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Habit Formation and Entrepreneurially-Minded Learning (EML) in Developing the User-Centered Design Mindset

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Abstract:
To better help students develop a user-centered design mindset, a weekly activity is introduced into the Human Factors Engineering course that utilizes both the concept of human habit formation [1] and Entrepreneurial Minded Learning (EML) [2]. In each weekly activity, students are required to find a product or system that they think is designed poorly from a user standpoint. The poorly designed product or system examples can be any everyday thing students interact with. Following a predefined template provided by the instructor, students are required to showcase their examples by including photos, the user's goals as well as issues using the product, critiques, and a proposed design solution to address the user's needs. The instructor's main requirement for accepting a student's example is to evaluate whether it satisfies at least one of the three goals of human factors engineering (enhancing performance, safety, and satisfaction). Students share their examples with other students, who are then required to participate in a discussion (in-person or an online forum) and contribute to the proposed solution with constructive ideas or propose a different solution. The critical aspect of this activity is the weekly repetition. The goal of requiring a weekly assignment is to help students form a habit of consistently thinking about users during the design process and be cognizant of users' needs with their everyday products. The activity was experimented with in a Human Factors engineering course. To evaluate the effectiveness of the activity in developing a human-centered design mindset through habitual behavior, two methods were conducted: 1) a self-reporting survey by students, and 2) instructor analysis of the artifacts. Once the course concluded, students completed a survey in which they shared their experience and perception about the assignment. Students believed that the activity was an effective one (89% extremely and very effective, 11% somewhat effective) in developing a human-centered design mindset. Students believed (44% strongly agree, 56% agree) that after participating in the Hall of Shame activity, they became more cognizant of users' needs and their unpleasant experiences. They also believed that thinking about poorly designed products and systems regularly, the activity helped them unleash their curiosity. 89% of students believed that completing the activity helped them think about human-centered design issues beyond the course. This indicates that the activity could contribute to forming habitual behavior. Moreover, the instructor analyzed students' artifacts to assess Entrepreneurial Mindset Outcomes (EMO) including curiosity, connection, and creating value. The results indicated that the students' artifacts presented the EMO items (average percentage of observed occurrence): value creation (58%), connection (45%), and curiosity (42%). This paper will share the motivation and rationale behind creating and proposing such a habitual activity to develop a user-centered mindset in students through Entrepreneurially Minded Learning (EML). The paper also provides the activity instruction, learning objectives, and the instructor's lessons learned in applying the activity in class.

Introduction

Human Factors Engineering Education

Human Factors Engineering is a multidisciplinary essential subject for engineering students as they learn how humans' physiological and cognitive capabilities affect their interactions with systems and technologies. In the human factors engineering course, students learn about design methods, evaluation methods, human sensory mechanisms (visual, auditory, tactile, multimodality, and sensory substitution), perception, cognition (attention, information processing, working memory, long-term memory, situation awareness) and user-centered design principles. The implication of the gained knowledge helps students to consider human factors in the design or evaluation of technologies or systems.

One of the objectives of human factors engineering is to learn about users' goals to better design and evaluate systems and technologies by applying appropriate methods. This user-centered design approach is the main methodology that allows engineers to learn about users' goals and needs, with the aim of designing user-centered systems.

The user-centered design process requires understanding users to the point of forming empathy with them and directing the design and evaluation process based on the users' needs. Conventionally, in human factors courses, students are required to complete a course project in which they would be required to develop a problem statement, understand the users' goals and their issues, and propose a solution by making a prototype and evaluating the users' interaction with the prototype. Depending on the topic, students' background, interests, time constraints, and other factors, groups may spend more or less time on each phase of their project, particularly during the users' requirements phase. This may result in variations in learning about users and their needs within and across groups. Although a course project strengthens students' skills to apply the class topics toward a user-centered design process, solely, it may not lead students toward developing a user-centered design mindset because of the constraints previously mentioned. There need to be other supplementary activities in the course to reinforce learning about users' needs that will result in a mindset shift. Developing this user-centered design mindset in students requires using several learning methods: habit formation, where students repeat an effective activity about users' issues experiencing or interacting with products or systems throughout the semester/quarter; and entrepreneurial-minded learning, where students learn to integrate curiosity, connection, and creating value into their core engineering curricula.

Habit Formation

Based on the information processing model [3], to perform a task, humans perceive stimuli through sensory mechanisms which are transferred to central cognitive processing for decision-making. Throughout this process, the working, long-term memory, attentional resources, and feedback are utilized to select the appropriate response and execute it. The significant aspect of information processing is the feedback a human receives from the system or environment while performing a task. Based on the received feedback, humans select an appropriate action or revise the action to better perform the task. By repeating the task, a human can turn an activity into a habit. However, humans need to follow the habit formation process to sustain a habit.

