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Communicating the use of generative AI to design students: Fostering ethics rather than teaching it

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Communicating the use of generative AI to design students: Fostering ethics rather than teaching it

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Abstract: This paper presents a means of communicating to design students the appropriate use of generative artificial intelligence (GenAI) in their studies. It underscores the need to consider broader aspects such as individual student identity and ethical considerations, given the emerging popularity of GenAI. The paper explores the necessity for students to acknowledge their use of GenAI. It draws parallels between GenAI and traditional design resources, likening the use of GenAI to leveraging other designers' work and assistance received during projects. This analogy is employed as a strategy to link the decision to disclose the use of GenAI with the students' designer identity. The delineation between contexts in which students are permitted to use GenAI and those in which they are encouraged to do so is tied to their intended learning outcomes. Several case studies, both hypothetical and real, are discussed and analyzed to support the points raised in this paper.

Keywords: generative AI; design ethics; design education; ethics education

1. Introduction

Emerging technologies do not only require that design educators update their technical skills but also necessitate the engagement of design students in discussions about ethics. The advent of new technologies has generated opportunities for designers to enhance people's lives while also presenting a broad spectrum of ethical (and unethical) choices. As educators, the task of integrating these technologies into classrooms and studios has become increasingly complex. The challenge extends beyond merely introducing new technologies; it also involves preparing design students to critically evaluate the potential ethical implications of these advancements. A prime example of this kind of emergent technology is generative artificial intelligence (GenAI), as exemplified by ChatGPT and MidJourney. This paper explores these challenges and presents a communication approach for addressing ethical issues with design students. Design decisions behind the communication approach are also discussed.

2. The emergence of GenAI – enabling unethical options for design students

GenAI refers to a suite of technologies, enabled by artificial intelligence, that can create content. ChatGPT, for instance, is a GenAI application capable of generating text based on a prompt, which can be a phrase or a full sentence. ChatGPT can maintain a text-based conversation in natural language and keep track of the context of the conversation. Users can instruct ChatGPT to revise earlier responses and produce more complex answers. Another example is MidJourney, a GenAI application capable of generating images based on textual prompts.

While GenAI has been around for some time, it garnered significant popularity when OpenAI began granting public access in March 2023. Suddenly, GenAI became accessible without the requirement of advanced technical skills. People began exploring various ways to utilize GenAI, and companies began incorporating it into their design software applications. For instance, Adobe Photoshop introduced a "generative fill" feature in early 2023. Users can now select a region of an image and provide a text prompt. The software then populates the region with content reflecting the text prompt, seamlessly integrating it into the image. Multiple fill-in content options are often generated for users to choose from. Consequently, GenAI is increasingly embedded in design software and, by extension, design practices.

Despite only capturing the public's attention in the last year, the use of GenAI in the design and creative industries has not been without controversy. Concerns have been raised by fans and audiences alike, particularly with the revelation that the opening credits of Marvel Studio's drama series *Secret Invasion* were created using GenAI (Watercutter, 2023b). Another example is Hollywood writers initiating a strike due in part to concerns over the use of GenAI (Watercutter, 2023a). They are demanding contractual terms to limit the use of GenAI by Hollywood studios.

The next generation of design students could utilize GenAI to enhance their design process and learning experiences. For instance, they could rely on GenAI to assist in prototyping by solving technical challenges, handle minor design decisions within larger projects (such as generating a persona image for a hotel experience design project), and visualize what-if scenarios by creating visual illustrations based on textual prompts describing the scenarios. However, it is important to consider that design students may become overly dependent on GenAI for generating designs, potentially diminishing their own design skills. They might also develop a tendency to overlook the critical evaluation of designs generated by GenAI due to its convenience. Additionally, there is a risk that they may be tempted to present GenAI-generated works as their own, as the quality of the generated designs is reasonably high.

In the realm of higher education, the introduction of GenAI to the public has raised concerns in universities. A major worry is the potential misuse of GenAI by students to generate essays, making it challenging for professors to detect such malpractice. Scholarly tactics to address this issue are being discussed on higher education–focused websites and forums.

Efforts have been made to promote the responsible use of AI in diverse educational environments. One notable initiative is the AI Pedagogy Project, which offers valuable teaching resources such as guides and assignments (*The AI Pedagogy Project - metaLAB (at) Harvard*, n.d.). Educational institutions and scholars have also been exploring the application of generative AI in educational contexts. For instance, researchers have examined governance models for the use of generative AI in education (Vidal et al., 2023).

However, most of these strategies are suitable for lecture- and essay-based settings where students attend a series of lectures, receive essay instructions and requirements, and submit their essays after a designated period. These tactics generally do not assess students' progress in preparing their submissions.

