AI in the Classroom: First-Year Engineering Students Usage Policies

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Abstract:

This Work In Progress paper focuses on first year engineering students' understanding of and thoughts regarding Generative Artificial Intelligence (GAI) policies within the classroom. With many universities opting to leave GAI policy development up to the faculty members [1-2], general policies have been applied to courses focusing heavily on a high-level regulation of GAI for the classroom [3]. Despite GAI policies being included primarily as part of a syllabus statement [4], many students are unclear on what the class AI policy is [5-6], policies are inconsistent across professors and universities [7-8], and students as a stakeholder group have largely not yet been consulted.

Through this project, approximately 125 first year engineering students in the first semester of a required two-semester foundations of engineering course sequence at a large R1 mid-Atlantic university were tasked with crafting a GAI use policy for their upcoming spring foundations in engineering course. Students in the class were divided into teams of five to six, with a variety of intended engineering majors and identities present. Along with a comparison of the average policy statement created by all teams, a comparison of differences in policies between students' intended majors and students' identities was performed to determine how engineering major and identity impacts the GAI policy development the team decided on.

Student GAI policies were compared to the course GAI policy using Microsoft Word's Legal Blackline feature to identify what sections of the policy the students keep the same, and which parts they added or adapted. Student policies were thematically analyzed into one of three themes: unrestricted GAI use, semi-restricted GAI use, fully restricted GAI use. Further themes will be created for the semi-restricted GAI use policies, focusing on the types of activities that students are allowed to use GAI for.

Once all students generated GAI use policies are thematically analyzed, students' intended majors will be mapped to the different policies to determine any correlation between majors and the criteria included in a GAI use policy. This will be repeated for students' self-reported identities as well.

Following the conclusion of thematic analysis and mapping to the different GAI policies, an updated recommendation of GAI use policies for foundational engineering classes will be created, with attention to policies on unrestricted use, semi-restricted use, and fully restricted use of GAI from the student's perspectives.

Introduction:

Following the public release of OpenAI's ChatGPT in 2022 [9], higher education has grappled with the impact of Generative Artificial Intelligence (GAI) within the learning environment. While GAI has been touted as a way to improve personalized learning [10-11], and act as an always available tutor [12-13], GAI has also led to concerns within higher education. Some commonly reported concerns include academic integrity risk [14-15], increased cheating [16], and intellectual property violations [17-18].

Higher education has created GAI usage policies at varying levels to help students understand the boundaries of what GAI can and cannot be used for during the learning process. While some universities have issued university wide general guidance [19], sometimes focusing on the specific tools that can be used on campus [20], many administrators have left GAI usage policies up to the course instructors [1-2]. While this supports instructor autonomy [21], inconsistent policies impact students' confidence in appropriate GAI use [5], along with their perceptions if they can use GAI or not [6].

To date, no study has looked at GAI usage policies from the student's perspective, particularly for what students believe is necessary to include in a GAI usage policy. This study asks teams of first year undergraduate engineering students to create a GAI usage policy for their upcoming Spring 2026 Foundations of Engineering class. Starting from the current course GAI usage policy for their Fall foundations course, students will be grouped into teams of five to six and asked to edit, add to, or remove from the GAI policy to what they believe is necessary to include in it. Prior to working on the course GAI policy, students will be primed with an engineering and professional ethics lecture, to help them frame what they believe should be included in the policy.

As such, this study aims to answer the following research questions:

RQ1: What course activities did students address in their GAI usage policy?

RQ2: What sections of the created course policy did students edit when they created their own GAI usage policies?

Theoretical Framing:

The Policy Diffusion Theory [22-23] evaluates how policies and practices spread across various groups or regions. Policy Diffusion Theory evaluates how organizations apply *learning*, observing the policy in other settings, *emulation*, conforming to norms and standards, *coercion*, being pressured to adopt a policy, *competition*, adopting a policy driven by competitor choices, and *interdependence*, making policy choices based on other choices already made.