Based on the cognitive information processing mechanism, habit formation is a process. Humans need to be exposed to and follow four steps to turn a task into a habit. The first step is defining

motivations or triggers to perform the task. The second step is defining a routine based on a routine plan to perform the task consistently. The third step is to receive feedback every time the task is performed. The feedback improves or reinforces the performance, which also leads to receiving rewards. The fourth step is to define and receive a reward each time the task is completed based on the trigger, routine, and feedback. This is an iterative process that helps humans to learn from the process and develop skills until the skill turns into rules, and eventually an unconscious behavior (Figure 1). If the process repeats consistently for at least 66 days [4], a habit may form. However, this time is dependent on many factors and the complexity of the activity so it can vary from 18 to 254 days [4]. Also, habits are learnable throughout our life [5]. They can be learned through a repetitive process and engaging procedural memory system [6]. Therefore, a careful design of activity may help people to form healthy habits.

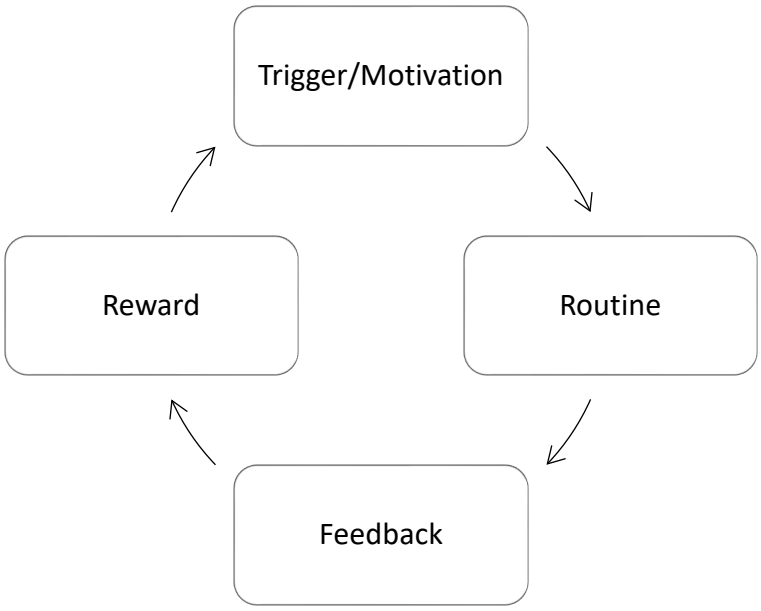

Figure 1. The elements of a habitual behavior

Entrepreneurial Minded Learning (EML)

In a Human Factors engineering course, a variety of teaching pedagogies including subject-based learning, case-based learning, active and collaboration learning, and problem-based learning were utilized [2]. However, a new activity was created to support a user-centered design mindset through Entrepreneurial-Minded Learning (EML). Entrepreneurial-minded learning, or entrepreneurial mindset, is a pedagogy based on developing three mindset components in undergraduate engineering students: curiosity (discovery), connection (identifying unexpected opportunities), and creating value (for stakeholders). These are coupled with engineering thought and action, expressed through collaboration and communication, and founded on character [7]. By developing this mindset, students are taught to think more broadly and deeply about how their ideas fit into their environment [8]. This makes it a suitable approach for developing a user-centered design mindset and forming a habit in students.

The current EML framework has been developed and improved through the Kern Entrepreneurial Engineering Network (KEEN), a nationwide partnership of more than fifty

colleges and universities across the United States. The network's mission was to create an action-oriented, entrepreneurial mindset among engineering, science, and technical undergraduates. Rae and Melton provided a comprehensive background about the KEEN network, developmental approach, and contributions of KEEN to entrepreneurial education learning [9]. The EM outcomes are presented in Figure 2. More details about EM outcomes including complementary skills are provided in the KEEN Framework [10].

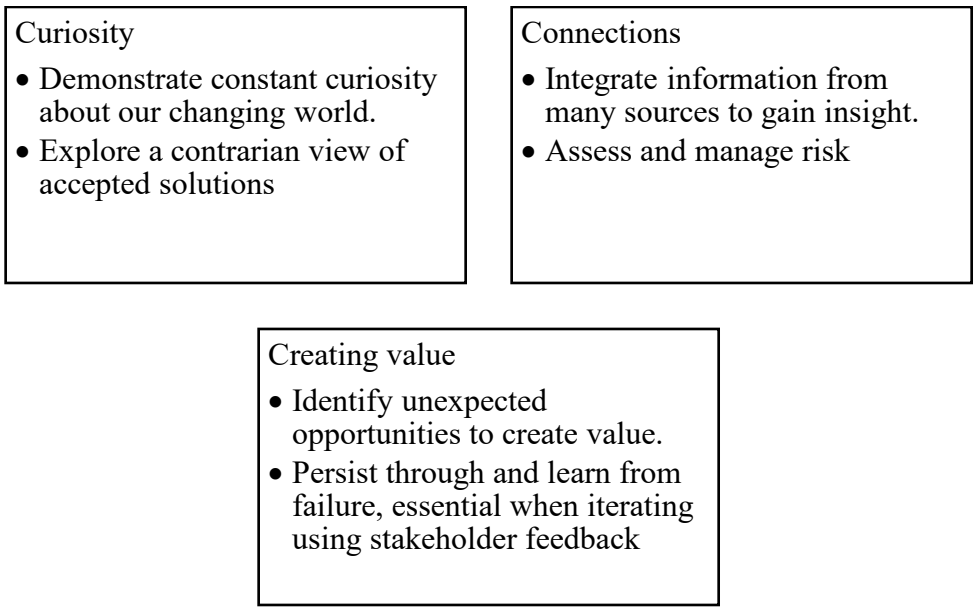

Figure 2. The Entrepreneurial Mindset Outcome

The Design Hall of Shame Activity

The objective of this activity is to identify human factors issues in systems and technologies in everyday things. The goal is to help students be cognizant of human factors during basic daily life activities and develop a human-centered design mindset through regular practice. The objectives of the activity include:

