Implementing Entrepreneurial Minded Learning in a First-Year Seminar Course

Dr. Simon Thomas Ghanat P.E., The Citadel

Dr. Simon Ghanat is an Associate Professor of Civil and Environmental Engineering at The Citadel (Charleston, S.C.). He received his Ph.D., M.S., and B.S. degrees in Civil and Environmental Engineering from Arizona State University. His research interests include geotechnical earthquake engineering and engineering education.

Dr. Deirdre D. Ragan, The Citadel

Deirdre Ragan is an Assistant Professor in the Department of Mechanical Engineering, as well as the director of the Honors Program, at The Citadel. She holds a B.S. in Materials Science and Engineering from Rice University as well as a M.S. and Ph.D. in Materials from the University of California Santa Barbara where she studied stresses in thin films. She previously developed nanoparticle-modified glass and automotive coatings (at PPG Industries, Inc.), conducted Raman spectroscopy of materials under static high pressure (at Los Alamos National Lab), studied the physics of electrochromic devices (at Uppsala University, Sweden), and taught science, math, and reading to 4-year-olds (at a Charleston preschool). Now she enjoys teaching upper-level undergraduate and graduate Materials courses and encouraging students. Her research interests include materials science, the neuroscience of learning, humanitarian engineering, and undergraduate research involvement.

Implementing Entrepreneurial Minded Learning in a First-Year Seminar Course

Entrepreneurially minded learning (EML) was implemented in a first-year seminar course at a teaching-focused public institution in the Southeast United States. Entrepreneurial mindset (EM) is characterized by the Kern Entrepreneurial Engineering Network (KEEN)'s 3Cs, which are curiosity, connections, and creating value. To assist the first-year students with the development of EM, a 7-week long project was developed and incorporated into the course using active and collaborative learning pedagogical approaches. For the course project, the first-year students were required to design a 65,000 ft^2 community park on a brownfield site in Charleston, SC, with a $5,000,00 budget for site cleanup and redevelopment. A few assessments were implemented, including weekly summary reports, poster creation, presentations, peer evaluation on teamwork, reflection assignment, and a survey. This paper discusses the redesign of the course through the backward design approach, the implementation of project-based learning, and the assessment of activities. Additionally, it provides insights into its implementations in other institutions.

Background

EML has emerged as a relevant educational approach fostering an inquisitive mind through active, experiential, and problem-based learning. By emphasizing innovation and value creation, EML aims to equip learners not only to comprehend entrepreneurial thinking but also to actively identify opportunities, calculatedly accept risks, and proactively solve problems [1]. The Kern Entrepreneurial Engineering Network (KEEN) plays a crucial role in developing EML curriculum, tools, and a supportive community for educators.

KEEN uses the 3C framework to characterize the entrepreneurial mindset: curiosity, connections, and creating value [1]. EML activities are intentionally designed to cultivate curiosity and enhance learners' ability to synthesize information from diverse sources, ultimately fostering insightful problem-solving and value creation through collaborative teamwork. EML pedagogy prioritizes active learning, immersing students in hands-on experiences like developing innovative business ideas, tackling complex problems, and collaborating with peers.

Beyond practical skill development, EML cultivates essential entrepreneurial mindsets such as resilience, creativity, and the ability to recognize opportunities. Moreover, EML pedagogy encourages interdisciplinary learning, recognizing that effective entrepreneurial thinking often demands a comprehensive understanding of various fields and industries [2]. By promoting exploration across diverse knowledge domains, EML fosters a holistic and integrated approach to problem-solving, preparing learners to engage in dynamic problem-solving.

First-year experience (FYE) courses, aimed at easing transitions and fostering student success, have increasingly found a valuable partner in EML. EML can benefit FYE courses in diverse ways:

- Developing self-efficacy: FYE courses can incorporate EML, allowing students to identify opportunities, work collaboratively, and learn from failures, boosting their confidence and self-efficacy.

- Building interdisciplinary connections: EML tasks can naturally weave in diverse disciplines, mirroring the interconnectedness of real-world challenges. FYE courses can leverage this feature to encourage students to appreciate the value of interdisciplinary thinking.
- Fostering adaptability and resilience: Experimentation and calculated risk-taking are hallmarks of EML. By embedding these elements in FYE courses, students gain exposure to navigating uncertainty and bouncing back from setbacks, crucial skills for academic and personal growth.

