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A Systems Engineering Approach to Metacognition in a Final Synthesis Project

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Abstract

This complete evidence-based practice paper examines the implementation of a final synthesis project within a success skills course for first-year engineering students enrolled in General Engineering Learning Community at Clemson University designed to support students with low calculus readiness. The program's goal is to enhance retention and foster academic and professional success by providing holistic support, including a co-enrollment in a professional skills and learning strategies course. The course focuses on cultivating key habits in students, encompassing professional behaviors, effective learning strategies, and mindfulness practices. Through the final project, students apply systems engineering principles to synthesize course topics into meaningful groupings, reflecting on their personal and academic growth.

The study addresses three research questions: (1) Which course topics do students identify as most influential and useful for their future? (2) What common grouping strategies do students use, and do these align with the course framework? (3) Does the systems engineering approach foster unique metacognitive insights? A qualitative analysis of student submissions from the Fall 2024 cohort reveals that time management and rest are identified as the most impactful skills. Grouping strategies ranged from simple categories aligned with the course framework to more complex, systems-based analogies. The systems engineering approach provided valuable metacognitive insight, helping students understand the interconnections between course content and its relevance to their academic and professional lives.

The findings suggest that integrating systems thinking into first-year courses can deepen students' understanding of their learning processes and improve their ability to apply study strategies in diverse contexts. This approach not only promotes academic success but also supports the development of essential professional skills, highlighting the importance of holistic, student-centered instructional practices in higher education.

Introduction

This complete, evidence-based practice paper discusses the use of a final synthesis project in a success skills course for first-year engineering students enrolled in the General Engineering Learning Community (GELC) at Clemson University. The GELC supports first-year engineering students with low calculus readiness to increase retention for this population [1]. In addition to cohorting students in STEM courses and requiring an additional engineering math class [2], the program requires students to co-enroll in a professional skills and learning strategies course [3], [4], [5]. The goal of the GELC is to provide wrap-around holistic support to students with low calculus readiness, and this course is a key component to building a strong foundation of skills to help students succeed in their college careers.

The success skills course is intended to provide students with the resources needed to develop the habits of healthy and successful engineering students and professionals. The course-level learning outcomes for this course include the following:

CO1) Apply behaviors associated with successful engineering professionals
CO2) Apply specific strategies associated with effective learners
CO3) Apply mindfulness practices associated with high achievers
CO4) Demonstrate collaboration skills necessary for learners and professionals

The course is broken down into three primary units: Habits of Professionals, Habits of Learning, and Habits of Mind. These units correspond to the first three course-level learning outcomes, as outlined above and identified in parentheses in Table 1. The specific course content in each unit can also be found in Table 1. Habits of Professionals includes strategies successful professionals use to support and monitor effective time management, task prioritization, and healthy behaviors. This unit also asks students to explain their interest in their intended engineering major. Students work to develop long-term goals as engineering professionals alongside their goals for their collegiate experience. Habits of Learning includes identifying strategies used by successful students and generating a "toolkit" of skills to enhance learning. Habits of Mind includes identifying factors that contribute to positive psychological well-being and developing a growth mindset toward learning. It also includes examining methods to enhance preparation and reduce anxiety and stress by anticipating future obstacles. The remaining course-level outcome (C04) is related to peer study meetings, which occur throughout the entire semester. Peer study meetings require students to organize small group study sessions in preparation for each of their engineering, chemistry, and math exams. Teams of three are assigned to prepare and submit agendas for each study session. They then carry out their agendas on pre-scheduled class days designated for peer study meetings.

Table 1: Summary of concepts included in each unit of the course.

Habits of Professionals (C01)	Habits of Learning (C02)	Habits of Mind (C03)
Attitude	Information Processing	Anxiety
Motivation	Selecting Main Ideas	Concentration
Time Management	Self-Testing	Mindset
Goal Setting	Test Strategies	Resilience
Big Rocks Prioritization	Using Academic Resources	Stress Management & Triage
Ideal Week	After Action Review	Meditation
Notetaking	Learning Success Panel	Rest
Peer Study Meetings	Discussion	Technology Break
5-Day Test Prep	Skillful Learning Reflections	Gratitude
Mind Like Water		
McRaven 10 Lessons		

Brief History of Final Project

During the first year of the GELC, the success skills course required students to submit a portfolio demonstrating the learning practices covered in the course that they found most challenging to utilize and a reflection on their semester goals [1]. In 2018, the final project was replaced with a learning resume where students were required to reflect on their biggest strengths, areas of improvement, top external distractor, collaboration skills, and their mindset toward a personal academic challenge. The learning resume also required the students to include additional components, including their intended major, personality inventory results, favorite motivational or spiritual quote, most impactful point from the Engineer's Creed [6] and the most impactful of Admiral McRaven's 10 Lessons [7]. The GELC faculty found student effort on these two assignments to be low and did not feel the assignments effectively reinforced course concepts. The final synthesis project was then created, and first implemented in 2021, requiring students to organize the course topics using a systems engineering approach.

Systems Engineering

In Fall 2021, Systems Thinking was integrated into the course content to provide students with a foundational understanding of this approach before starting on the synthesis project. The University had just added a graduate degree in Systems Engineering, so the basic Systems Engineering model of analysis (breaking down a problem) and synthesis (building up capability) was introduced. Figure 1 shows the diagram used to introduce this idea to the students. The objective was to teach the students to analyze the many parts of what seem to be unrelated items and develop or synthesize a "systems view" of the items. To properly form a "systems view," the students had to break each learning practice down using their own criteria. Once they did that, they could better see relationships and successfully synthesize the learning skills into larger categories or "subsystems." This assignment enabled students to apply their own perspective to each of the learning practices, which resulted in a variety of different groupings and "systems." The extent to which these student grouping strategies differed from the structure of the course also varied, providing interesting insight into the depth of student understanding of the systems approach. It seemed possible that students with more creative grouping strategies may have had a deeper understanding of the interconnectedness of the topics.