1. Identify possible Human Factors and design issues in personalized experiences with everyday things.
2. Develop a curious mindset regarding human needs during their interactions with everyday things.
3. Develop a habit of being empathetic and cognizant about users' needs and unpleasant experiences.
4. Demonstrate a poorly designed case, criticize it, and propose a solution to revise the design.

The activity is integrated with entrepreneurial mindset outcomes: curiosity, connection, and creating value. It provides opportunities for students to practice constant curiosity by looking for design issues in our everyday things, identifying human factors related to the issues, and proposing a solution to these issues. Curiosity is not only about finding solutions, but more importantly, creating opportunities to develop new ideas and innovate further. Moreover,

students can actively connect the course concepts about human factors in the design of products and systems when observing and exploring everyday products and systems, then also by sharing them with the class to integrate additional insights. By developing a case from an observation or experience, students must propose a redesign or design modification solution to address users' needs. This way they are able to practice value creation on a small scale, but also constantly. The goal is to repeat this activity regularly to help students turn this process into a habit. Performing all tasks and other course activities can help develop a human-centered design mindset. However, to move forward with forming a habit, the cognition of the habit formation and its process must be considered.

The Activity Procedures

Students are required to find an example of a poorly designed system, technology, or tool that they or someone else interact with in their home, workplace, or anywhere else. They are required to criticize the design and provide the reasons why they believe their case is an acceptable example of a poorly designed system, technology, or tool. They are also expected to identify where the product fails to address human factors. They are required to consider the three main goals of human factors in their cases (performance, safety, and satisfaction) and propose a new design, or design modification, including the reasons for their redesign suggestions. After creating a case, students are required to turn in their case to the course webpage on the Learning Management System (LMS).

Once cases are submitted, students are required to review all other students' cases and reply to at least two cases with appropriate discussion posts. The requirement for the appropriate discussion is to share technical thoughts or similar experiences about the issues concerning human factors. In addition, students are expected to make additional design suggestions or share their points of view and constructive feedback on the proposed suggestions. Students are also expected to keep the discussion friendly, inclusive, empathetic to users' experiences, and casual, but at the same time professional (i.e., use appropriate language) and respect all ideas. The details of instruction, a framework template, and examples are provided in the appendix.

Habit Formation Elements in The Activity

During the term that this activity, "The Hall of Shame," was introduced, students completed the assignments following the habitual behavior elements (i.e., trigger, routine, feedback, reward) without consciously knowing about them. Table 1 lists the activity's habitual elements.

Table 1. Hall of Shame Habit Formation Elements

Habit formation steps	The activity's habitual elements
Trigger (Motivation)	Time (weekdays), Location (campus, LMS), grade, competition, gamification
Routine	Due on Mondays, Repeating for ten weeks
Feedback	Peer review, instructor feedback, received a grade, weekly recognition
Reward	Accomplishment, Recognition, Certificate

Trigger/motivation:
Students learned about the assignment requirements early in the quarter. Therefore, "trigger" was the first element they learned about. One of the "triggers," or motivations, to work on the Hall of Shame assignment is receiving grades. Students learned to complete the assignment successfully, they are required to provide all cases with completed assignment sections. In forming a habit, the context of the activity plays an important role. The context including the time or location of the activity can create motivation to repeat the activity and connect the cues to memory. Students could work on the activity at any time at any location during the weekday. However, as they spend most of their time on campus, it is most likely that they will complete it on campus. Students could also submit their work on the LMS system any time by the deadline, and they were notified when another classmate submitted a case. Therefore, LMS, which is a digital platform, was also a virtual location that would trigger the action.

To provide some context for the activity and create an enjoyable environment, the activity was introduced as a fun activity. Students were informed that their cases will be voted on by their peers weekly, and the three top choices would be announced by the instructor. The winners received gold, silver, and bronze badges/medals depending on the number of votes. When there were ties in results, final candidates were selected using a raffle wheel of names (i.e., https://wheelofnames.com/), and a winner was announced. This way students could experience the activity through competitions like a game. Also, every week the winners' names were announced on the first slide of the lecture with digitally made fireworks animation around their names and students' round of applause. In addition, those whose cases would be among the top three choices at least twice during the course were acknowledged for being among the top case creators based on students' votes by receiving a certificate of the "students' popular choice case". The certificate is to recognize the student's continuous efforts in identifying and presenting human-centered design issues in everyday things (samples in Figure 3). The assignment's details and a template are available in the appendix. The activity was repeated for ten weeks to help students be exposed to the requirement for approximately 66 days, which is the requirement for habit formation.

