation within the student body, specifically from the Computer Science department using the idea of Gamification, surrounding the interaction with either clubs or CS related events. With students often not participating in the events available to them for reasons that we will look into. For non-membered students in our early research we can hear reasons that range from not knowing due to lack of promotion, to preconceived notions of already needing to have knowledge on the topic going on. Where for current members, we've heard the challenge lie with retaining member participation due to lack of structure, academic priorities, or limited benefits after joining.

This lack of participation presents challenges for non-members as it pertains to their lack of confidence in knowledge surrounding the notion that they should possess prior knowledge before joining certain events or clubs, causing a disconnect between them and the CS community within the school. For current members, it focuses more on sustaining their current engagement level and long-term involvement after their initial engagement. They often struggle to find continued motivation or increase levels of excitement after the initial meetings, as club activities start to lack importance when compared to other commitments, such as school and other non-CS related extracurriculars. The lack of active faculty engagement also highlights the issue of support and guidance when promoting clubs.

Gamification has been a concept used through different educational systems, in order to help see improvement in participation among their choice of study groups. It involved the usage of game design elements or patterns within an education context, commonly such as badges, rewards, leadership board... etc [3]. Our usage of gamification is to address the current issues of what students face when trying to learn about clubs and events or maintaining engagement once discovered. As it is crucial to follow appropriate educational methods and strategies, taking into account the students' knowledge, interests, unique characteristics, and personality traits [4]. Implementing specific methodologies within our design would ensure more long-term participation.

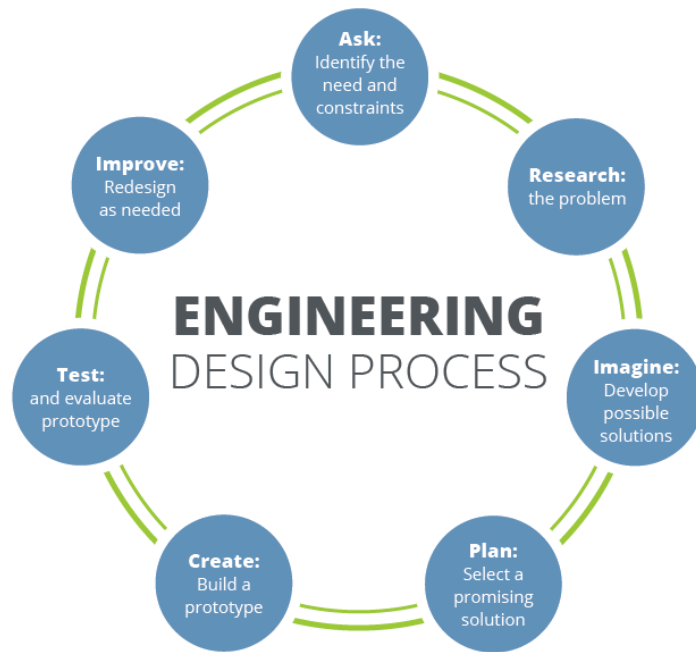


Figure 1. The iterative nature of the engineering design process [2].

Section B. Engineering Design Requirements

B.1 Project Goals (i.e. Client Needs)

The project aims to boost engagement and participation within the Computer Science Extracurricular Activities Department using gamification. By gathering data about the current CS student population, it provides insight about the current situation to see where the usage of gamification can be used to help aid in the improvement of engagement outside their course load.

- To increase participation in extracurricular activities within the CS department through gamification techniques.
- To perform interviews with both students and faculty to gather data to better understand the current situation.
 - To collect and analyze data to understand the factors affecting participation.
- To create a well formed concept statement that aligns with the objectives of increasing engagement.
- To design a prototype interface that deals with a factor limiting student engagement in extracurriculars.

B.2 Design Objectives

The Design Objectives for the project focus on creating a prototype system that helps track student involvement and increase their engagement with clubs and or events, using gamification elements that focus more on key issues in regards to the current situation based on the collected data of the students and faculty. The final design will be decided upon the observations drawn from observing the current and past situation of clubs/events like our own.