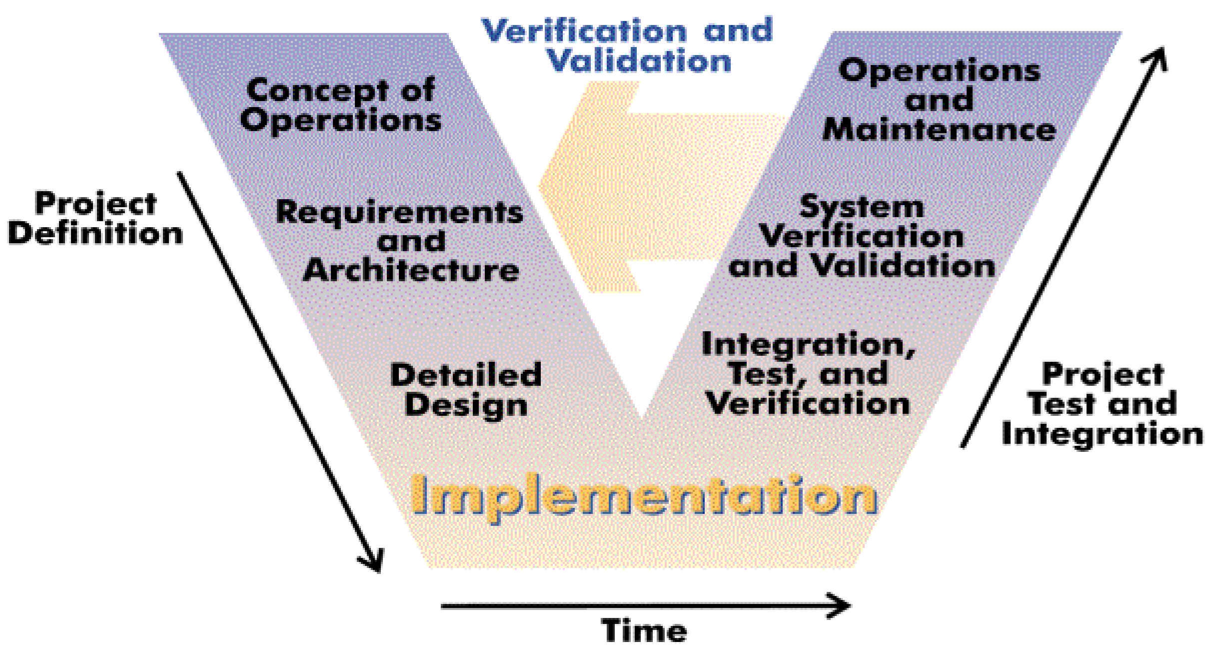

Figure 1. Systems Engineering Introduction Diagram [8]

Project Description

The final synthesis project consists of a systems diagram and a final project paper. For the systems diagram, students work to find connections between all aspects of the class and group them into a minimum of three major categories using a systems engineering approach. Students are not allowed to use the three primary units for the class (i.e., Habits of Professionals, Habits of Learning, Habits of Mind) as their major category names. The students are given a list of class topics that must be included in their final categorization. Students then use the systems engineering approach of integrating complex systems by examining relationships and making connections between the topics. Although the metacognitive goals are similar to concept mapping, students are not limited to the format of a "map". The synthesis can take any shape or form that meets the assignment's requirements, containing all topics in at least three categories in some form of visualization. Before starting the final project, students work in teams to complete a practice systems diagram in class using Joe and Sue's progress from the Skillful Learning video series [9]. For assessment purposes, the systems diagram is tied to course sub-outcome *C01.c: Analyze and synthesize solutions to issues in college and as an engineer.* Students are penalized for missing course topics, having less than three major categories, lacking distribution of course concepts among categories, and having formatting below course standards or a poor visual representation of course concepts. Students may also receive bonus points for creative systems integrations. Some exemplar student example images in the Appendix demonstrate the level of imagination and creativity put into the projects.

After creating their final visualization, students write a paper with four sections: *Categories*, *Influence*, *Future Work*, and *Summary*. The *Categories* section requires students to write one paragraph for each major category defending the categories chosen and why particular concepts were grouped in those categories. For the *Influence* section, students choose two to three concepts in each major category that positively influenced them during the semester. They write two to three sentences explaining how each chosen concept helped them and are required to include specific examples. The *Future Work* section requires students to write one paragraph explaining which additional course concepts they plan to utilize in future semesters. The chosen concepts in this section must differ from those in the *Influence* section. The *Summary* section requires students to discuss what they discovered about the course content and course structure by creating their systems picture.

For each section in the paper, students are generally penalized for missing required discussion items, lacking depth in required discussions (minor penalty), or discussions that do not adequately address the project requirements (major penalty). For assessment purposes, the *Category* and *Influence* sections are tied to course sub-outcome *C02.a: Identify strategies used by successful students through generating a "toolkit" of skills to enhance learning*. The *Future Work* section is tied to course sub-outcome *C01.b: Explain reasoning behind interest in engineering as a major and develop long-terms goals as an engineering professional*. The *Summary* section is tied to course sub-outcome *C01.c: Analyze and synthesize solutions to issues in college and as an engineer*.