Figure 3. A sample of winners' badges and certificate

Routine
To let the students turn the activity into a routine task and repeat it, they had the entire week to look for a design issue in everyday things and create their case and turn it in by the end of each week. This way, they had to consistently look for design issues as a routine activity.

Feedback
All students were required to provide their feedback on other cases. In addition, the instructor also provided weekly feedback and graded the cases based on the rubric. In the following week, after each case was submitted, students accessed a voting webpage to anonymously vote for their favorite case. Once the voting deadline passed, the instructors would send a mass email announcing the week's most popular choices. These feedback items would keep students on track and be intended to provide a short-term award and motivate them for the next week.

Reward
A reward is necessary to form a habit. In this activity students received a short-term reward weekly, which included the announcements of the most popular cases. In addition, they were informed that they would receive a certificate upon successfully completing the entire activity recognizing their excellence and ability in identifying and presenting human-centered design issues in everyday things.

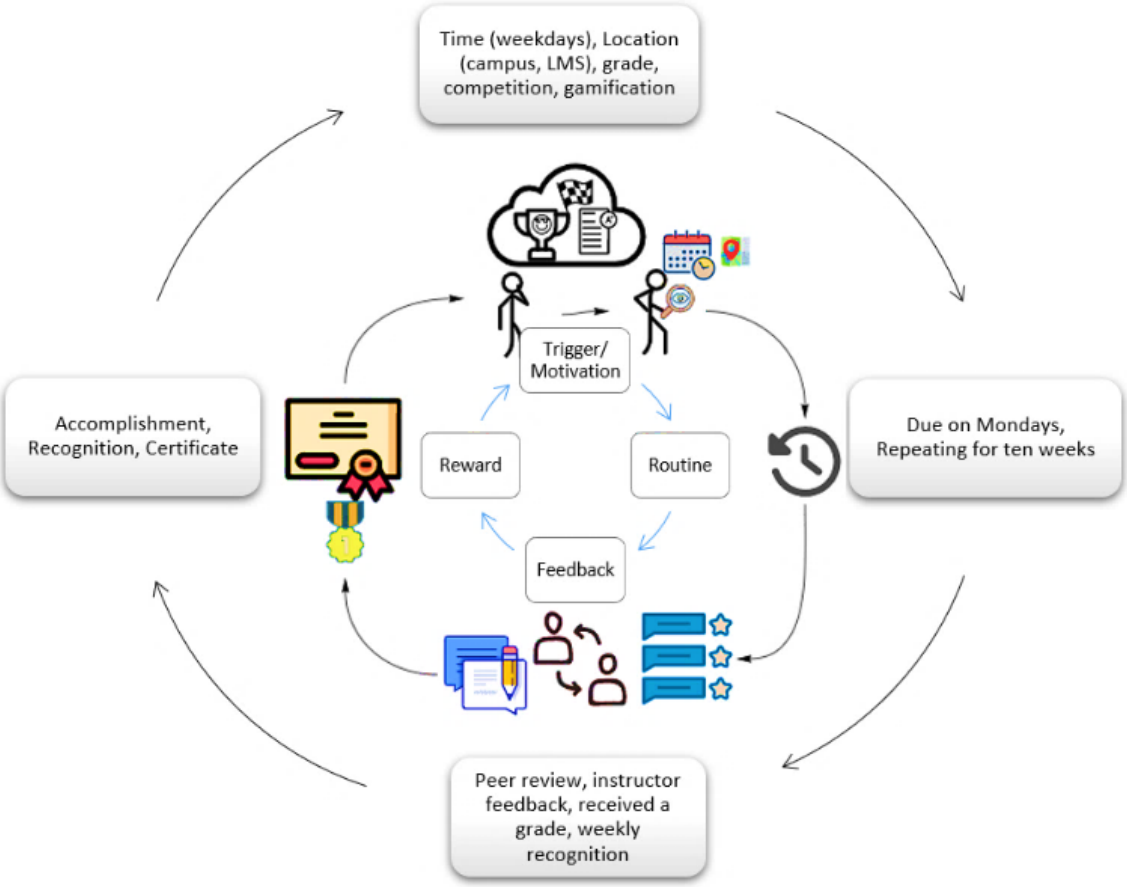

Figure 4. Hall of Shame Habit Formation Elements

Assessment:
Measuring the EML, as well as habit formation, is not a straightforward process. However, in this project, a survey was conducted to learn more about students' experiences and identify whether students also had the same perception about the activity and its implications. The survey was conducted at the end of the quarter when all assignments were complete and grades were published. The results of the survey are reported in the next section. Moreover, the instructor analyzed students' artifacts to assess Entrepreneurial Mindset Outcomes (EMO) including curiosity, connection, and creating value.