The work by Braun and Gilardi explored beyond these initial mechanisms how policy actors make policy decisions [24]. In their work, they break the policy change process down into the steps of policy change, diffusion, and aggregate pattern of diffusion and convergence. During

the diffusion step, Braun and Gilardi add the mechanism of *taken-for-grantedness*, that is that policies are considered to be natural choices.

Marsh and Sharman focus on the similarities and differences between *policy diffusion* and *policy transfer* [25]. In their work, they identify that there should be an increased focus on the interactions between mechanisms in diffusion and transfer, there should be a dialectical relationship between diffusion and transfer, both pattern finding and process tracing are crucial to include, cases should also include developing countries, and success considerations need to be given for diffusion and transfer.

Through a combination of the mechanisms introduced by Rogers, Walker, Braun, and Gilardi, and the focus on diffusion and transfer as suggested by Marsh and Sharman, student created GAI use policies will be thematically analyzed with the codebook found below in Table 1:

Table 1

Deductive Codebook Used for Qualitatively Analyzing Student GAI Policies

Code	Definition	Source
Emulation	Students adopt a policy commonly accepted as the standard	[22-23]
Interdependence	Students create a policy due to pre-existing GAI decisions	[22-23]
Taken-for-Grantedness	Students create a policy due to choices they see as naturally made	[24]
Policy Diffusion	Policy created is a combination of existing and new knowledge	[25]
Policy Transfer	Policy adopted is pre-existing in another similar situation	[25]

Methodology:

In Fall 2025, approximately 125 first-year engineering students enrolled in a Foundations of Engineering course were divided into teams of five to six. From there, the class was provided a lecture on engineering and professional ethics and then asked to work in their teams on developing a GAI usage policy for their Spring 2026 Foundations of Engineering course.

Teams were each provided with the current Foundations of Engineering policy in a Microsoft Word document and asked to make changes to the policy until they were satisfied with the policy they created. Policies were then tagged with a team number and submitted to the research team for analysis.

The student created GAI usage policies were analyzed in two ways. First, each policy was compared against the current Foundations of Engineering GAI usage policy in Microsoft Word using the Legal Blackline feature. The differences between the student policies and the current course policy were then coded and organized by the themes defined in Table 1.

Following this initial analysis, student GAI usage policies were thematically analyzed into one of three categories: unrestricted GAI use, semi-restricted GAI use, and fully restricted GAI use. Table 2 below defines what each of these categories look like:

Table 2

Definitions of the GAI Usage Policy Themes used for Analysis in this Paper

GAI Usage Policy Theme	Definition
Unrestricted GAI Usage	GAI can be used on any and all class activities
Semi-Restricted GAI Usage	GAI can be used on some class activities but is prohibited on others
Fully Restricted GAI Usage	GAI cannot be used on any class activities

Once this theming took place, student GAI usage policies were compared to other policies in the same cluster to identify similarities and differences among the team created policies.

Preliminary Results:

Policy Comparison:

Following the generation of the 23 policies created by the student teams, a comparison of policies in Microsoft Word's Legal Blackline took place to identify consistency in what students retained or changed in the course GAI use policy. The current course GAI usage policy stated:

> In this class, Generative AI (e.g., ChatGPT, Bard, GitHub Copilot) is prohibited unless explicitly required. You should assume it is not allowed unless otherwise indicated. At certain points, we will use AI in structured ways to help you practice ethical and effective use. **Prohibited**: Using AI for assignments, drafts, or reflections unless specifically instructed. **Permitted**: Only when the assignment requires AI use, with clear guardrails. **Accountability**: Unauthorized use will be reported as an Honor Code violation. You are here because of your ability and effort. This course is designed to strengthen your skills and voice while also preparing you to use new tools responsibly.