Metacognition

Metacognition involves the reflective processes through which learners become conscious of and manage their thinking [10], [11]. For students to become self-directed learners, they must cultivate the ability to assess task requirements, evaluate their knowledge and skills in relation to the task, plan an effective approach using suitable strategies, and monitor their progress to adjust as necessary [12]. Therefore, developing metacognitive skills is essential for academic success and aids engineering students in understanding and improving their problem-solving [13]. Students may use different problem-solving techniques depending on their goals in the future and can articulate those processes [14]. Students also identify differences in the problems that they are solving in the classroom context versus problems they anticipate solving in the workplace and feel a lack of preparedness to handle those problems [15].

Metacognition is further defined as "knowledge of one's knowledge, processes, and cognitive and affective states; and the ability to consciously and deliberately monitor and regulate one's knowledge, processes, and cognitive and affective states" [16]. Hacker proposed a model of metacognition (illustrated in Figure 2) with two primary components: declarative knowledge and procedural knowledge.

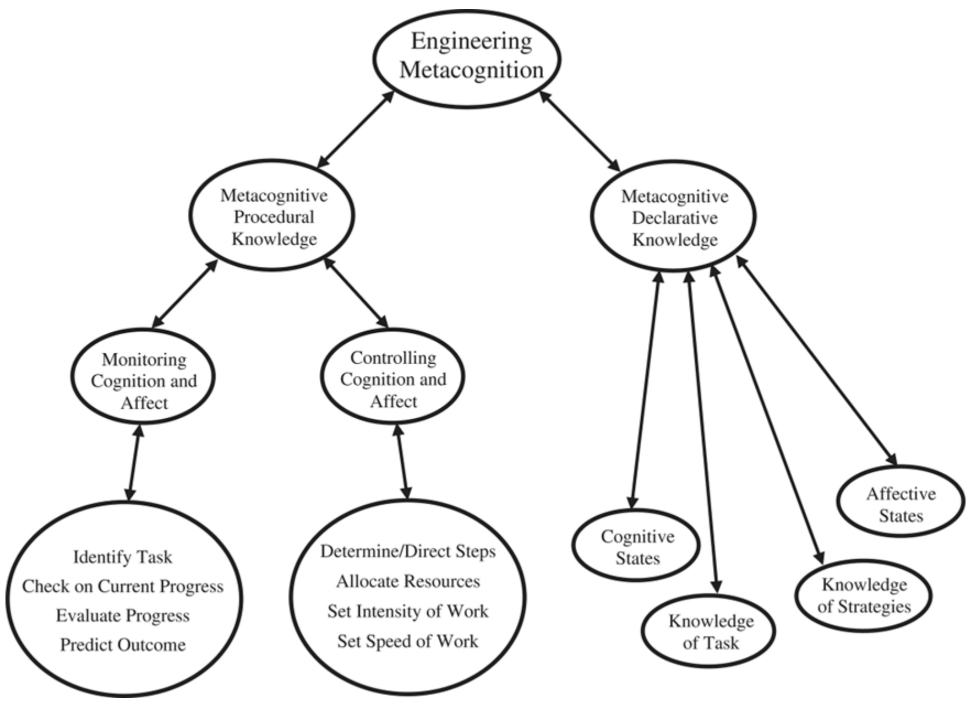

Figure 2. Hacker's Model of Metacognition [16]

Metacognitive declarative knowledge encompasses an individual's understanding of their own cognitive and emotional states; this includes knowledge of a task, its demands, how those demands can be addressed under different circumstances, and strategies for completing the task [16].

Metacognitive procedural knowledge is an individual's ability to monitor and regulate their cognitive and emotional states. Metacognitive monitoring of one's thinking processes includes identifying the task at hand, tracking progress on that task, evaluating that progress, and predicting whether the desired outcome will be achieved [16]. Metacognitive control processes focus on regulating the direction of one's thinking, including abilities such as allocating cognitive resources to the task, determining the steps necessary to complete the task, and setting the intensity of effort and speed of task completion [16].

All relationships between the components are bidirectional, indicating that information processing at more specific, lower levels of metacognition can inform higher-level, more general metacognitive processes and vice versa.

Metacognition and Systems Engineering Connections

Although metacognitive components are linked to effective learning and life-long learning, few studies have addressed the development of metacognition in engineering students. Most studies focus on instructional interventions that make some use of metacognition to teach engineering problem-solving and design [17]. This work aims to show a more holistic example of integrating metacognition by connecting to similar ideas in Systems Engineering, particularly when applied to topics learned throughout a course (Table 1).

In this context, the Systems Engineering approach includes steps to define the project, which relates to the ideas of metacognition's task identification, knowledge of task, determine and direct steps, and knowledge of strategies. Next, the Systems Engineering approach includes implementation, which relates to the metacognition ideas of checking current progress, allocating resources, and setting intensity and speed of work. The design loop and verification components relate to metacognition's ideas of evaluating the process and the bidirectional relationship between components.

Research Questions

To examine the effectiveness of the project, three research questions will be addressed: 1. What course topics are selected as the most influential and useful in the future by students? 2. What common grouping strategies do students use, and do these align with the course framework? 3. Does the systems engineering approach used within the project lead to unique metacognitive insight on the course content?