Nevertheless, the design education context often differs from that described above, particularly in studio-based teaching, where the evaluation of student progress is a main focus. In studio-based teaching, the journey toward the final outcome is deemed as important as the outcome itself. Therefore, in design education, it is very common to assess the process by which students produce final design outcomes. With GenAI capable of generating various types of content, design students are presented with numerous options to utilize it at every step of the design process.

The positioning of the current paper is that GenAI should not be completely rejected in design education; rather, it should be integrated to equip design students for the future. The main concern, which is also the central focus of this paper, revolves around how to effectively incorporate GenAI into design education, specifically in terms of conveying the teachers' stance on GenAI to the students.

3. Dilemma faced by design educators

Design educators are confronted with a dilemma regarding GenAI. On one hand, as design educators, we could ban GenAI in our design classes. This approach would be straightforward: any use of GenAI by students in class or related design work would be deemed plagiarism. However, this approach would fail to prepare our students for the future and would only delay their inevitable encounter with GenAI, either in the job market or through other accessible means.

Conversely, as design educators, we could permit our students to utilize GenAI in our classes. This would expose them to GenAI, allowing them to gain experience with it during their studies and thus better preparing them for the future. However, this leniency could lead to students using GenAI to produce design work that they should be creating themselves, impeding their learning and practice. Moreover, by allowing GenAI use, educators implicitly recognize GenAI as legitimate, which could send a message to students that its use is universally ethical—a potentially dangerous assumption.

The dilemma of choosing between these two different perspectives can have long-term consequences for design students. Considering the future impact highlights the

responsibility that falls on design educators' shoulders, making it even more difficult for them to decide which positions to adopt in their everyday teaching.

These are extreme scenarios representing two divergent options. The ideal scenario would involve permitting students to use GenAI in classes while also teaching them to make ethical decisions about its appropriate use. In other words, allowing students to use GenAI in design education is not just about exposing them to new technologies and equipping them with relevant technical skills. More crucially, it is about training them to critically evaluate their ethical choices when presented with options made available by new technologies. This raises the following questions: "What kind of ethics should be taught?" and "To what extent are educators responsible for their students' actions?" Among these many concerns, one more immediate and practical issue is how to communicate the design educators' policy regarding students' use of GenAI in design classes.

Design scholars have been exploring various approaches to foster ethics in design education. Sonneveld (2014) advocated for positive ethics, which emphasizes promoting “doing the right thing” rather than merely avoiding wrongdoing. This approach is based on the interplay between professional ethics and personal ethics. Sonneveld proposed a two-dimensional matrix that assesses the levels of professional ethics and personal ethics as high or low. The author examined students’ personal values and suggested an approach aimed at nurturing and developing personal ethics into professional ethics as designers, which students found challenging. In another work, Sonneveld (2016) proposed integrating ethics learning across different design courses. Ethical learning objectives, such as ethical sensitivity, ethical analytical skills, ethical creativity, ethical judgment skills, ethical decision-making skills, and ethical argumentation skills, were incorporated into a design bachelor's degree program. The author aimed to provide a cohesive perspective on how various ethical approaches, including virtue ethics, deontological ethics, utilitarian ethics, and care ethics, can be applied to design. The author also discussed universal values, professional norms, and personal perspectives as factors to consider. The use of stories depicting ethical dilemmas in the design of technologies was employed as examples for educational purposes to achieve different ethics-related learning objectives.

Hiort af Ornäs and Keitsch (2016) conducted interviews with design educators to identify approaches for teaching ethics in design. The strategies employed by these educators included exemplification, externalization, contrasting, pointing out alternatives, and positioning. The authors proposed three levels/perspectives: (A) Ethics of the profession, (B) Personal ethics, and (C) Ethics as practice. They presented a model illustrating four types of approaches to ethics in design education. While most of the focus seemed to be on using design cases as a starting point for discussion, the authors suggested that exploring other approaches could open up more possibilities.

4. Challenge—responsibility for the ethics of student decisions and behaviors

When it comes to the ethics of technology use (Chan, 2018), there are at least two prevailing perspectives. One view posits that technology is ethically neutral and that the individual using it holds ethical responsibility. From this standpoint, design educators have less to worry about and can concentrate on introducing GenAI to their students. Educators who introduce GenAI are not responsible for students' ethical (or unethical) use decisions. However, this perspective appears to conflict with valid concerns, as GenAI does indeed present numerous unethical options.

Another perspective sees technology as a mediator through which new technologies provide previously inaccessible information and choices. Verbeek posits that technological artifacts have moral agency (which he refers to as material morality) in the sense that technologies mediate people (Verbeek, 2008). Technological mediation should be analyzed at the level of combining users and technologies as a whole. Alternatively, technology can be viewed as not having moral agency in the sense that it cannot act on its own. People do not punish technologies and/or hold technologies responsible for any 'wrongdoing' (Parsons, 2016, pp. 142–143). However, it cannot be denied that when people use artifacts to perform tasks, these artifacts are doing part of the 'work'—for example, by empowering people or automating part of the process (Latour, 2021).