Result
Students who completed the survey believed that the Hall of Shame activity was an effective activity (89% extremely and very effective, 11% somewhat effective) for developing a human-centered design mindset. 44% of participants strongly agreed, and 56% agreed that after participating in the Hall of Shame activity, they became more cognizant of users' needs and their unpleasant experiences. Moreover, 78% of participants believed being aware of users' needs and their unpleasant experiences with products/systems would definitely help them be better engineers/designers while 22% believed it would probably be the case. They also believed that after completing the Hall of Shame activity, they regularly look for or think about poorly designed examples in their everyday things which can be a sign of curiosity mindset and habit formation. 89% of students believed that completing the Hall of Shame activity helped them think about human-centered design issues beyond the course. Finally, 100% of participants believed that the empathy, which is a goal of understanding users' needs in a user-centered design process, needs to be part of the design efforts. Table 2 includes the survey statements, and the average and standard deviation of Likert scale scores (1=lowest, 5=highest) based on students' responses.

Table 2. Students self-reporting data

Survey Statements	Average (1=lowest, 5=highest)	Standard Deviation
The activity is an effective activity for developing a human-centered design mindset particularly when it comes to human needs.	4.33	0.7
After practicing the Hall of Shame activity, I am more cognizant of users' needs and their unpleasant experiences.	4.44	0.52
Being aware of users' needs and their unpleasant experiences with products/systems would help me be a better engineer/designer.	4.77	0.44
After practicing the activity, I regularly look for or think about poorly designed examples in my everyday things.	3.75	0.46
Completing the Hall of Shame activity helped me think about human-centered design issues beyond the course.	4.55	0.72
I believe empathy with users needs to be part of the design efforts	4.33	0.5

To learn about students' motivations in selecting and voting for their favorite cases during the voting process each week, students were asked to select their answers to the question "What factors drove your decision in selecting and voting for your favorite cases?" 100% of students

revealed that they selected their favorite cases from what other students presented because they experienced/observed the same difficulties related to the design issue. Moreover, 56% of students made their selection because they empathized with the users' issues. This indicates that students understand users' needs and empathy at the top of their minds when being exposed to a poorly designed system and product. Table 3 presents the percentage of students who select each answer.

Table 3. The factors that influenced students to select their favorite Hall of Shame cases.

Factors in selecting/voting favorite cases	% of students selected the item
Experiencing similar situation	100%
Empathy with users	56%
Nice presentation of the case	56%
The importance and consequences of the design issue for users	56%
A new design issue that you were not familiar with	22%
Interesting photos	22%
Knowing the creator	11%
Discussions under the case	0%

Figure 5 illustrates these factors in a radar chart. The figure shows students' top preferences in voting for their favorite Hall of Shame cases were intended to be about users' needs, the importance of design issues in the case, empathy, and presentation of the case.