Methods

This project was first added to the course in the Fall of 2021 and has been implemented every year since. This qualitative analysis will examine the most recent cohort of students from the Fall of 2024, who consented to participate in the research (IRB2017-295). Demographics for this cohort are presented in Table 2 below, including in-state (IS), out-of-state or international (OOSI), first-generation college students (FG), and underrepresented minority status (URM). Due to a limited number of international students, they are grouped with out-of-state students to avoid potentially identifying them. Non-binary genders are not represented due to the University's collection mechanisms for demographics, which is a limitation of this work.

Table 2. Demographic Information for Fall 2024 Cohort and General Engineering Overall

	Male	Female	IS	OOSI	FG	URM
Total Cohort	51	15	56	10	32	29
66	77%	23%	85%	15%	48%	44%
Consent	42	11	45	8	27	24
53	79%	21%	85%	15%	51%	45%
Consent + Submit	41	11	44	8	26	23
52	79%	21%	85%	15%	50%	44%
General Engineering	767	313	743	332	122	184
1080	71%	29%	69%	31%	11%	17%

As shown in Table 2, of the cohort of 66 students, 53 consented to participate in the study, and 52 of those students submitted a project. The 52 participants show a similar representation of percentages of male versus female groups, in-state versus out-of-state status, first-generation college student status, and underrepresented minority races as the overall GELC cohort. When comparing to the population of General Engineering Students, the GELC has a higher representation of in-state, first-generation, and underrepresented minority students.

To answer research question one, the frequency of the course topics selected as the most influential and useful in the future by students was tallied from the appropriate sections of the student essays. An analysis of which topics were most frequently selected as the most influential and useful in the future by students will be presented. This evidence could support the teaching of these skills as a best practice and promote their inclusion in other first-year programs and may highlight the fastest way to add value.

To answer research question two, multiple rounds of coding were performed to determine common grouping strategies used by the students. The research team worked in groups of two to complete the first round of coding on students' project files. This round included identifying the emergent grouping strategies used by each student and coming up with a standard way of defining that strategy, mostly using in-vivo codes of student-defined categories. Before the second round, the entire team met to group these strategies into common categories of similar grouping methods, from which five strategies emerged. In the second coding round, the projects were classified into one of these categories. The team met to discuss each project until there was 100% agreement on the category. After these two rounds of coding, one of the strategy groups aligned with the course framework, and the other four provided emergent ways in which students synthesized the topics.

To answer research question three, the research team examined the summary section of the paper, where students were asked to discuss what they had discovered about the course content and structure by creating their systems picture. This paragraph provided insight into the metacognitive processes that students uncovered by completing the project.

Results and Discussion

Influential and Useful Course Topics

An analysis was conducted on the frequency of study skill topics selected by students as the most influential and useful for their future, as identified in their accompanying project papers. The skills that were most influential to students were tallied from the required two study skills per category in their concept map. Table 3 lists the top 7 topics. The two most frequent influential topics clearly stand out from the rest.

Table 3. Top 7 Most Influential Study Skill Topics

Rank	Topic	Tally
1	Time Management	22
1	Rest	22
2	Top 3 Personal Priorities	16
2	Goal Setting	16
2	Peer Study Meetings	16
2	Stress Management & Triage	16
3	Mindset	14

Time management and Rest were the two study skills that ranked significantly above the rest. These results are not surprising, given that our study population was all students in their first semester of college. Most college first-year students experience a dramatic transition from high school, where their schedule and study patterns are dictated in detail, to college, where they are expected to manage their learning [18], [19].

It is interesting to note that Time Management and Rest go together, each with the highest tally. Students who do not manage their time well do not get the rest they need, and their academics suffer. They often find themselves in a constant cycle of assignment crises, working late night hours to keep up, reducing their much-needed rest. On the contrary, successfully managing their time provides time for rest. Students who managed time well could rest, and their academics improved.

Additionally, students were required to list at least two study skills they plan to use in the future to further their development as learners. The skills that were most useful to students in the future were tallied from the student papers. They were required to list at least two study skill topics overall, so the count is less than the most influential study skill topics. No single future skill rose far above the others. Table 4 lists the top 7 future study skills and their tally.

Table 4. Top 5 Future Study Skills

Rank	Topic	Tally
1	Using Academic Resources	9
2	Goal Setting	8
2	Gratitude	8
3	Mind Like Water	7
2	Resilience	7
2	Technology Break	7
3	Time Management	7

It is noteworthy that Using Academic Resources was ranked the highest. Course instructors have observed that students coming out of high school, especially those who did very well in high school, were reticent to use Academic Resources, like mentoring, tutoring, study skill seminars, etc. Many thought it was an admission of failure to acknowledge their need for help in these areas. As this course progressed, instructors continued to stress the availability and importance of these resources provided by the university. It is not surprising that students planned to use the Academic Resources more regularly as they moved on in their college careers.

Commonly Used Grouping Strategies

Several commonly used grouping strategies emerged from the analysis of methods used by students to group the topics from the course into categories. Figure 3 summarizes these common strategies and reports the proportion of students who utilized each.