- The design will be a prototype of a user-interface that allows for the user to access their attendance during CS club meetings or events in order to track their progress.
- The design will log the number of events or club meetings attended by each student
 - Allowed to record attendance and participation data to create reports that display trends of engagement
- The design will utilize tools such as ReactNative and Figma to help prototype a display to help visualize gamification
 - Develop a simple database to log attendance data.
- Interview students, club officers, and club advisors on what is needed
- Look at previous projects of a similar capacity and take notes on what currently does and does not work.
- Adjust vision based upon the data garnered from those observations

B.3 Design Specifications and Constraints

- Design must be simple to understand.
- Design must be mobile functional.
- Design must work within the decided specifications.
- Design must integrate gamification features in a meaningful capacity.
- Design must be justified with the research done on the subject.
- Design must be well documented with an easily understood timeline.
- Design must not exceed current budget.
- Design must focus upon data collected from Computer Science related events.
- Design must incorporate UX/UI components during prototype design.

B.4 Codes and Standards

List all specific codes and standards that are relevant to the design providing specific details of each as they relate to the design. While the terms codes and standards are often used interchangeably, there are in fact important differences in their definitions that should be understood. **Standards** are documents that provide a set of technical definitions, instructions, rules, guidelines and/or characteristics of a product, process, or service meant to provide consistent and comparable results (e.g. performance requirements, dimensions, testing procedures, file formats etc.). They allow for interchangeability of components and system interoperability and are typically produced by industry or professional organizations such as ASME, ANSI, ASTM, IEEE, ISO, ACM, IAPP, AIS, etc. Standards are meant to help ensure quality, reliability, and safety.

Codes are laws or regulations that specify the methods, materials, components, etc. required for use in a certain product, process, or structure. Codes have been *codified* into a formal written policy or law and can be approved at the local (municipal), state, or federal level. While standards provide sets of guidelines, codes are constraints that *must* be met in accordance with the law. It is, however, common for codes to reference or require the use of one or more standards. Some common code producers include the EPA, OSHA, DOTs, and the NFPA. Codes help set minimum acceptable levels in order to protect public health, safety, welfare.

Codes and standards are often listed by their producer followed by an identifying numerical code. They often contain hyphens or periods which may help reference specific parts of a larger code/standard or provide the year of the latest revision. Some general examples in a list of codes and standards are as follows:

- ASME Standard No. xxx – design must consider some specific fatigue failure criteria
- IEEE Standard No. xxx – design components must not exceed some maximum current limit
- ISO Standard No. xxx – design components must adhere to some standard thread size
- OSHA Code No. xxx – operators of design must wear appropriate eye and face protection
- IRTF Standard No. xxx – design must consider internet communication protocols
- W3C Standard No. xxx – design must adhere to some HTML/CSS standards
- NIST Standard No. xxx – design must consider some specific data security standards

Note: Relevant codes and standards should be incorporated into the design specifications and constraints listed above.

Section C. Scope of Work

C.1 Deliverables

- 1 report about the current state of attendance and retention of Computer Science club members, which will include:
 - Interview data of interviewed stakeholders
 - Work Activity Affinity Diagram (preferably converted into a digital form for record keeping) organizing the various keywords and phrases gathered from the interviews.
 - Representative set of personas of major user archetypes for both clubs and events.
 - One or more usage models that show how the club/event attendance, interaction, event planning work, and barriers (one for the current situation and one for the envisioned situation)
- A list of work roles and who (Students/Members, Faculty/Advisors, Organizers) and/or what systems (Gamification features) fulfill each of these work roles
- A set of mandatory design requirements for the system that is well cited and based on existing data (these are the things that NEED to be supported, not necessarily features we'll add to enhance the envisioned experience)
- Multiple Scenarios/storyboards comparing and contrasting the current situation and the envisioned situation
- At least 3 very different conceptual designs with descriptions and justifications as to why one was chosen over the rest
- Evaluation of the finally decided upon design with accompanying data
 - 1 prototype of the user-interface
- A set of software design requirements for the system based on the design and evaluation
- A Fall design poster.