Previous papers have documented students' conceptualization of the entrepreneurial mindset in a first-year multidisciplinary course and their development throughout the semester [3]. Additionally, growth of the entrepreneurial mindset has been emphasized in previous project-based programs [4]. This paper describes the implementation of EML in a project-based, first-year experience course at The Citadel. Course design, course activities, and assessment methods are presented. These tools could be incorporated into other courses and classrooms with small modifications.

Course Description

The Environmental Hazards Freshman Seminar is a three-credit hour general education course open to all first-year students at The Citadel. It focuses on analyzing scientific literature for environmental impacts, specifically chemical contamination from anthropogenic disasters. The course explains basic scientific concepts related to human-made environmental hazards and discusses various case studies. It offers opportunities for reading, creative and critical thinking, instilling an entrepreneurial mindset, ethical reasoning and action, and oral and written communication. Classes typically have 20-25 students.

Redesign of Course via a Backward Design Approach

The first step of the backward design, which focuses on the transfer of learning, was employed to develop learning objectives. The module was designed with the following course learning objectives in mind:

- Propose solutions to a local brownfield site.
- Recognize the social, economic, and political aspects of environmental hazards.
- Form and work in a team.
- Research and integrate information from various sources.
- Examine stakeholder’s needs.
- Explore and consider multiple stakeholder perspectives relevant to the brownfield site.
- Examine the economic, social, and environmental benefits of redevelopment of brownfield.
- Examine the existence of environmental justice by analyzing the environmental justice indexes data, socioeconomic indicators data, and health disparities data.
- Create extraordinary value for a community.
- Compose a persuasive poster that proposes potential redevelopment solutions to brownfield site.
- Communicate the solution to non-expert stakeholders.

Once desired outcomes were identified, attention turned to developing acceptable evidence and learning plan. Signature assignments—including a site cleanup report, position paper, project proposal, and reflective assignments—were created to assess learning outcomes. The following paragraphs briefly describe each signature assignment.

Site Cleanup Report- The Site Cleanup Report assignment encouraged curiosity. Students selected a site in active cleanup stages and prepared a two-page summary and five slides detailing: site name and location, responsible parties, regulatory agencies involved, chemicals spilled and contamination extent, cleanup goals, technologies used, and performance history.

Position Paper- The Position Paper assignment supported curiosity and connections. Students were prompted to take a firm stance on whether cleanup is always necessary at groundwater-contaminated sites, considering the high costs and environmental impact. The prompt highlighted differing views, with some arguing cleanup is essential regardless of cost, while others suggest the money could be better used elsewhere and that cleanup processes themselves can generate pollution.

Project Proposal- The project was introduced during the seventh week of the semester. The project addresses the 3Cs by requiring students to brainstorm ideas (curiosity), conduct research (connections); and identify stakeholders, and create a value proposition (creating value).

Students were requested to submit a redevelopment proposal for a brownfield site. As with most project-based learning modules, the following was the hook statement “If you’ve ever driven into Charleston on Interstate 26, one of the most desired vacation spots in the world, then you’ve passed through the “Neck” region and your eyes have met with a view of aging industrial equipment, rail cars, and vacant lots. The region not only depends on preserving its historic value but also needs to begin redeveloping these abandoned sites and create a more sustainable and usable landscape. One of these sites is 1766 Meeting Street and with creative minds, this brownfield site could begin to transform itself into a better image of an already desired location. The city officials are looking for solutions and have reached out to your team to prepare a redevelopment proposal for this site.” Each student team was required to develop a proposal in the form of a poster to convince their customer, the City of Charleston, that their proposed solution is necessary, feasible, and effective.

The project started with students forming teams of three, each acting as a small start-up company to address customer needs (site remediation and redevelopment). Each team member had a role (project manager, financial analyst, public relations). The customer's value was defined in economic, societal, and environmental impact terms, with teams given a budget for site cleanup and redevelopment.

As a team, students devised a plan to divide the work and communicate results comprehensively. They demonstrated curiosity by conducting primary research, visiting the brownfield site for firsthand knowledge. They connected their experience with existing knowledge by researching best practices in site redevelopment. Each team created value by developing a project proposal in the form of a poster to convince the City of Charleston that their solution is necessary, feasible, and effective.

To enhance curiosity and connection, an ideation brainstorming session explored the benefits of park development versus industrial development. A case study demonstrated the negative effects of brownfield sites on neighboring communities to promote making connections.