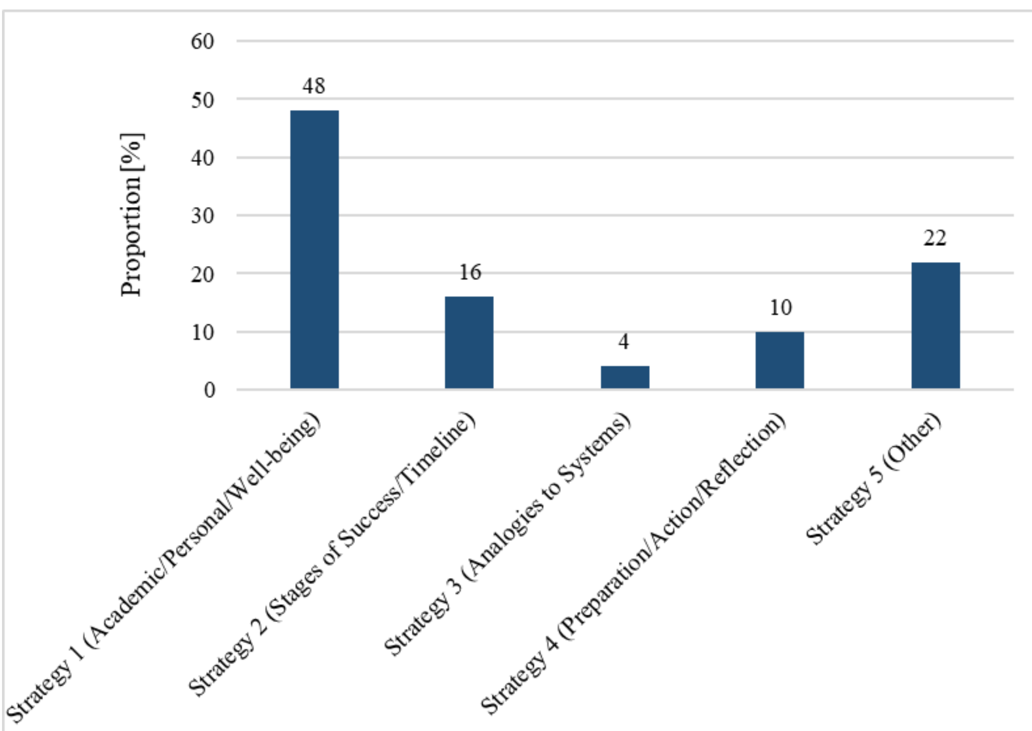

Figure 3: Proportion of students who utilized each commonly used grouping strategy.

Students who used Strategy 1 divided the course topics into three major categories: academic, personal, and well-being. The academic category included skills that might lead to better performance in their college coursework. The personal category included skills that could help them improve certain aspects of their personal lives, such as their work ethic or social relationships. The well-being category included skills that would improve their mental health. Many students included in this strategy used slightly different category names, but their justification of their grouping aligned well with this strategy definition. For example, one such student used the categories "Study Habits," "Personal Development," and "Mindset Matters."

Students utilizing Strategy 2 either grouped the skills in the order that they gained them chronologically or in perceived stages of success. For example, one student who used Strategy 2 used the categories "The Beginning," "Where We're At," and "The Vision." The student described these categories as containing the skills they had when they began their first year of college, the skills they felt they had gained throughout their first semester, and the skills they felt they still needed to work on, respectively. Another student in the Strategy 2 group created a systems diagram analogous to a sea voyage, grouping the topics into the categories "Do-First Dock," "Breakaway Boat Trip," and "Success Shore" (also shown in the Appendix). These categories included topics the student felt were foundational to success, could help keep one on track during the journey, and would be gained once success is achieved, respectively.

Students who used Strategy 3 grouped the topics into categories which they compared to the parts of a metaphorical system. For example, one student used categories named for the parts of a bike. The "frame" included topics the student perceived as the most important or foundational skills, the "wheels" included skills that keep one moving towards success, the "handlebars" included resources that guide the bike in the right direction, the "brakes" included strategies for maintaining mental health, the "pedals" included motivational strategies, and the "chain" included topics that connect other categories.

Students who used Strategy 4 based their categories on when the skills would be most helpful in completing a task. For example, one student who utilized this strategy used the category names "Preparation," "Action," and "Reflection." As the names indicate, each category included the skills that would be most helpful before, during, and after completing an assignment or other professional task.

Finally, students whose grouping strategy did not align with the above four strategies were included in the "Other" category. Strategy 5 consists of a variety of approaches, ranging from one student's categories called "Mental," "Physical," and "Emotional" to another student's groups named "Actions," "Mindset," "Management," and "Relationships." Since the minimum number of required categories was three, many projects utilizing four or more categories were included in the Strategy 5 group.

Approximately half of the students (48%) demonstrated a grouping strategy that aligned with the course framework. These students used Strategy 1, whose categories aligned most closely with the three units to structure the course. The "Academic" category used by the students who utilized Strategy 1 was similar to the "Habits of Learning" unit, as it tended to include topics explicitly related to improving information retention. Similarly, the “Personal” category was much like the “Habits of Professionals” unit, as it generally contained topics related to becoming more productive individuals or better team members. Finally, these students' “Well-being” category aligned closely with the “Habits of Mind” unit, containing primarily mental health maintenance strategies.

The other half of the projects demonstrated grouping strategies that did not align with the course framework. The second largest group was Strategy 5 (22%), which is unsurprising considering the students were free to use more than three categories if desired. As a result, many projects were sorted into the “Other” category based on the number of categories used. However, Strategy 5 also included several projects with just three categories that did not align with any other strategies. These students demonstrated a unique way of considering the system in which the course material might be useful.

Another significant portion of students (16%) utilized Strategy 2. The tendency of students to consider the skills learned in this course as stages or a timeline shows a certain level of understanding regarding the systems engineering approach; however, other strategies may show a deeper level of connection between categories. Students who utilized Strategy 4 (10%) demonstrated a similar linear thought process by grouping the topics based on when they would be most useful. Finally, Strategy 3 included the smallest number of students (4%). Considering the categories as interdependent parts of a system shows perhaps the deepest level of understanding of the systems engineering approach of any of the strategies used.