C.2 Milestones

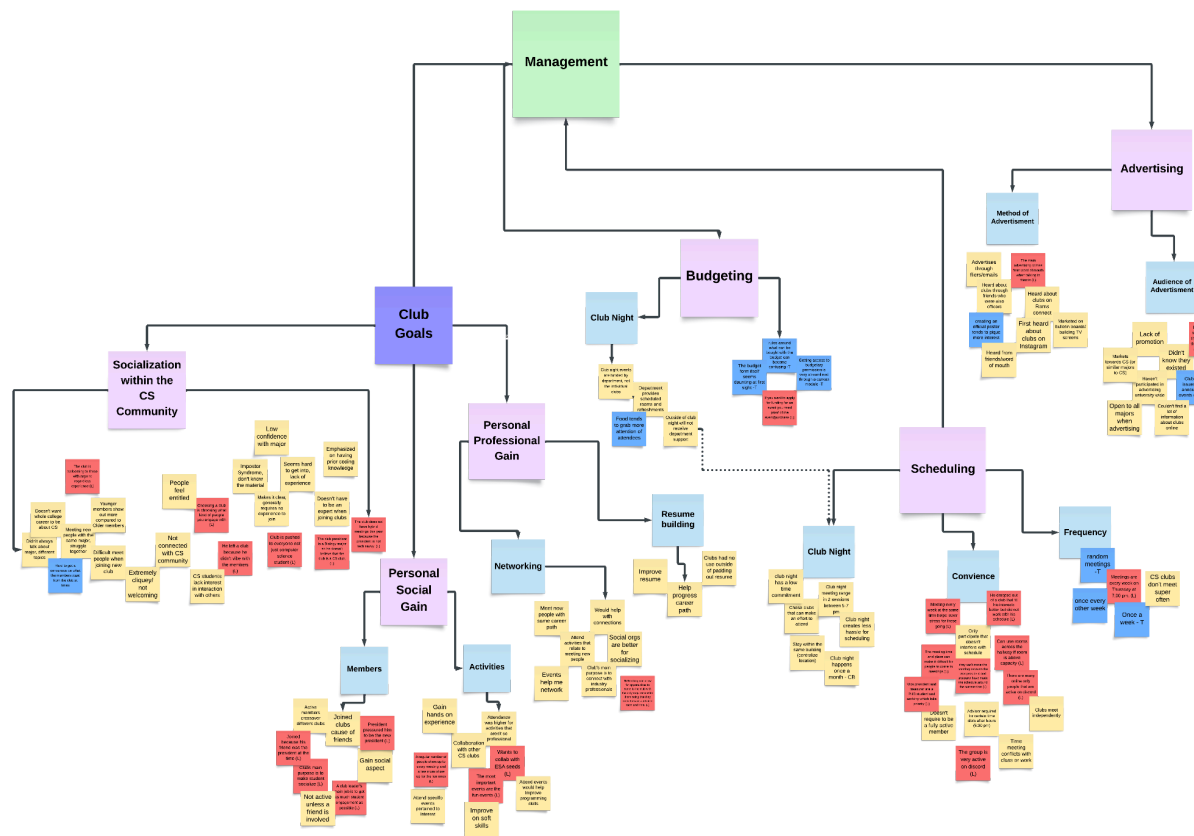
- By Mid-November we will have an analysis of our data to come up with possible solutions to increase extra curricular engagement.
- By the 16th of December, at least 3 storyboards + personas will be created based on data collected from stakeholder interviews
- by mid-january, design informing models and set requirements based upon them.
- By mid february we will have a conceptual design of what a working prototype might be.
- In the first quarter the Spring semester we will have committed to a solid conceptual design/statement for the problem statement
- During Mid-Spring, a mockup prototype will be created
- End of Spring, Capstone Expo and presentation of our final product (being a prototype gamification design)

C.3 Resources

- To be determined through the process of creating the final prototype(s)

Section D. Concept Generation.

Affinity Diagram, Nov 15, 2024



Pros	Cons
<ul style="list-style-type: none"> Defined objectives like socialization, professional gain, and personal social gain provide clarity for members. Addresses key barriers like lack of connection and confidence issues. Focus on convenience (flexible times, consistency) increases participation. Proper scheduling and communication about events like Club Night to ensure better turnout. Effective coordination can bridge gaps in areas like scheduling and budgeting. A focus on reaching broader audiences may help attract non-members and newcomers. 	<ul style="list-style-type: none"> Overemphasis on one area (e.g., professional gain) could neglect others, reducing overall appeal. Low participation due to barriers like lack of confidence or perceived exclusivity. Poor communication about event timing can lead to low attendance. Scheduling conflicts with academic or other extracurricular activities may discourage participation

Storyboard Concept 1 - Current Member: John Whitterman

degree: computer science, second year in college

age: 20

background:

- White, average build, prescription glasses.
- median gpa
- from northern virginia
- parents are paying for tuition, housing is on campus
- knows some of his classmates from high school.
- Has two cats and one dog at home.

Club of interest: Competitive Coding Club

current goal:

- get more experience in coding
- compete in tournaments
- continue to make and maintain friendships within the club

current obstacles:

- Class obligations
- the meeting times aren't posted until the day of
- office hours conflicts with club time
- Club times overlap
- Preparing for multiple internship applications

Storyboard outline:

- The student attempts to go to the school club
- but finds himself falling behind in class
- He would like to go to office hours
- but office hours conflict with the club time. He has to decide between the two.