Graded work consisted of eight interim summary reports, with a poster due on the last day of class. Each deliverable was introduced with a brief in-class presentation, and students had approximately 60 minutes of class time to work on the project, aiming to complete most of the work in class. The instructor played dual roles: as a technical advisor to student teams and as the customer. Summary reports #1-#3 emphasized supporting curiosity, #4 focused on connection, and #5-#8 centered on value creation.

- For summary #1, students visited the brownfield site and provided information about the current condition of the brownfield site.
- For summary #2, students summarized the cumulative environmental issues at the brownfield site, including industrial activities, landfills, and congested highways. They also discussed potential impacts on public health and the community's welfare due to exposure to hazardous substances, pollutants, or contaminants, as well as the economic effects on the community.
- For summary #3, they investigated the demographic Information. They also employed an interactive EPA tool to investigate the evidence of environmental justice in that neighborhood.
- For summary #4, they focused on the needs of the community. They brainstormed the types of activities people in the community enjoy as well as the ways to make the park enjoyable for everyone.
- For summary #5-#6, first, they investigated various remediation techniques and their associated costs. Next, they focused on redevelopment strategy and the park design.
- For summary #7, students examined the economic, social, and environmental benefits of redevelopment of this brownfield site.
- For summary #8, they focused on community engagement, governmental and local partnerships, and planned efforts to promote local hiring.

Lastly, students created a persuasive poster proposing redevelopment solutions for the brownfield site and aimed to communicate these solutions to non-expert stakeholders.

Reflective Assignments- Following their submission, students completed a metacognitive reflection assignment. They reflected on what they learned, as well as how they might approach an assignment like this project and how they might extend their knowledge regarding the project in the future.

Samples of student work for summaries #1-#8 from an average team are included in the appendix.

Assessment Measures

Indirect Assessment

A 10-question pre- and post-survey were developed based upon KEEN framework [1, 5] (Table 1) to assess the impact of the project and to capture the students' changes and growth in EM and skillsets gained. The pre-survey was administered to measure students' prior EM skillsets at the beginning of the project. The same survey was conducted at the end of the project to assess

EM and the skillsets gained because of the EML activities experience. The results of the study are organized according to the following research question. Fourteen students participated in the pre- and post-survey.

Research Question: What do the students gain in EM and Skillsets from the beginning to the end of the project?

The mean and standard error were calculated for each skill or behavior assessment pre- and post-survey and the results are shown in Figure 1. The mean perception scores varied from 3 (Q 3) to 3.5 (Q 1) and 3.8 (Q 6) to 4.3 (Q 4) on the pre- and post-survey, respectively. A statistical analysis was conducted on pre- and post-survey data to detect changes in students' gains in EM skillsets over the semester. A comparison of the pre- and post-survey scores was completed using the unpaired t-test of unequal variances at a five percent level of significance. Students felt that their EM skills increased because of this project. Most notably, a statistically significant increase in skill level was seen for Q 1 "I can demonstrate curiosity about our changing world", Q 3 "I have a deep understanding of the end customer's needs", Q 4 "I understand the importance of creating economic and societal values", and Q 7-10.

Table 1. Pre- and post-survey of students' perceptions adapted from [1, 5].

	Strongly Disagree	Disagree	Neural	Agree	Strongly Agree
1. I can demonstrate curiosity about our changing world.	1	2	3	4	5
2. I can define problems, opportunities, and solutions in terms of value creation.	1	2	3	4	5
3. I have a deep understanding of the end customer's needs.	1	2	3	4	5
4. I understand the importance of creating economic and societal values.	1	2	3	4	5
5. I take risks when necessary.	1	2	3	4	5
6. I persist through and learn from failure to learn what is needed to succeed.	1	2	3	4	5
7. I can construct and effectively communicate engineering solutions in economic terms.	1	2	3	4	5
8. I like new challenges.	1	2	3	4	5
9. I can effectively collaborate in a team setting.	1	2	3	4	5
10. I integrate information from many sources to gain insight.	1	2	3	4	5