Metacognitive Insight

The systems engineering approach helped most students gain insight into three areas: the overall objectives of the course, how much the student learned, and the idea that different students will come up with different systems.

The Overall Objectives of The Course

Students in their first semester of college are embroiled in so many new and different activities that it is hard for them to see the forest for the trees. Looking at the learning strategies and analyzing their content, outcomes, and benefits gave students a different perspective of this course. One student wrote:

> *“Another major takeaway that I discovered was that <u>the structure of the class was purposeful.</u> For example, having the mind unit as the last unit fits well with the fact that we have finals at the same time because that particular unit gave us ways to help be mentally prepared to take our finals. The <u>structure of the class related to our current state in college and was set up purposely to best help us throughout the semester</u>.”*

Another student wrote:

> *"Through creating my systems diagram I have gained insight into how all of the topics in the course link together. These links have then led me to the major takeaway of how the different concepts build upon each other. I have observed that many of the latter ideas and topics in the course implement many of the former more simple concepts to create a more complete picture."*

The variety of learning practices introduced, taught, and applied during the course seemed like a random selection with no structure or forethought. Applying the systems approach helped students see the overall structure, and they could recognize the benefit to them as college students and eventual professionals.

How Much the Student Learned

Each learning practice was applied first in class and then encouraged to be applied outside of class. It is difficult to tell if any practices had a lasting impact on the students. The systems approach caused students to look at the whole instead of the individual parts and helped them to see just how much they have started to apply in their own lives. One student wrote:

> *"This project has reminded me about all the concepts we have learned over the semester and how we practiced them. By doing this project I have been able to reflect on my academic progress this semester and how this class contributed to it. What I have realized is that I have formed new habits both consciously and subconsciously due to the influence of this class. Even if these strategies didn't always work out for me, it was so nice to have a class dedicated to finding the study habits and skills that are best in my favor."*

As this student indicated, none of these learning skills were mandatory; each student had to decide which benefited them the most based on their specific situation and maturity.

Different Students Create Different Systems

Like in systems engineering, different analyses could lead to a different system specification. Some students recognized the system attribute of "portability." The systems approach can be ported to another student in a different environment, with a different background, and they can still analyze and synthesize a very different system than any other student. One student wrote:

> *"Another major takeaway is that these concepts can be completely rearranged based on categorization. They are not [exclusively] "preparation, action, reflection" as I set it up, but can be rearranged to however a person sees fit."*

The portability of this approach made it valuable to a diverse group of students. It was not a one-size-fits-all assignment.

Conclusions

Regarding the first research question, students identified time management and rest as the most influential and useful study skills for their academic success. This reflects a common challenge faced by college first-year students, where the ability to manage time effectively directly influences their ability to rest and maintain academic performance. Additionally, students showed an interest in utilizing academic resources more extensively in the future, indicating a shift towards greater self-awareness and the value of support systems. Discussing these skills within all first-year program courses should be considered. It is possible that the success skills course could be improved by spending more class time discussing these highly valued topics, while less time could be dedicated to topics that received little attention from students who completed the synthesis project. Data from future semesters, along with longitudinal analyses related to this study, will be heavily considered when making decisions regarding the evolution of this course, particularly concerning the distribution of course topics.

For the second question, a range of common grouping strategies emerged among students, with approximately half aligning their groupings with the course framework. Other strategies, such as Stages of Success/Timeline and Preparation/Action/Reflection, also showed an understanding of how the course material could be applied but at different stages of their academic journeys. However, the most sophisticated groupings, seen in Analogies to Systems, highlighted a deeper systems-thinking approach, recognizing interconnections and interdependencies between course topics.

Finally, the third research question explored whether the systems engineering approach fostered metacognitive insight into course content. The results revealed that the approach encouraged students to reflect more deeply on the purpose and structure of the course. Students reported understanding how the various topics interconnected and contributed to their academic and personal growth and how the connections could vary among their peers. The systems engineering approach provided a meaningful framework for students to reflect on their learning, and the findings underscore the importance of integrating academic and personal development skills into higher education curricula. While students utilized different strategies to categorize and internalize the course content, the overall impact was a deeper understanding of how these skills are interconnected and applicable beyond the classroom.

Future Work

Longitudinal analyses will be conducted as part of this study to examine how students continue to utilize the course skills in subsequent semesters and to explore whether discussions from the final project paper can predict future academic success and/or continuation in an engineering major. Students from this study will be surveyed in future semesters to identify which course skills they are still applying. The alignment between the skills they selected as most influential during the course and their use in later semesters will also be assessed. Additionally, students who reported that creating the systems picture helped them better understand the course topics and structure will be further examined to determine whether such revelations predict future academic success. A comparison will be made between the academic performance of students who found the systems picture beneficial and those who did not. These future investigations will inform the ongoing development and refinement of the success skills course.