Storyboard Concept 2 - New Member: Jackie Le

degree: computer science, third year in college

age: 21

background:

- Average gpa
- from Northern Virginia
- Transfer student from NOVA
- paying out of pocket, housing is off campus
- Has no pets
- 1 part-time job

Club of interest: Girls Who Code

current goal:

- Make new friends/meet new people
- Pay for tuition
- Start networking with others to develop professional relationships

current obstacles:

- Club meetings conflict with work schedule/classes
- Everyone seems to already be friends
- Not many flexible professional opportunities
- Unsure where to look for other clubs

Storyboard outline:

- Jackie is trying to attend the club meeting for the first time.
- The club has a small group of members that all are close to each other
- It is difficult to approach others
- she can't easily join another club as her work and school responsibilities only leave this time slot available

Storyboard Concept 3 - Club president: Phil Jobs

degree: computer science, Senior in college

age: 22

background:

- White, large build
- High gpa
- Blacksburg, VA
- Has a scholarship and lives with parents
- Friends with people on a similar career path

Club of interest: Cyber Security Club

current goals:

- Find a president for next year
- Collaborate with other CS clubs
- Develop his resume
- Make a good environment for the club members

current obstacles:

- Needs to maintain high performance in classes
- Limited time means he needs to make compromises with what to do with the club
- Needs to coordinate with other members to determine club times
- Hard to organize times with other CS clubs
- Advisor is not that active

Storyboard outline

- Phil is trying to put together an event
- He wants to do something that the members wish to do, but the last time he did that, only a few members attended
- On that point, he has been noticing that not many members have attended meetings to begin with.
- They seem perfectly active in their chat room, but chat room numbers don't seem to turn into attendance numbers.
- He feels frustrated and confused. What could be causing this? What could he possibly do to fix this?

Storyboard Concept 4 - Faculty Advisor: Terry Johnson

background:

- Bachelors on Computer Science
- Worked for the CS department for 5+ years
- Teaches intro coding classes
- Sponsors Computer Science projects/research for the school
- Sponsors Cyber Security Club

Club of interest: Cyber Security Club

current goals:

- Get more student engagement
- Allow for club leadership to evolve
- Communicate with other faculty members about allocating funds
- Liaison for students

current obstacles:

- Limited availability due to work/research
- Club leadership inactive
- Lack of transparency between faculty members and students

Storyboard outline

- Terry signed up to be an advisor of a club because he found that it could be helpful to the student body
- Sadly, he learns halfway through the second semester that his club's leadership is struggling with numbers and creating events/meetings for the club.
- He wants to help, but between his research, his classes, and being an advisor for multiple senior projects, he just doesn't have the time to deal with it.
- After all, to a certain degree, student clubs are supposed to be pretty autonomous when an advisor isn't actively helping it.
- Actually, many clubs don't even contact their advisor to begin with unless it's something they need their permission to do, which is pretty rare.
- He wishes that there were some kind of managing body to manage the clubs so that something like this wouldn't happen. Or even just some way to incentivize the officers to remain active

Section E. Concept Evaluation and Selection

Pugh Matrix

	“Challenges”	Peer Collaboration	Time-sensitive Events	Boards and Rankings	Progression	Total Points
Engagement						
Inclusivity						
Professionalism						
Sustainability						
Cost						

“Challenges”: Clubs would be able to notify users about certain events that are happening that specifically pertain to their club, which can be a range of attending other club events, going to a seminar sponsored by the club, or coming out to Engineering social events ... etc

Reason: Personalized to align with students' individual interests and future goals, encouraging them to attend events that are relevant to their aspirations. It also ensures that events are effectively advertised, helping students discover opportunities that may align with their personal or professional interests.

Peer Collaboration: Clubs would be able to collaborate to promote both of their missions in a more social, community-driven way, rather than focusing solely on professional goals

Reason: Many CS clubs have already begun working together to expand their reach and engage a larger audience, while also fostering connections between different student groups. For example, the dodgeball tournament organized by various CS clubs and Club Night that centralizes everyone who already have at least one thing in common, Computer Science.

Time-sensitive Events: The department hosts external events, such as professional speaker sessions, fundraisers, and coffee chats. These events can tie into the "Challenges" aspect, creating a sense of urgency by highlighting that participation is limited to a specific timeframe.

Reason: This encourages students to take advantage of these unique opportunities before they pass and is another way to help promote/advertise events

Boards & Rankings: Each club could be placed on a non-biased scale where they compete with one another based on student feedback, certain social events, or community involvement.