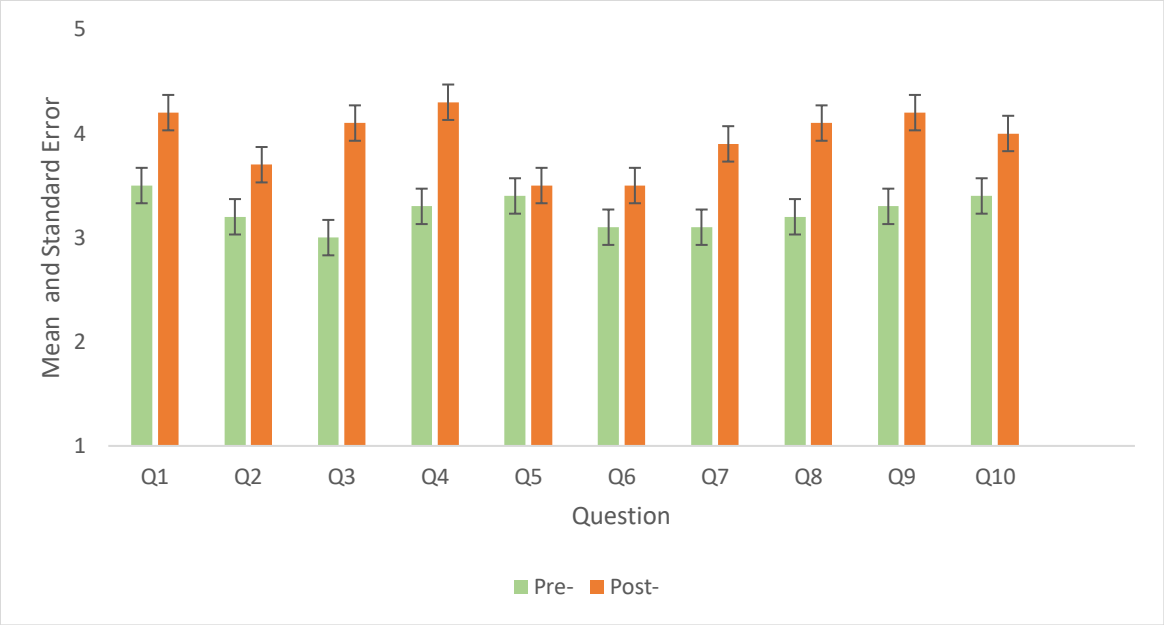


Figure 1. Mean and standard error of student's perceptions before and after project

Direct Assessment

Direct assessment was conducted via summative course assessments. For direct assessment, the VALUE rubric [6] (Appendix) was used to assess weekly summary reports and the proposal poster. In addition, the students' presentation skills were assessed by requiring a team poster presentation on the final exam scheduled date (appendix). The VALUE rubrics were reorganized around the KEEN 3Cs of curiosity, connections, and creating value. The attributes assessed by the VALUE Rubrics closely parallel those discussed in connection with the entrepreneurial mindset. The curiosity portion of the rubric focuses on evaluating students' attitudes towards curiosity, initiative, and independence. The connections portion of the rubric evaluates transfer and connections to experience. The creating value portion of the rubric evaluates integrated communication, contribution to team meetings, individual contributions, and establishing social, economic, and environmental values. It is important to note that the Value rubric is not capturing elements pertaining to stakeholders' needs and observed trends regarding the changing world. Although there are gaps in each portion of the rubric, some are more pronounced than others.

Conclusion

First-year students at The Citadel evaluated a brownfield site for redevelopment potential and presented recommendations to the City of Charleston. The project cultivated curiosity through recognizing knowledge gaps and asking questions. Students demonstrated curiosity by visiting the site for firsthand knowledge. They connected their experience with course materials by researching socioeconomics, environmental justice, and related issues. Communication skills were showcased through a poster proposal report and presentation, and collaboration was evident in teamwork. The project's environmental, social, and economic themes allowed students to create value by communicating their assessment and recommended course of action. The assessment instrument used in this study shows promise as a starting point for future efforts in assessing the EM, though further work on reliability and validity is needed.

Based on student feedback, the authors believe the EML activities were successful and beneficial for students' future courses and career development. While designed for a freshman seminar course, the activities could be applied to other classes with similar learning objectives.

References

[1] Kern Entrepreneurial Engineering Network, "The KEEN Framework." https://engineeringunleashed.com/framework Accessed 7 February 2024.

[2] J. J. Daspit, C. D. Fox, and S. Findley. "Entrepreneurial mindset: An integrated definition, a review of current insights, and directions for future research." *Journal of Small Business Management*, pp. 12 – 44, May 2021

[3] D. R. Riley, H. M. Shuster, C. A. LeMasney, C. E. Silvestri, and K. E. Mallouk, "First-Year Engineering Students' Conceptualization of Entrepreneurial Mindset," *Entrepreneurship Education and Pedagogy*, pp. 87-91, Jul. 2021, doi: https://doi.org/10.1177/25151274211029207.