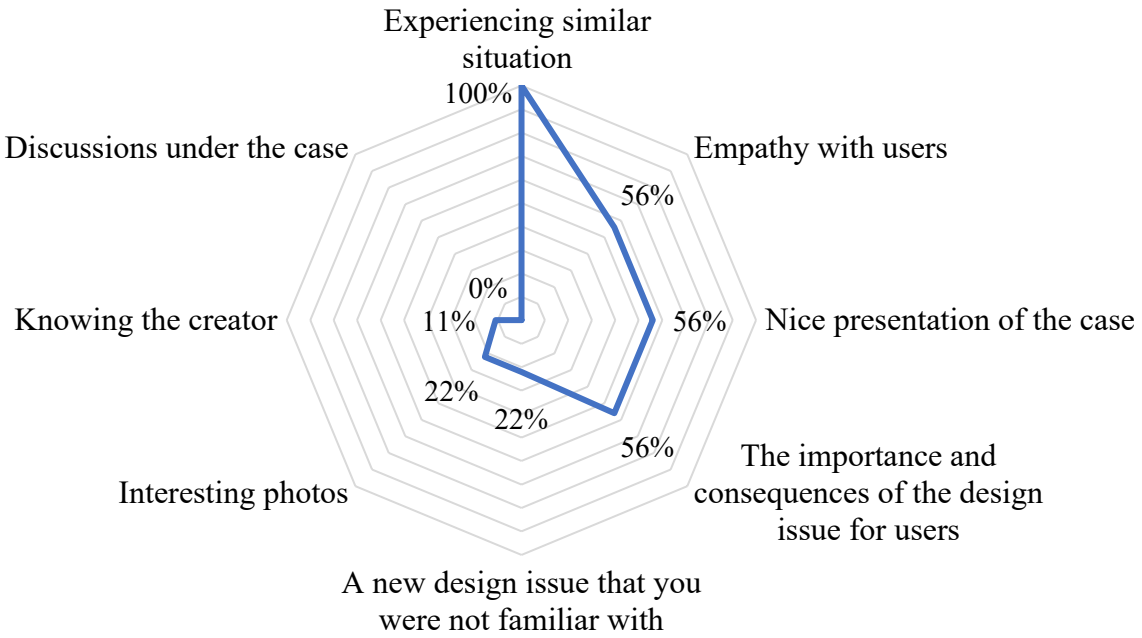

Figure 5. Factors in selecting/voting favorite cases

As discussed, motivation is the first step in the habit-formation process. Table 4 provides the weighted average of the Likert scale (1=lowest, 5=highest) students rated their motivation in completing the Hall of Shame activity. From the list of triggers provided to students, the highest rate belongs to students' interests in completing the assignment (m=3.89, std=1.45). It is also clear that the assignment grade was another trigger for students to complete the assignment (m=3.78, std=1.13). Moreover, performing the assignment routinely (m=3.11, std=1.1), and acknowledging the popular choices selected by students and announced by the instructor (m=3.11, std=1.37) were equally rated as the second triggers in completing the assignment. The next triggers in completing the assignment rated by students were receiving feedback from other students (m=2.78, std=1.23), taking the challenges in completing the assignment (m=2.75, std=0.83), and receiving the certificate (m=2.38, std=1.22).

Table 4. Students' triggers in completing the Hall of Shame activity (1=lowest, 5=highest)

Triggers	Weighted Average	Standard Deviation
Acknowledging Popular choices	3.11	1.37
Certificate	2.38	1.22
Challenges	2.75	0.83
Feedback from my classmates	2.78	1.23
Grade	3.78	1.13
Personal interests	3.89	1.45
Routine	3.11	1.10
Others	2.2	1.60

The triggers' weighted averages are visualized in Figure 6, which illustrates it in a radar chart.

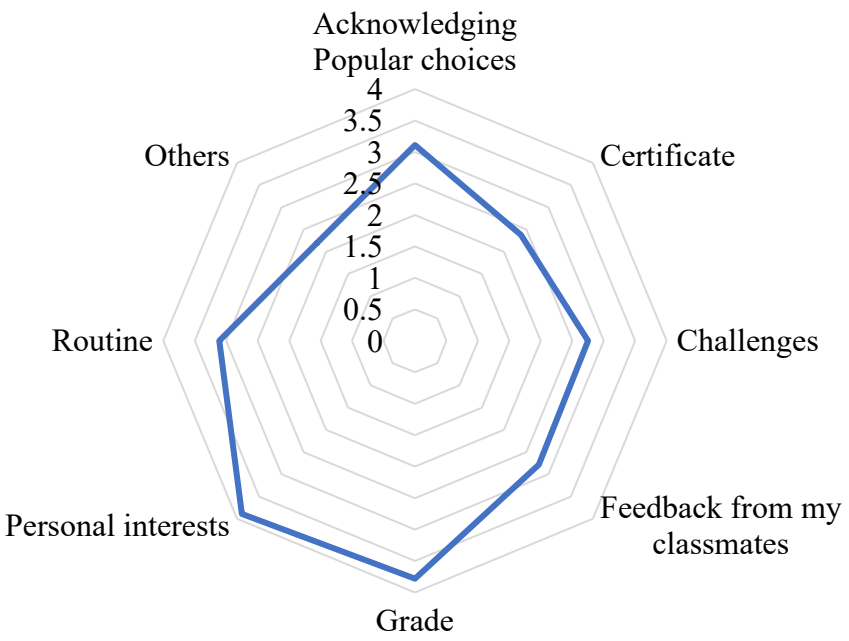

Figure 6. Students triggers in completing the Hall of Shame activity (1=lowest, 5=highest)

In addition to students' feedback, the instructor also reviewed the artifacts for identifying EM: curiosity, connection, and creating values (3Cs). Table 5 summarizes the criteria to assess 3Cs and the percentage of each item that was identified in each artifact by the instructor. The percentages represent the number of artifacts over submission size that met the 3Cs criteria.

Table 5. Entrepreneurial Mindset Outcme assessment

3Cs	The percentage of artifacts met the criterion	Criteria
Curiosity	38%	More than the minimum requirements were identified (i.e., several keywords referring to different user experiences and human factors)
	46%	More than one solution was proposed or discussed.
Connection	62%	Integrated information from many sources to gain insight (e.g., from different users' experiences, their feedback, course topics, and out-of-course resources)
	44%	Multiple design issues related to human factors were identified (i.e., safety, satisfaction, performance)
	28%	Risks in redesign proposals were identified
Creating Value	88%	The project was completed with all requirements.
	62%	Unexpected opportunities or values were identified.
	24%	Unexpected, proposed solutions were discussed.

The results show that 38% of students could complete the assignment by satisfying more than the minimum curiosity requirements. Although proposing one solution to the design issues was the minimum requirement, 46% of students could also provide more than one solution. Moreover, in 62% of the cases, students integrated information from many sources to gain insights either into identifying the design issues or into their proposed solutions. In a few cases, students' examples were related to the course topics they learned in the same week. In other words, they could connect the course topics to design issues they observed and presented.

In terms of connecting the design case with the risk component of EM, there was not any requirement, but in 28% of cases, students could identify or discuss potential risks in their redesign proposed solution.

In assessing the value creation, students completed the activity with an 88% rate of completion and satisfied all minimum requirements. In 62% of cases, unexpected opportunities or values were identified and in 24% of cases, an unexpected solution was proposed or discussed. Figure 7 illustrates the average percentages of EM outcomes together. The figure indicates that students' cases provided evidence of creating values (58%), connection (45%), and curiosity (42%), respectively.