Reason: Many students have either a professional goal or social goal with clubs. By ranking clubs, they can see which ones are currently active and would allow for students to engage in events at the club that offer relevant opportunities.

Progression: This is more personalized for the user, as it can track what clubs/events they have attended. This allows users to monitor their individual growth, engagement, and involvement across different activities.

Reason: The system provides a way for students to see their progress toward personal or professional goals. This personalized progression serves as both a reflection and a motivation tool, visually displaying their past participation, current involvement, and potential future opportunities. This centralizes information about what events have happened before for students to have easy access to.

Section F. Design Methodology

In this section, we outline the methodology used to evaluate, improve, and evolve the design through the iterative process. As of now, we are still in the research and conceptualization phase, aiming to gather data that will guide the eventual integration of gamification into the extracurricular participation landscape within the Computer Science department. The final design will need to be validated and verified to ensure it provides more structure and awareness to the underlying issue of increasing participation.

F.1 Research and Stakeholder Interviews

The design methodology began with an in-depth analysis of the current state of extracurricular participation within the Computer Science department. We conducted interviews and surveys with key stakeholders, including faculty members, club leaders, and students. The goal was to identify the existing barriers to participation, understand the levels of current engagement and areas where gamification can help with improving recognition and motivation.

Key areas of focus:

- Existing Levels of Engagement: Understanding how many students are involved in extracurricular activities and what types of activities are most popular.
- Barriers to Participation: Identifying factors that prevent students from engaging with events and clubs. We sought to uncover issues related to awareness, scheduling, time management, and perceived value.

F.2 Data Collection and Analysis

In this phase, we focused on gathering qualitative and quantitative data through structured surveys and interviews. We also conducted observations to understand how students and clubs interact with the existing system. Data collected included:

- Awareness of Opportunities: How students find out about extracurricular events and clubs, and the level of visibility that smaller clubs have.
- Time Constraints: Understanding how students balance academics, internships, and social activities, and how time constraints may limit their participation.
- Motivational Factors: Evaluating the factors that influence student participation, such as academic/professional benefits versus social networking opportunities.

The data gathered was analyzed to identify the most pressing issues facing students and clubs in terms of participation. We also explored possible gamification strategies that could be applied to address these challenges.

F.3 Conceptual Framework for Gamification Integration

We began conceptualizing how gamification could be introduced. While we have not yet implemented gamification elements such as points, badges, or leaderboards, we are focusing on

how these elements might address the key challenges identified in our research. Some of the potential elements include:

- Challenges: Encouraging students to complete specific activities or tasks, fostering both individual achievement/personal gain
- Boards & Rankings: Help facilitate friendly competition between other clubs and promote engagement for students.
- Social and Professional Networking: Creating opportunities for students to interact with different clubs and attend events that help promote social and professional networking connections.

F.5 Validation Procedure

Stakeholder Feedback (Faculty, Club Leaders, and Students):

We will meet with key stakeholders, including faculty, club leaders, and students, throughout the entirety of the project to provide regular updates and gather feedback on the evolving design. This continuous engagement will ensure that the platform remains aligned with the needs and expectations of all involved parties. Feedback will be collected through structured surveys, interviews, and direct observations of users interacting with the platform to assess usability, functionality, and overall effectiveness in meeting the project's objectives.

Section G. Results and Design Details

G.1 What We Did

Going into this project, the overall analysis of what the current situation was needed to fully understand the issue of whether gamification would aid with increasing extracurricular participation for students within the Computer Science department. The key stakeholders in the CS department, including faculty, club leaders, and students. These interviews helped us understand the existing state of extracurricular participation and identify the challenges that students and clubs face in encouraging greater involvement.

The goal of these interviews was to identify:

Existing Levels of Engagement: How many students are actively participating in extracurricular activities, and which types of activities are most popular?

Barriers to Participation: What factors prevent students from engaging with events and clubs? Are there issues related to awareness, time, or value?

Opportunities for Improvement: What could be done to make extracurricular activities more accessible, appealing, and rewarding for students?

Focused on how we could use gamification to address these challenges — specifically by making extracurricular activities more visible, engaging, and rewarding for students. By leveraging the feedback from these interviews, we plan to design a platform that integrates gamification elements like points, badges, and challenges to increase motivation and participation, while also ensuring that event advertising and club management improves.