[4] E. Pluskwik, E. Leung, and A. Lillesve, "Growing Entrepreneurial Mindset in Interdisciplinary Student Engineers: Experiences of a Project-Based Engineering Program," *Cornerstone (Minnesota State University, Mankato)*, Sep. 2020, doi: https://doi.org/10.18260/1-2--30565.

[5] A. Gerhart and D. Carpenter, "Campus-wide Course Modification Program to Implement Active and Collaborative Learning and Problem-based Learning to Address the Entrepreneurial Mindset," Proceeding of the 2013 ASEE Annual Conference, Atlanta, GA.

[6] Association of American Colleges and Universities, Value rubric development project, http://www.aacu.org/value/rubrics/, Assessed 10 September 2023.

[7] Ghanat, S. 2023, "Redeveloping a Brownfield Site in Environmentally Sound, Economically Competitive, and Socially Responsible Ways-Project for a First-Year Course". Engineering Unleashed Friday, August 11, 2023. https://engineeringunleashed.com/card/3254

Appendix

Table. A modified VALUE rubric for assessing the EM.

Adapted from AA C&U Value Rubric	2	1	0
Curiosity (Curiosity)	Explores a topic with some evidence of depth, providing occasional insight and/or information indicating mild interest in the subject	Explores a topic at a surface level, providing little insight and/or information beyond the very basic facts indicating low interest in the subject	Not exploring a topic and indicating no interest in the subject.
Initiative (**Curiosity**)	Completes required work and identifies opportunities to expand knowledge, skills, and abilities	Completes required works.	Does not complete required works.
Independence (**Curiosity)**	Beyond classroom requirements, pursues additional knowledge and/or shows interest in pursuing educational experiences	Begins to look beyond classroom requirements, showing interest in pursuing knowledge independently.	Not showing interest in pursuing knowledge independently.
Transfer (**Connection**)	Uses skills, abilities, theories, or methodologies gained in one situation in a new situation to contribute to understanding of problems or issues.	Uses, in a basic way, skills, abilities, theories, or methodologies gained in one situation in a new situation.	Not uses, in a basic way, skills, abilities, or methodologies gained in one situation in a new situation.
Connections to Experience (**Connection**)	Compares life experiences and academic knowledge to infer differences, as well as similarities, and acknowledge perspectives other than own.	Identifies connections between life experiences and those academic texts and ideas perceived as similar and related to own interests	Not identify connections between life experiences and ideas perceived as similar and related to own interests
Integrated communication (**Creating value**)	Fulfills the assignment(s) by choosing a format, language, or visual representation that connects in a basic way what is being communicated with how it is said (form).	Fulfills the assignment(s) (i.e., to produce an essay, a poster, A PowerPoint presentation, etc.) in an appropriate form	Does not fulfill the assignment(s) (i.e., to produce a poster, a video, a PPT presentation, etc.) in an appropriate form
Reflection and self-assessment (**Reflection assignment)**	Articulates strengths and challenges to increase effectiveness in different contexts (through increased self-awareness).	Describes own performances with general descriptors of success and failure	Does not describe own performances with general descriptors of success and failure
Contributes to team meetings (**Creating Value**)	Offers new suggestions to advance the work of the group.	Shares ideas but does not advance the work of the group	Not shares ideas, does not advance the work of the group
Individual contributions (**Creating value**)	Completes all assigned tasks by deadline; work accomplished advances the project.	Completes all assigned tasks by deadline.	Not complete all assigned tasks by deadline
(Creating Value)	Created Economic, Social, and Environmental values for stakeholders	Created Economic and Environmental values for stakeholders	Created Environmental value for stakeholders

Poster Rubric

Style, Organization, and Visuals

Visual Appeal	1	2	3	4	5
Layout and Organization	1	2	3	4	5
Figures and Tables	1	2	3	4	5
Written Content (Appropriate, Concise, Grammar, Mechanics, etc.)	1	2	3	4	5

Total: ___/20

Poster

Abstract	1	2	3	4	5
Introduction	1	2	3	4	5
Plan	1	2	3	4	5
Discussion	1	2	3	4	5
Conclusions	1	2	3	4	5
Reference /citation	1	2	3	4	5

Total: ___/30

Poster Presentation

Verbal Communication (Appropriate for Audience, Clear, Volume, etc.)	1	2	3	4	5
Nonverbal Communication (Body language, Eye Contact, etc.)	1	2	3	4	5
Professionalism (Appearance, Demeanor, etc.)	1	2	3	4	5
Ability to Answer Questions (Thorough, Correct, etc.)	1	2	3	4	5

Total: ___/20

Student Work Outcome

Details of the class and sample work can also be found at the published Engineering Unleashed card [7].