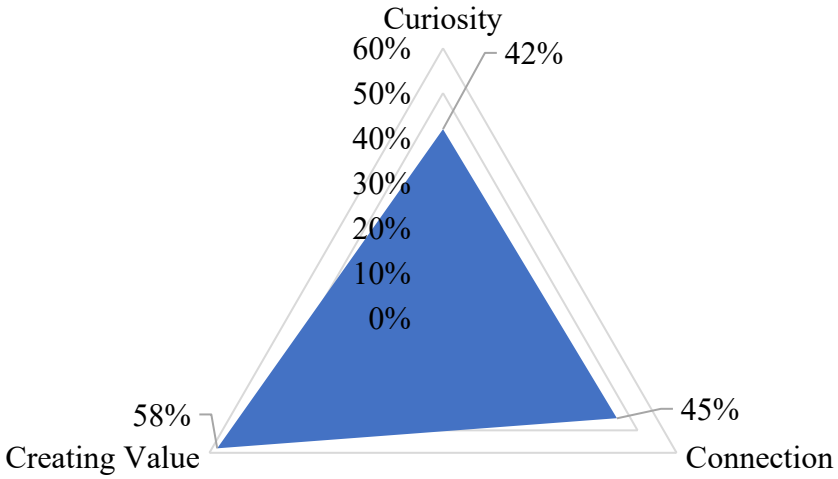

Figure 7. Entrepreneurial Mindset Outcomes

Discussion and Conclusion:

During this activity, several other positive events were observed:
Students found the activity a fun assignment and different than a traditional assignment. Therefore, several times during the quarter they expressed that they were enjoying working on it. Also, announcing the week's winner every week on Mondays created excitement and motivation earlier in the week and helped in generating a positive and fun class atmosphere. All these

factors helped with a better instructor-student and student-student relationship, as well as creating a positive and engaging learning environment.

Although it was not planned to measure how many students were thinking about their experiences with products or systems while learning about human factors topics during lecture time, on two different occasions, two students came across their week's Hall of Shame ideas and pointed it out during class time. This may imply that the students were actively thinking about design issues in their everyday things during lecture time and could connect their cases with the course topics.

Creating an environment to support empathy with users is a requirement for a user-centered design process. Although empathy with users was one of the assessment criteria, teaching empathy was not a direct focus of this activity. However, in a few cases, students shared their personal experiences interacting with products that failed to accommodate their needs. In those cases, students discussed how users may feel excluded. It was interesting to see constructive and empathetic discussions made by other students in this case.

The Hall of Shame activity is also a helpful activity for an online class. Before introducing this activity in an in-person class, it was piloted in an online class during the Covid-19 pandemic. Although we did not study and analyze the pilot version in this paper, it may help to know that despite being quarantined and interacting with fewer products at home during the pandemic, all students came up with one poor design example from home and turned them in the discussion forum by the end of each week. The activity created an online environment for students to engage more and socialize with other classmates while learning about human factors in the design of everyday things.

Limitations

Conventionally, in human factors courses, showcasing or illustrating examples of poorly designed products and systems from the news, real-world examples, or other studies are usually effective ways to help students learn from different cases, brainstorm better, and connect to topics. In this paper, an activity is proposed that can engage students in creating real-world examples of poorly designed products and encourage them to discuss the design issues and provide redesign solutions. By doing so, the number of examples students have been exposed multiplies and they see different aspects of human factors in the real world. Therefore, to have a more effective learning experience, the larger the class size, the more examples to discuss and learn from.

Moreover, the EM outcome shows that to make a more effective learning experience, raising the activity requirements to improve curiosity, connection, and value creation can be helpful. For example, requiring students to provide at least two redesign solutions, or identifying at least two human factors related to a design issue may reinforce the curiosity.

Habits are learnable and the goal of the Hall of Shame activity was to provide an opportunity for students to form a habit of being curious about human factors in the design of everyday things. However, as explained in the habit formation steps, forming a habit depends on several triggers such as time and location when/where behavior occurs. In this activity, students were not

monitored to see if they regularly made efforts every day to search for design issues in everyday things. Therefore, it cannot be claimed that all of those who completed the activity form a habit. However, the activity and the process were designed based on habit formation requirements.

Future work

The current activity can be improved by repeating in several quarters, with more students, and by conducting pre and post-test studies. Also, in future offerings, measuring several user-centered mindset factors such as habit formation in detecting design flaws and empathy awareness may help to understand more about the effectiveness of such an activity.

Moreover, to strengthen the requirement on value creation to the stakeholders, it may help to extend the activity by requiring students to assess their proposed solution financially. This may require improving the instruction with examples of how to assess a solution financially by considering economic aspects such as return on investment, or cost-benefit analysis. Similarly, to improve the requirement on the connection mindset, providing additional instruction to assess the risk of implementing a redesign solution may help with the EM development.