The first change that was observed in 19 (82.6%) groups was a focus on the role of disclosing the usage of GAI when students are permitted to use it to help complete class assignments. Next, 14 (60.8%) groups made a change to focus the syllabus policy more on specific GAI use cases, such as *brainstorming*, *reviewing*, or *debugging*. Lastly, 15 (65.2%) groups made changes in the policy to either not directly call out the Honor/Academic Code, or to not mention enforcement consequences if GAI is used in an unauthorized manner.

When comparing the changes made in the policy to the categories defined in Table 1, we observed that students generally made changes on *Taken-for-Grantedness* 13 (56.5%), students know what "acceptable" AI use mans, and *Emulation* 14 (60.9%), instructors will specify when

AI can be used, levels. Table 3 below lists each category and the number of policies that included that type of change:

Table 3

Frequency of Policy Diffusion Codes Assigned to Student Generated GAI Policies

Code	Frequency	Percentage
Emulation	14	60.9%
Interdependence	8	34.8%
Taken-for-Grantedness	13	56.5%
Policy Diffusion	9	39.1%
Policy Transfer	14	60.9%

Policy Clustering:

From the 23 policies created by the students, the following distribution of polices were found:

Table 4

Distribution of GAI Usage Policies Created by the Foundations of Engineering Students

GAI Usage Policy Cluster	Number of Policies	Percentage of Policies
Unrestricted GAI Usage	0	0%
Semi-Restricted GAI Usage	11	48%
Fully Restricted GAI Usage	12	52%

When comparing across the clusters, no students developed an unrestricted GAI usage policy. The fully restricted GAI usage polices however, had students acknowledging the role of the professor/course instructor when it comes to regulating GAI usage in the classroom (*Emulation*), with students developing a policy such as:

> Students are not permitted to use AI at all unless instructed to do so. If the professor lets you use AI, you must document every part of the conversation you had with GenAI through screenshots. The penalty for failing to do so will be determined by the jurisdiction of the professor for the course

The largest difference was between students who created a semi-restricted GAI usage policy. Within the semi-restricted GAI policies, students commonly noted allowing the usage of GAI tools for understanding proper syntax in a code or debugging (9, 82%), providing additional information or clarity on a class topic (7, 64%), and for idea generation or brainstorming activities (7, 64%). Students commonly agreed on restricting the use of GAI for writing (6, 55%), creating anything to be submitted as graded work (7, 64%), and for usage during class projects (5, 45%).

While many students commonly agreed on restricting the use of GAI for writing, developing submissions for graded work, and working on class projects, students disagreed on the

way to word the policies and display them to students. An example of one team's semi-restricted GAI usage policy is:

> Students may use GenAI for generating ideas, grammar improvement, and debugging only if they disclose their usage in the assignment submission (e.g., "ChatGPT was used to rephrase text and check code logic"). GenAI may not be used to generate entire assignments, solutions, or design reports. All AI use must be transparent, limited, and educational, supporting learning rather than substituting for it. Failure to disclose or misuse AI constitutes academic misconduct. Punishment is under the jurisdiction of the professor (and punishments must be disclosed by the professor beforehand).

Discussion/Conclusion:

Through the 23 policies developed by the first-year first semester engineering students, a combination of semi-restricted and fully restricted GAI usage policies were observed. Students focused on providing additional details on the use cases of GAI, sometimes opting to include why they decided that a use case was or was not acceptable for GAI, and often still differed back to the Professor or course instructor to mention/decide which assignments GAI can or cannot be used for.

In answering the first research question, what course activities did students address in their GAI usage policy, it was observed that students called out both those activities that they felt GAI usage was permissible for, as well as those in which they felt GAI use should be prohibited. For those allowed, understanding proper syntax in a code or debugging (9, 82%), providing additional information or clarity on a class topic (7, 64%), and for idea generation or brainstorming activities (7, 64%) were the most common. For the tasks in which students felt GAI use should not be allowed, writing (6, 55%), creating anything to be submitted as graded work (7, 64%), and for usage during class projects (5, 45%) occurred the most frequently.