Summary #1 [Average Team]:

- highway/roads and railroad surround the property.

• there are two slabs of old concrete in the middle of the site

• businesses and a sidewalk are exactly next to the site and homes not too much further

1.

There are no buildings on the property but are surrounding businesses

• No damage to the land as of late, only a light post and concrete slabs

2.

Measured dimensions: Total: 389 ft by 229 ft contaminated portion: 200 ft by 300 ft

Summary #2 [Average Team]:

1. Provide a summary of various cumulative environmental issues (e.g., industry, landfills, congested highways, or other sources of air, water, and land pollution) which may be present. a.

The brownfield site is located on a main road within the City of Charleston. This is surrounded by local houses, commercial buildings, and industry. The commercial buildings consist of businesses such as a tire shop and a catering establishment. The industry consists of rail to the south and a refinery to east.

i. Small Residential located sporadically around ii. Commercial nearby iii. Railways and refinery nearby
ii. b. Traffic Proximity (daily traffic count/distance to road): i. 210
iii. c. Superfund Proximity (site count/km distance): i. 2.1
iv. d. Hazardous Waste Proximity (facility count/km distance): i. 6.6
v. e. Underground Storage Tanks (count/km2): i. 2.6
vi. f. Wastewater Discharge (toxicity-weighted concentration/m distance: i. 0.011
vii. g. Diesel Particulate Matter* (µg/m3): i. 0.456

Discuss the impacts the brownfield has on public health or welfare of the community, that may be associated with exposure to hazardous substances, pollutants, or contaminants.

3. -There are many harmful substances in the area of the site such as lead paint, diesel particulate matter, and air toxins. -This site is surrounded by large manufacturing plants like oil refineries, port terminals, construction sites, and lumber mills to name a few.

- Diesel Particulate Matter

- 99th percentile for proximity to superfund site

- 98th percentile for hazardous waste proximity

- 98th percentile for wastewater discharge

- 95th percentile for cancer risk in the state

- 95th percentile for air toxins in the state

- 95th percentile for lead paint

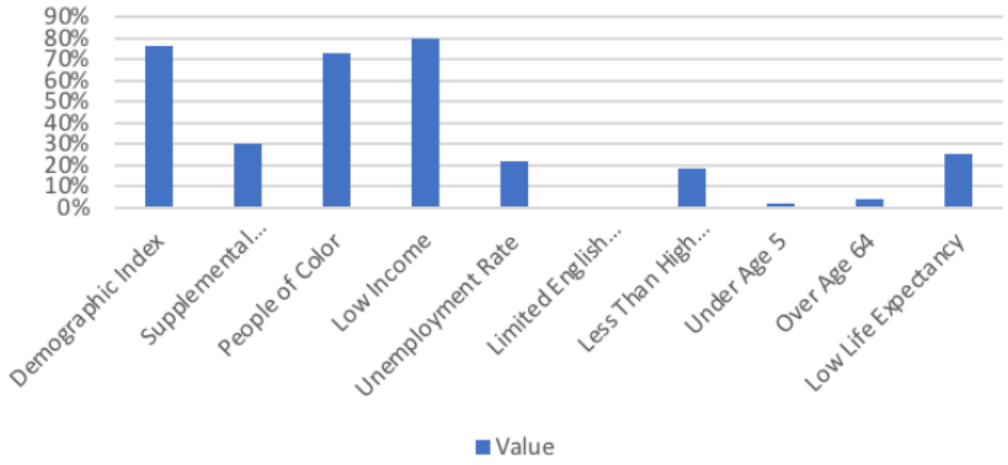
- 90th percentile for underground storage tanks

- 4. Discuss the key economic effects of the brownfield on the community. Some of the key effects in the immediate area seem to be a lot of industrial sites such as, chevron plant, waste treatment facility, import dock facility, train hub to the east and north…all of these contribute to airborne toxins and the possibility of ground contamination from all the resources getting transferred into the local area. Even to the south there have been efforts to rejuvenate the local area with business such as night life and some convenient shops. With the redevelopment of this brownfield site it will improve the immediate area as well depending on the decided development that we decide is needed or wanted. It will bring up the immediate area's property value, bring convenience such as an area that looks pleasing to be at and see daily. See what the area needs or could need will be a big deciding factor since this area is in a highly polluted area

and will need consistent workers to maintain the area which will bring jobs to the area. Instead, the site is just sitting and has possible squatters to the north of the site which can bring or have an effect on the crime rate in the area.