Appendix
Hall of Shame Instruction

Learning objective:
The objective of this activity is to identify human factors issues in systems and technologies in everyday things. This activity can help you to be cognizant of human factors during daily basis life activities and develop a human-centered design mindset through regular practice. Based on Bloom's (Revised) Taxonomy, after completing the series of this activity students will be able to:

1. Identify possible Human Factors and design issues in personalized experiences with everyday things.
2. Develop a curious mindset regarding human needs during their interactions with everyday things.
3. Develop a habit of being empathetic and cognizant about users' needs and unpleasant experiences.
4. Demonstrate a poorly designed case, criticize it, and propose a solution to revise the design.

Instruction for generating Hall of Shame cases:
You need to find an example of a poorly designed system, technology, or tool that you or someone else interacted with at home, the workplace, or anywhere else. You need to be able to criticize the design and provide the reasons why you think your case is an acceptable example of a poorly designed system, technology, or tool and where you think the human factors might fail to address in the design. You should think about three main goals of human factors in your examples (performance, safety, and satisfaction) and propose a new design or design modification including the reasons for your redesign suggestions. One way to think about a poorly designed product is that you or the other users may try a shortcut or look for a workaround in performing a task while interacting with the product. Another option is when the design is not inclusive based on your physical or cognitive characteristics.

1. Students need to provide photos (taken by cellphone or camera) of a product/system/tool/procedure that illustrates the human factors design issues.
2. Paste the photo in the table (in the first row) and mark the area that you are pointing to as a design issue.
3. Select and enter a name/topic for your example.
4. Provide at least two keywords about your case and use the hashtag to tag the keyword. (e.g., #visibility, #PoorMaping, #userFreedom, #Inconsistency, #RecallRatherThanRecognition, #flexibility, #NotMinimalist, #NoErrorRecovery, etc.,)
5. In a paragraph explain the user’s goal/s using the product, the required procedures for users to reach their goal/s, and why you think the product fails to satisfy users’ needs. You should also refer to any human factors’ goals (enhancing performance, safety, and satisfaction) that the example may fail to satisfy.
6. Up to a paragraph, suggest or propose your solution/s. It can be simple or technical. (Try to find an innovative solution for improving the design, redesigning, or changing the procedures--you can be simple but creative)

Instruction for contributing to other students' cases:

1. Each student is required to read all other students' cases and reply to 2 other cases. (You are welcome to expand the discussion and reply on more cases)
2. Share your thoughts, similar experiences, or observations about the issues concerning human factors.
3. Make additional design suggestions or share your points of view and constructive feedback on the proposed suggestions.
4. Try to make constructive responses.
5. Keep it friendly, inclusive, empathetic to users' experiences, casual, but at the same time professional (use proper language) and respect all ideas.
6. Use this template table to organize your case. (See examples at the end of this page)
7. Download the Hall of Shame template: shorturl.at/bfyDY

Hall of Shame Case Presenter Grading Rubric

The rubric below shows how each case will be graded.

Criteria	Unacceptable: 1	Below Standards: 2	Meets Standards: 3	Outstanding: 4	Grade
Requirements for accepting a case	The case is not related to any of the human factors' goals	The case is related to human factors goals but fails to address the goal	The case is related to the human factors goals and addresses them.	The case is related to the human factors goals and refers to them and provides evidence to support it throughout the case.	1-4
Explaining the design issues and suggestions	The case does not explain the issues clearly with jumping from one point to another. Suggestions are not provided or not completed.	The case provides the issues but fails to provide a connection between issues and suggestions. The suggestions sound unrealistic.	The case provides the design issues clearly, and suggestions are acceptable.	The case provides outstanding points to the design issues and the redesign suggestions are realistic, innovative, and applicable to a real-world example.	1-4
Language and grammar	The language is not technical and/or more than 3 grammar or spelling mistakes were found.	More than 2 grammar or spelling errors were found, or the language used is not professional and appropriate.	Good content, but 1 or 2 grammar or spelling mistakes are found.	Error-free that appropriately communicates ideas.	1-4
Graphical illustrations	No visual aids	Poor-quality visual aid or visual aids do not contribute to the communication of written content.	Visual aid(s) offer a new or different way of understanding the written content.	Visual aid(s) enhance the written content and is essential to understanding it.	1-4
Grade					= Average of all grades in this column in %

Hall of Shame Contributor Grading Rubric
The Rubric below shows how your contributions to others' Hall of Shame cases will be graded.

Criteria	Unacceptable: 1	Below Standards: 2	Meets Standards: 3	Outstanding: 4	Grade
Quality of the contribution	No constructive comments	Provides random ideas and fails to support or add applicable ideas.	Add constructive comments that support or add to other ideas.	Constructive, well-explained, engaging, and realistic.	1-4
Language and grammar	No empathy for users' experiences. Careless language with more than 3 grammar or spelling mistakes.	Empathy to users, but more than 2 grammar or spelling errors were found.	Empathy to users' needs and experiences, and error-free content.	Empathy to users' needs, a careful language with inclusive thoughts, error-free that communicates ideas clearly.	1-4
Grade					= Average of all grades in this column in %

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