Acknowledgments

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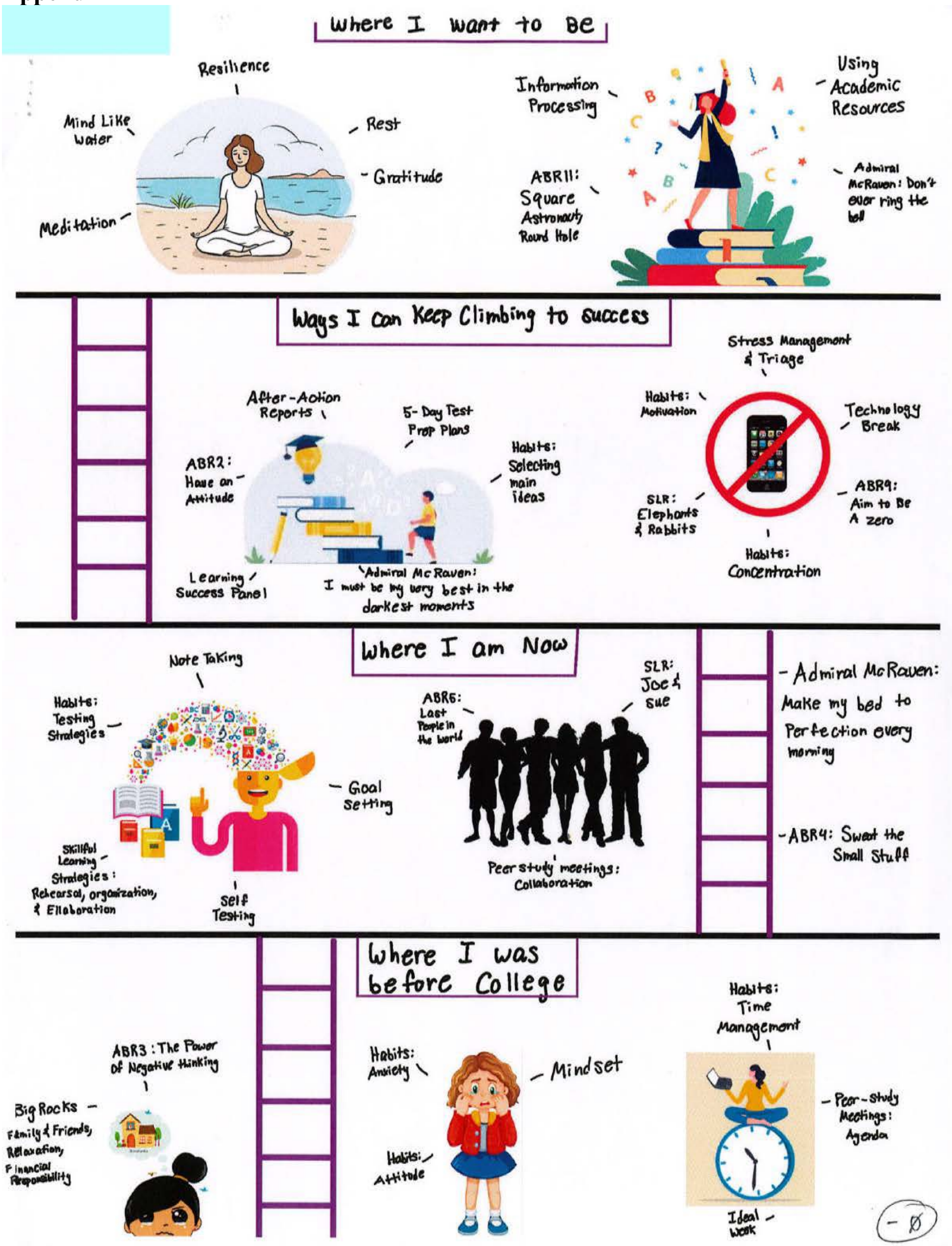
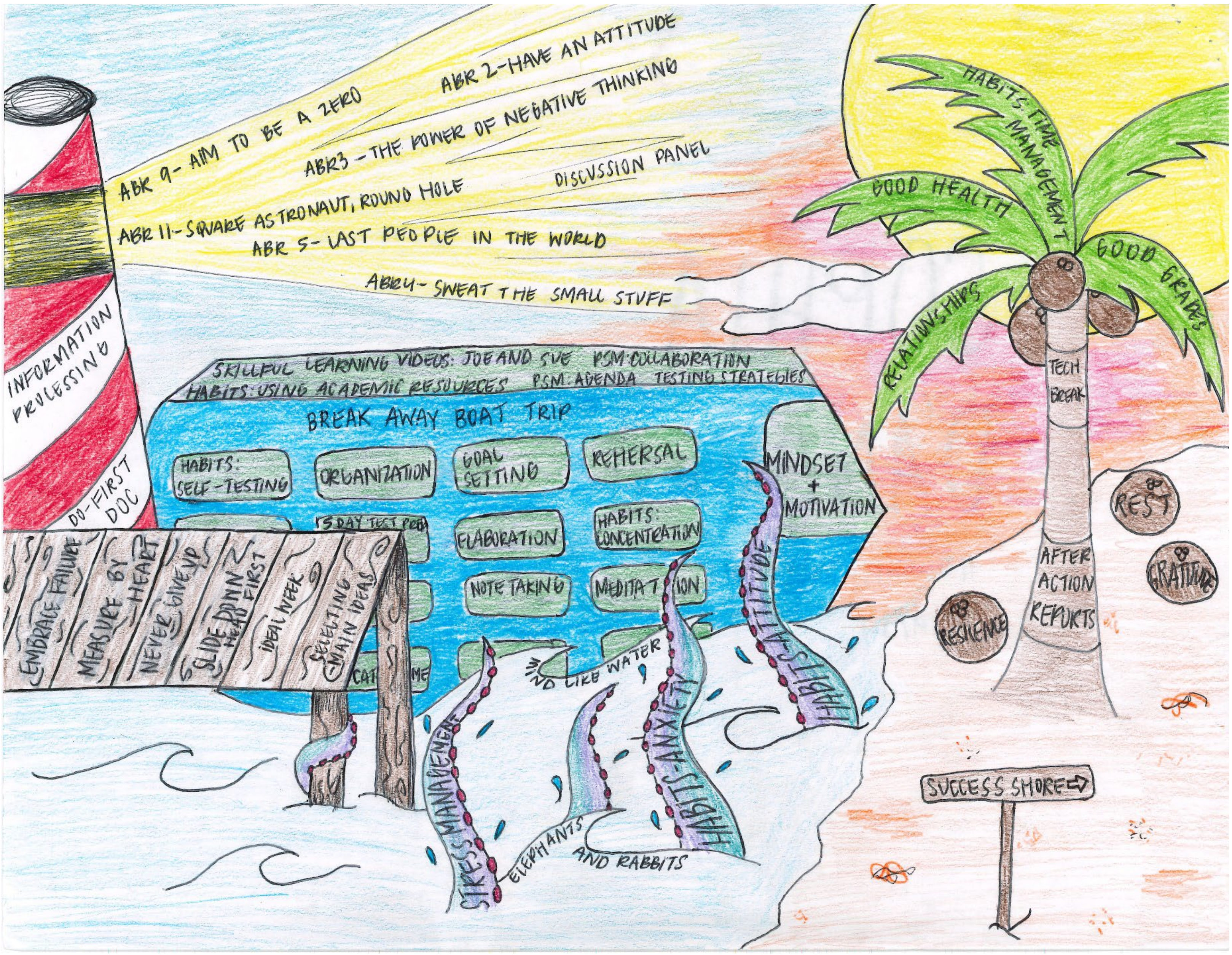
Appendix