G.2 What We Learned

1. Low awareness of opportunities

Many students were unaware of the range of extracurricular activities available within the department, especially those offered by clubs or those outside of their immediate academic interests. Students often only engaged in events that were directly tied to their coursework or personal professional goals. They were unaware of the wide array of events and opportunities available to them, particularly those organized by smaller clubs or events that were not heavily promoted. Most of the awareness around extracurricular events came from word-of-mouth, in-class announcements, or social media posts from specific clubs, but there was no centralized or consistent platform for event promotion.

2. Lack of Incentive to Participate Beyond Coursework

Students often didn't feel compelled to attend extracurricular events unless there was a clear academic or professional benefit. Many were focused on building their resumes or preparing for internships and career fairs, which sometimes led them to prioritize academic responsibilities over social or professional club events.

3. Time Constraints and Scheduling Conflicts

Students often had tight schedules due to coursework, internships, and other obligations, which made it difficult to participate in extracurricular events. Many students did not attend events because they conflicted with their class schedules or because the events weren't at convenient times.

4. Interest in Social and Professional Networking

There was a strong interest in events that provided social networking opportunities or facilitated professional development. Many students expressed a desire to meet people from other clubs who have similar interests, collaborate on projects, or hear from industry professionals in informal settings.

On the other hand, some students genuinely have no interest in participating in a club that pertains to their major as they have no interest in it or would focus more on more social clubs/students prefer not to focus exclusively on their major and seek a broader college experience, choosing to engage in social clubs or extracurricular activities outside their academic field.

4.1 Inclusivity

As this is mainly about computer science students, many members within the clubs are of different majors/backgrounds. Which ties how most social gain from participating in clubs would be beneficial to broaden the range of club access.

Section H. Societal Impacts of Design

H.1 Public Health, Safety, and Welfare

- More people may know about catered events so they will get a chance to eat.

H.2 Societal Impacts

- More traffic in these clubs is a possibility.
- More attention to club charity events.

H.3 Political/Regulatory Impacts

- Due to the nature of the application, all political/regulatory impacts would be confined to university policy.
- regulations on how student clubs in the computer science department would advertise their meetings may be added or changed to fit this final product's addition.

H.4. Economic Impacts

- More clubs may be able to justify larger budgets if their retention increases as a result of this project.
- if the final product is an app, maintenance costs would be incurred.
- Also of note is costs to maintain servers that hold this application's data
- if this project ends in the form of a billboard-like structure,

H.5 Environmental Impacts

- most of the possible end products for this project require power
- which inevitably relies on the power grid. This would add more strain upon the

H.6 Global Impacts

- If other institutions see this project and wish to implement something similar, this could cause multiple similar projects to be created.

H.7. Ethical Considerations

- If the final product is an application, that means data. This data would likely include metrics about the student body.
- This data is something of concern, as this can be exploited by whomever gets their hands upon it.
- An app a student interacts with can create a security vulnerability that must be considered

Section I. Cost Analysis

No cost analysis

Section J. Conclusions and Recommendations

Conclusions

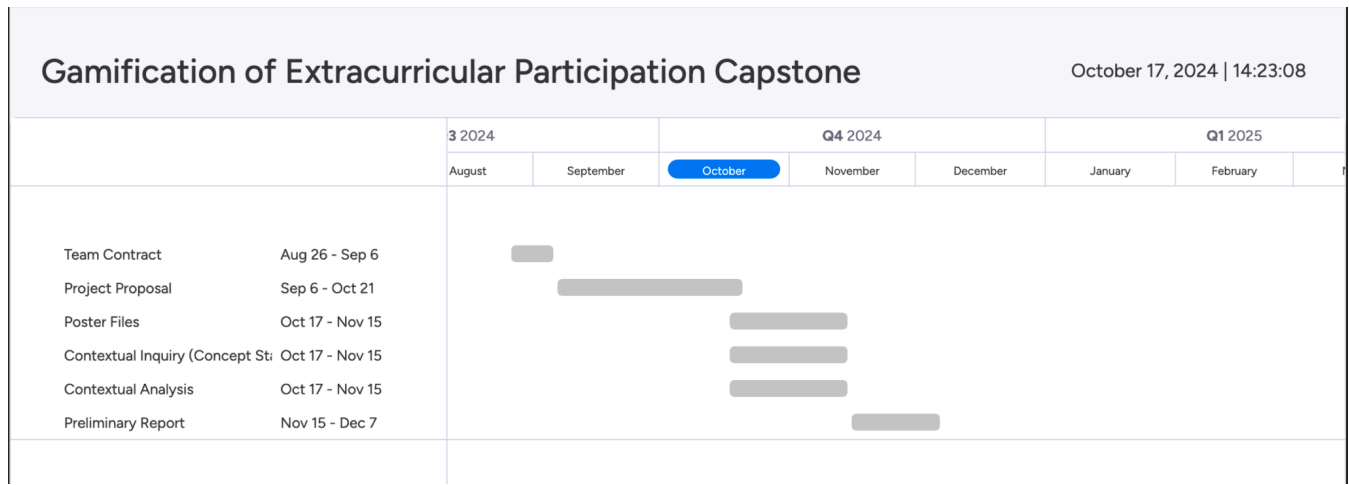
So far, it seems that we are making good progress in understanding the challenges faced by the Computer Science department with increasing extracurricular participation within the student body based on the small data set. Some of the key issues highlighted were:

- There is a definite need for additional assistance for computer science students and the clubs that relate to them.
 - We would like to look more into financial aspects of the department/ how certain clubs get funded or how the department allocate funding for club night
- Main focus would be the general lack of awareness for clubs and what their main mission is for each club. How students could appeal to them as what aligns with personal or professional goals.
- Overall, we have a good consensus of what the general student body expects when it comes to Computer Science clubs and their feelings towards them based on some answers to the questions being of similar responses.

Recommendations for next semester:

- Continue interviews. Specifically focus on club officers and students not in clubs to fully understand what their goals are or if they have any from the start.
- Start looking into methods/ways gamification could help benefit address some of the underlying issues, a place for centralized information at hand for the students to be able to readily access
 - Could relate back to club night, having a physical centralized location for meeting people, why not have a centralized app that holds all information about clubs rather than relying on physical/outdated means of advertisement (emails, posted bulletin boards, flyers ... etc). Modernize advertisement as a means to spread awareness more efficiently.
- Confirm with students via survey about issues they have with awareness in CS clubs
- Reach out to a broader audience, as the department wants more Participation within CS, they did not restrict to only CS students as many have minors in CS or partake in events based on their own personal hobbies/interest.

Appendix 1: Project Timeline



Appendix 2: Team Contract (i.e. Team Organization)

Step 1: Get to Know One Another. Gather Basic Information.

Team Member Name	Strengths each member bring to the group	Other Info	Contact Info
Vy Luu	Organization, Arranging meetings, Like to plan ahead	Procrastinates sometimes until the last minute, strict on deadlines	school: luuvt@vcu.edu number: (571)-382-0504
Tayah Mezick	Creativity, strong desire to get the project done in a timely manner.	Has a part time job and other outside responsibilities.	School: mezickts@vcu.edu Number: 757 784 7042
Jason Black	public speaking, can focus intensely when on a deadline	Procrastinates, almost always available	School: blackjm4@vcu.edu Number: 804 245 0378

Chase Taylor	Communications, Unorthodox thought process (outside the box), UI expert	Procrastination, good at following plans, bad at making them.	school email: taylorac3@vcu.edu Number: 804 704 4781
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<i>Other Stakeholders</i>	<i>Notes</i>	<i>Contact Info</i>
<i>Sponsor/ Advisor: Luke Gusukuma</i>		<i>gusukumals@vcu.edu</i>

Step 2: Team Culture. Clarify the Group's Purpose and Culture Goals.

<i>Culture Goals</i>	<i>Actions</i>	<i>Warning Signs</i>
<i>Being on time to every meeting</i>	<ul style="list-style-type: none"> - <i>Send reminder email/text message a day before meeting and day of meeting</i> 	<ul style="list-style-type: none"> - <i>Student misses first meeting, warning is granted</i> - <i>Student misses meetings afterwards – issue is brought up with faculty advisor</i>
<i>Informing the group of any delays in completing assignments</i>	<ul style="list-style-type: none"> - <i>Stay up to date with each other's project responsibilities</i> - <i>Set reasonable deadlines and note when an extension is needed</i> - <i>Update team members on discord about delay</i> 	<ul style="list-style-type: none"> - <i>Student shows up for weekly meeting with no considerable work done</i> - <i>Student missing multiple deadlines – issue is brought up with faculty advisor</i>
<i>Communication and taking initiative with deadlines</i>	<ul style="list-style-type: none"> - <i>Acknowledge members when reached out in regards to deadlines/milestones</i> 	<ul style="list-style-type: none"> - ...