Regarding the second research question, what sections of the created course policy did students edit when they created their own GAI usage policies, it was observed that about one third of the students adopted a new policy that was different from the original policy in multiple areas. For all the students, changes were mostly commonly seen in a focus on the role of disclosing GAI usage (19, 83%), discussing specific GAI use cases for students (14, 61%), both permitted and unpermitted, and changing or removing the statement on the Honor Code Policy (15, 65%).

Across policies, teams tended to treat GAI as a tool with legitimate uses to support leaning, but that also carries a substantial risk of learning substitution. Teams attempted to preserve a level playing field by making expectations explicit and enforceable. Many policies call out a subset of legitimate use cases (explanation, debugging, brainstorming) while restricting any use that replaces students' own work. Furthermore, permissible use cases are further constrained through strict disclosure requirements. This suggests that the central student concern with GAI usage is how to

distinguish acceptable GAI assistance from substitution of work. Unclear or vague policies or norms create ethical ambiguity (students are unclear what is permissible) and competitive pressure (peers may use GAI in what that inflate their grades). In response, students converged largely on two camps – 1) externalization of judgment to an authority with near-prohibition, or 2) establishing clear boundaries for use by defining permissible and impermissible use cases.

A second notable pattern concerns enforcement. Although the existing GAI course policy explicitly points to Honor Code violations for unauthorized GAI use, 65.2% (15/23) teams either removed honor code language or softened the consequences. Importantly here, the course assignment explicitly required students to provide consequences for violation in a separate section that was not analyzed in this work. As a result, here we are discussing how those consequences were integrated into the final policy statement itself. Even given this limitation, the relative absence of language concerning consequences of violation within those final policy statements is notable. This may reflect *emulation* of common course policy conventions at the institution, where penalties are often left to the discretion of the professor rather than standardized in the syllabus. In this light, students may be viewing the policy primarily to provide transparent coordination among peers to define boundaries and disclosure limits. Thus, students are viewing the policy more as a control on competition rather than a deterrence instrument. A plausible interpretation is that the policy statement is meant as guidance for students' own ethical use of GAI, with misuse falling under established institutional processes.

We can draw several implications from this work. First, student policies generally assume constraints on GAI use are warranted and they emphasize transparency. So, institutions can take this as a point of alignment between students and the institution. Secondly, students repeatably included rules for use and guidelines for disclosure into their policies, suggesting that clear boundaries might reduce ethical uncertainty and peer competition. Third, students might be anticipating some of the ambiguous scenarios that arise with GAI use in future classroom settings, as seen perhaps by deferring authority to the instructor. This concern could be addressed in course policy by explicitly stating where decision making lies in these ambiguous cases, providing guidance on how to ask for clarification, and notes on how to document permission and actual use. Finally, the relative dearth of punitive language in student-generated policies suggest that language framed around protecting learning might resonate more with students that purely punitive language. Policy could benefit from aligning with student character rather than presuming misuse.

By beginning to understand what first-year engineering students believe is important to include in GAI usage policies, we can begin to have more timely and targeted conversations on both the role of GAI usage policies in engineering and the impact of GAI on the accumulation of foundational knowledge for undergraduate engineering students. While it is expected that more advanced undergraduate students, such as juniors and seniors, may not need as much guidance on the proper usage of GAI tools in higher education, GAI usage polices help us ensure that the profession of engineering education remains ethically sound and that students are able to acquire the core foundational knowledge required to become an engineering professional.

Future work includes an additional layer of analysis on student declared disciplines and the role of engineering discipline on GAI policy creation and GAI usage. Additionally, a layer of analysis on student's identities on the GAI policies created to investigate any correlation between the first-year engineering student's identities and their created policies. Lastly, a longitudinal study with these first-year engineering students as they progress through their chosen engineering program to investigate how their view on GAI policy and GAI usage stays the same or changes over their development as engineers.

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