Where I want to Be
Resilience
Mind Like water
Rest
Gratitude
Meditation
Information Processing
Using Academic Resources
ABR11: Square Astronauts Round Hole
Admiral McRaven: Don't ever ring the bell
Ways I can Keep Climbing to success
Stress Management & Triage
After-Action Reports
5-Day Test Prep Plans
Habits: Motivation
Technology Break
ABR2: Have an Attitude
Habits: Selecting main ideas
SLR: Elephants & Rabbits
ABR9: Aim to Be A zero
Habits: Concentration
Learning Success Panel
Admiral McRaven: I must be my very best in the darkest moments
Where I am Now
Note Taking
Habits: Testing Strategies
ABR5: Last People in the world
SLR: Joe & Sue
- Admiral McRaven: Make my bed to Perfection every morning
Goal Setting
Skillful Learning Strategies: Rehearsal, organization, & Elaboration
Self Testing
Peer study meetings: Collaboration
-ABR4: Sweat the Small Stuff
Where I was before College
Habits: Time Management
ABR3: The Power of Negative thinking
Habits: Anxiety
Mindset
Big Rocks - Family & Friends, Relaxation, Financial Responsibility
Peer-Study Meetings: Agenda
Habits: Attitude
Ideal Week
-0


ABR 9- AIM TO BE A ZERO
ABR 2-HAVE AN ATTITUDE
ABR3 - THE POWER OF NEGATIVE THINKING
DISCUSSION PANEL
ABR 11- SQUARE ASTRONAUT, ROUND HOLE
ABR 5- LAST PEOPLE IN THE WORLD
ABR4- SWEAT THE SMALL STUFF
INFORMATION PROCESSING
DO-FIRST DOC
SKILLFUL LEARNING VIDEOS: JOE AND SUE
PSM: COLLABORATION
HABITS: USING ACADEMIC RESOURCES
PSM: AGENDA
TESTING STRATEGIES
BREAK AWAY BOAT TRIP
HABITS: SELF-TESTING
ORGANIZATION
GOAL SETTING
REHERSAL
MINDSET + MOTIVATION
ELABORATION
HABITS: CONCENTRATION
NOTE TAKING
MEDITATION
EMBRACE FAILURE
MEASURE BY HEART
NEVER GIVE UP
SLIDE DOWN HEAD FIRST
IDEAL WEEK
SELECTING MAIN IDEAS
MIND LIKE WATER
STRESS MANAGEMENT
HABITS-ANXIETY
HABITS-ATTITUDE
ELEPHANTS AND RABBITS
HABITS: TIME MANAGEMENT
GOOD HEALTH
GOOD GRADES
RELATIONSHIPS
TECH BREAK
AFTER ACTION REPORTS
REST
GRATITUDE
RESILIENCE
SUCCESS SHORE

Information Proccessing
Don't Back Down to Sharks (McRaven)
[redacted]
Joe & Sue
Resillience
Testing Stratigies
Elephants and Rabbits
Sweat the Small Stuff
Gratitude
Having an Attitude
Stress Management
Motivation
Negative Thinking
Mind like Water
Avoid Procrastination (Big Rock)
Mind Setting City
5 day test prep
Maintain Relationships (Big Rock)
Ideal Week
Agenda
Time Management
Success Land
Square Astronaut Round Hole
Learning Success Panel
Goal Setting
You Can't Go At It Alone (McRaven)
After Action Review
Last People In the World
Plan Setting River
Rehearse
Organize
Elaborate
Collaborate
Selecting Main Ideas
Technology Break
Make Your Bed (McRaven)
Academic Resources
Mindset
Concentration
Maintain Creativity (Big Rock)
Rest
Notetaking
Self Testing
Meditation
Aim to be a Zero
Habit Setting Forest