Step 3: Time Commitments, Meeting Structure, and Communication

<i>Meeting Participants</i>	<i>Frequency Dates and Times / Locations</i>	<i>Meeting Goals Responsible Party</i>
<i>Students Only</i>	<i>Every Thursdays @5:30pm, Discord</i>	<ul style="list-style-type: none">- Update group on day-to-day challenges and accomplishments (Avery will record these for the weekly progress reports and meetings with advisor)- Post in the discord/ take photos/notes on progress
<i>Project Sponsor</i>	<i>Thursday every other week @5p,</i>	<i>Update project sponsor and make sure we are on the right track (Jason will scribe; Vy will create meeting agenda and lead meeting; Chase will present prototype so far)</i>

Step 4: Determine Individual Roles and Responsibilities

Task: As part of the Capstone Team experience, each member will take on a leadership role, ***in addition to*** contributing to the overall weekly action items for the project. Some common leadership roles for Capstone projects are listed below. Other roles may be assigned with approval of your faculty advisor as deemed fit for the project. For the entirety of the project, you should communicate progress to your advisor specifically with regard to your role.

- **Before meeting with your team,** take some time to ask yourself: what is my “natural” role in this group (strengths)? How can I use this experience to help me grow and develop more?
- **As a group,** discuss the various tasks needed for the project and role preferences. Then assign roles in the table on the next page. Try to create a team dynamic that is fair and equitable, while promoting the strengths of each member.

Communication Leaders

Suggested: Assign a team member to be the primary contact for the client/sponsor. This person will schedule meetings, send updates, and ensure deliverables are met.

Suggested: Assign a team member to be the primary contact for faculty advisor. This person will schedule meetings, send updates, and ensure deliverables are met.

Common Leadership Roles for Capstone

1. **Project Manager:** Manages all tasks; develops overall schedule for project; writes agendas and runs meetings; reviews and monitors individual action items; creates an environment where team members are respected, take risks and feel safe expressing their ideas.
Required: On Edusourced, under the Team tab, make sure that this student is assigned the Project Manager role. This is required so that Capstone program staff can easily identify a single contact person, especially for items like Purchasing and Receiving project supplies.
2. **Logistics Manager:** coordinates all internal and external interactions; lead in establishing contact within and outside of organization, following up on communication of commitments, obtaining information for the team; documents meeting minutes; manages facility and resource usage.
3. **Financial Manager:** researches/benchmarks technical purchases and acquisitions; conducts pricing analysis and budget justifications on proposed purchases; carries out team purchase requests; monitors team budget.
4. **Systems Engineer:** analyzes Client initial design specification and leads establishment of product specifications; monitors, coordinates and manages integration of sub-systems in the prototype; develops and recommends system architecture and manages product interfaces.
5. **Test Engineer:** oversees experimental design, test plan, procedures and data analysis; acquires data acquisition equipment and any necessary software; establishes test protocols and schedules; oversees statistical analysis of results; leads presentation of experimental finding and resulting recommendations.
6. **Manufacturing Engineer:** coordinates all fabrication required to meet final prototype requirements; oversees that all engineering drawings meet the requirements of machine shop or vendor; reviews designs to ensure design for manufacturing; determines realistic timing for fabrication and quality; develops schedule for all manufacturing.

<i>Team Member</i>	<i>Role(s)</i>	<i>Responsibilities</i>
<i>Vy Luu</i>	<i>Project Manager</i>	<ul style="list-style-type: none"> ● <i>Keep a detailed record of meeting notes and share with group</i> ● <i>Send out weekly emails and other correspondence</i> ● <i>Make sure everyone understands what is going on</i> ● <i>Keep updates of project progress</i> ● <i>Set up meetings</i> ● <i>Oversee/providing resources all aspects when needed</i>
Chase Taylor	Test Engineer	<ul style="list-style-type: none"> ● <i>Check quality of project</i> ● <i>Document current and past data/issues</i> ● <i>Oversees Github repository</i>

Tayah Mezick	Financial Manager	<ul style="list-style-type: none"> • <i>Take financial account of funding</i> • <i>Request from advisor when needed</i>
Jason Black	Logistics Manager	<ul style="list-style-type: none"> • <i>Interact with internal and external parties</i> • <i>Scribe notes during meetings with members/advisors</i> • <i>Note usage of resources</i>

Step 5: Agree to the above team contract

Team Member: Chase Signature: Chase Taylor

Team Member: Vy Signature: Vy Luu

Team Member: Jason Signature: Jason Black

Team Member: Tayah Signature: Tayah Mezick

References

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- [3] Buckley, P., & Doyle, E. (2014). Gamification and student motivation. *Interactive Learning Environments*, 24(6), 1162–1175. <https://doi.org/10.1080/10494820.2014.964263>
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