Summary #3 [Average Team]:

1. Community Description (Demographic Information) -



1. Examine to see if there is any evidence of environmental injustice. There is absolute evidence that there is environmental injustice in the immediate area. There are several industrial complexes less than a mile away from residents in the area and park location. With being in such close proximity, the residents are exposed to airborne hazards, possibility of chemical. With the graph below you can see the air toxin cancer risk is extremely high compared to the rest of the state of South Carolina. Along with other superfund sites, lead paint hazards, waste treatment facilities, and diesel particulates in the area affect the quality of life of the residents and any businesses that are in the area. With these being in the area it is very hard to perform an actual beneficial environmental benefit for the area, but it can at least be an area for gathering and enjoyment.

Summary #4 [Average Team]:

What are the needs of the community, what would make the park enjoyable for everyone? Pickleball courts, basketball courts, food trucks, green space, Playground equipment, bathrooms, seating, parking. The top section would be divided into 2-3 basketball courts and 2-3 tennis courts. Basketball and tennis courts separated by fencing. Bathrooms would be on the southeast side of the northern section of land. The Southwest section would be devoted to parking while the southeast would be a playground. It would be important to factor in the cost of pouring new concrete and cleaning up the older concrete along with tapping into the water lines and sewers as these would be the biggest and most important parts of the park-building process. Fencing is also important, but most of the site is fenced already so the main concern is the quality (holes, rusting, missing sections, etc.). Landscaping is important in making the park presentable and attractive to the public. When looking at the site, you can see there are many sections that have large weeds and grasses growing out of the concrete.

Summary #5 and #6 [Average Team]:

- Estimate total cost of project.
- Volume of contamination 60000ft^3
- 2222 yards
- Restoration Total Cost: $355,520
- Soil Excavation: $277,750
- Debris Removal: $22,220
- Cost of new soil: $55,550
- Redevelopment Funds: $2,144,480

- Amenities:
- Food truck rental ~3-7,000 per truck (Link)
- Playground equipment cost ~15-50,000 (Link)
- Restrooms ~ 80-150,000 (Link)
- Basketball Court ~22,000 -124,000 (Link)
- Tennis Court ~ avg 45,000 (Link)

- Landscaping:
- Valencia Orange Trees $139.90 per one. 6 total $839.40
- White Trunk Palm Tree (20 foot tall) $100-$150 (x20 total) → $2-3,000.00
- European Ash Tree (Pollutant cleaner): 5kg (~61,730 seeds) - $415
- X Willow Tree (Pollutant Cleaner): 2x 10 pack - ~$220
- Sod: $3000-$7000 per 1/5th acre —> $4,200-$9,800
- Pond 100ft x 100ft (10,000ft) - ~$71,500
- Scott Aerator Vernader Fountain - ~$3,100
- Assorted Koi x75: ~$200
- 18 bike rack x2~$1300

- Pavilion
- The Thick Timber Toledo Wood Pavilions | Forever Redwood

- $87,570
- 30ft X 20ft

- Utilities
- Trash Receptacle Blue (Recycle) - $872.70
- Trash Receptacle Black (Trash) - Global Industrial™ Steel Flat Lid For 36 Gallon Trash Can, Black - 6 - $521.17
- Trash Cans - $465

- Costs:
- Soil removal and replacement: $355,520
- Amenities Cost: $165,000 - 376,000
- Landscaping Cost: $82,474.40 - 89,074.40
- Concrete Replacement~$125 per cubic yard —-> $277,750

- Total Cost @ lowest estimated price as of 3/30: $969,818.80
- Total Cost @ highest estimated price as of 3/30: $1,098,344.40

Summary #7 [Average Team]:

Social Benefits

- Will be a nice and stress-free gathering area.
- Let people get outdoors and feel safe.
- Can attract people to the area which can better the area.
- Will provide a place for people to receive the positive benefits of being outside
- Give an area for people to discuss and better connect as a community

Economic Benefits

- Construction of park and required upkeep can create jobs and bring in small businesses with food trucks and catering
- Can draw in people from outside of the neighborhood who otherwise would not be there
- Rise in land value of the area
- Food trucks allow extra money to flow into local businesses
- The park will provide some jobs to help maintain the park and maintain cleaning standards

Environmental Benefits

- The biggest thing will be the clean-up of the contaminated area of gasoline.
- The added trees and shrubbery will possibly bring in better air quality.
- Beautification of the local area
- Plants implemented will absorb any additional toxins in the ground and provide water control during heavy rain season.

Summary# 8 [Average Team]:

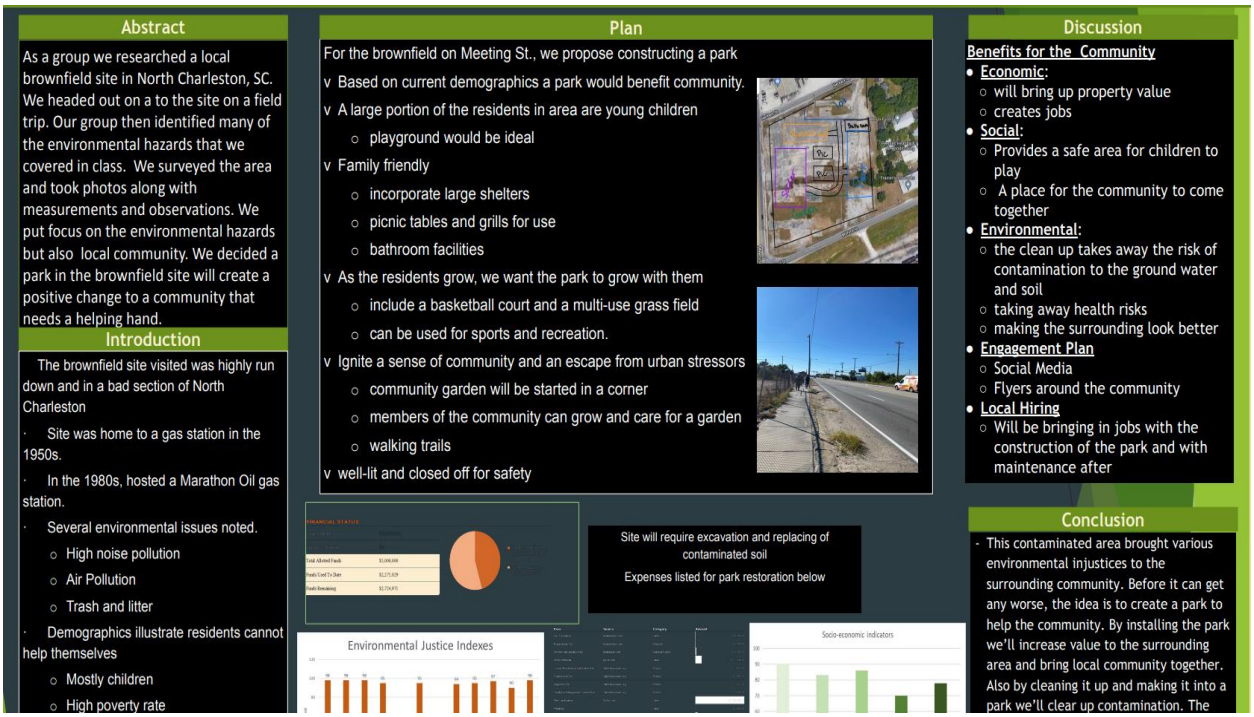
● Community engagement plan and governmental /local partnerships

We are planning on conducting community engagement in several different ways. First off we are going to start a program where you can donate the money to purchase a bench and you can write an appropriate message. The focus for this is more of an opportunity for the community to dedicate these benches to relatives or family members, or individuals who have left a significant impact for the area. Additionally, we will start up a community service project with Krause center to assist with cleaning up the park or implementing new landscape. Sophomore year all cadets are required to conduct a certain amount of community service hours so this will offer cadets the opportunity and assist with the park. We will create a plan with the City of Charleston to get this park recognized and ensure that the Park and Recreation department knows they are free to plan events at this park.

● Planned efforts to promote local hiring

We intend to hire some ground workers to maintain the park throughout the week and round up all the trash and clean restrooms and resupply. We will hire a local small business for landscaping maintenance once per week. We will recruit the local trash facilities to get the trash every day. We intend to hire several food trucks per day for breakfast-lunch and around dinner times every day since Charleston has such a rich food truck community all 3 types of meals can be easily hired for all the days and will be first come bases such as Yeaman Halls food truck area model. Possibly hire a social media manager for the park to inform the public on what food trucks are there every day, any events that may happen that are public. We will have to hire a groundskeeper manager to help make sure things are running smoothly with food trucks, hygiene standards, and landscaping is being done. Everything will be locally hired to keep jobs and community involved

Student work- Park Design



Poster created by a team.