According to Parsons' discussion, humans have moral agency and moral responsibility. But when humans use technologies, technologies do part of the 'work'—the operations of technologies complete certain tasks. Technologies shape human behavior by providing various options, making certain options easier to select and others less easy to select. Technologies can nurture, favor, or limit moral decision-making and behavior.

From this technology-mediates-people perspective, allowing design students to use GenAI is akin to permitting GenAI to mediate their ethics-related decisions and behaviors. Design educators—that is, the individuals who allow and acknowledge this mediation—expose students to a series of ethical dilemmas that did not previously exist. For instance, communication design students might quickly generate a poster design using GenAI and falsely claim it as their own work, thereby committing plagiarism. Alternatively, they could opt to study the visual culture of a given context in a design brief and create a poster. Students who prioritize efficiency might choose the former unethical option over the latter ethical option.

One could argue that design educators should train students to think critically about the outcome generated by technologies. This view suggests that since the outcome of GenAI is only mediocre, students with critical minds would not choose to use it. However, as technology advances, there may come a time when the outcome from GenAI is comparable to, if not indistinguishable from, that of human designers. The belief that "GenAI does not deliver quality design" is not forward-looking. The focus of such belief seems to be centered around critiquing the quality and performance of GenAI as a design tool. However, I would

argue that the core of the matter lies in determining what aspects students should be critical about instead.

The present paper concentrates on the ethics involved in the design process undertaken by design students throughout their projects or assignments at school. There are other interpretations of ethics in design, such as focusing on ethics in design outcomes with respect to the user and the society (Eggink et al., 2020).

Design educators are not the inventors of these GenAI technologies. However, our introduction of GenAI to a class has moral implications, namely exposing design students to the risk of being nurtured by GenAI to behave according to the values posed by GenAI.

Different values can be imposed by GenAI, for instance, efficiency and convenience. For example, the operation of typing a text prompt in natural language (and not a programming language) to generate an essay promotes the value of efficiency and convenience. The ability to allow users to respond to GenAI's output and ask for adjustment and refinement duly promotes inaccuracy. Although this may not be the intention of the original designs of GenAI, GenAI as a type of artifact can impose such values. On the other hand, such operation format of GenAI can also impose the value of democratizing technologies among people who do not have the programming skills to interact with AI.

Therefore, design educators, when introducing GenAI, need to carefully remind students to be critical. Different values can be imposed by GenAI. So that they do not simply accept all the values that are imposed by GenAI—so that they will not be tempted to unquestioningly accept all the options presented by GenAI. Options offered by GenAI may be tempting to students because of its easy-of-use and efficiency (e.g., the natural-language-based user interface). However, there are various types of values that can be imposed by GenAI. Companies providing GenAI have started providing supplementary materials on how to teach and utilize prompts in educational settings (*Teaching with AI*, n.d.), indicating the need for guidance in teaching the proper use of GenAI. I argue that students' criticality should not be limited to the quality of outcomes from GenAI but also extend to the identities of students and designers. As students and designers, they are supposed to behave in certain ways. Otherwise, they are neither students nor designers.

An educator's introduction of GenAI to a class by allowing or encouraging students to use it entails an intention of imposing particular values—e.g., embrace new technologies, embrace the new developments of the world, be sensitive to what is happening in the world. The educator's motivations and values behind the introduction of GenAI need to be presented clearly. Otherwise, the values imposed by GenAI will (mistakenly) be understood by students as values accepted by students and designers.

5. Design ethics—reminding students of their identities as students and designers

Educators should nurture a critical mindset in students to develop their identities and associated ethical behavior. Design educators have constantly emphasized to students that

"designing" involves critical mindsets in a broader perspective beyond the immediate problem at hand. Examples include addressing societal issues through diversity and creative thinking (Ferrarello et al., 2021), framing problems carefully to construct proper perspectives towards wicked problems (Self, 2017), and using prototyping to engage stakeholders in on-going discussions regarding problem-solving approaches and proposals. (Westerlund & Wetter-Edman, 2017). Rather than preparing design students to only critique the quality of design outcomes from GenAI, design educators should seize the opportunity to encourage students to critically reflect on their identities as design students and future designers. This reflection should prepare them to make ethical decisions based on the standards associated with their professional identities. Possessing a critical understanding of their identities will better equip design students to navigate future ethical dilemmas, including those extending beyond GenAI.

On the surface, GenAI appears capable of completing design assignments and projects for students and potentially replacing designers' jobs. Design educators should guide their students to critically reflect on the following questions: Is being a student only about completing assignments and projects? Is being a designer only about producing design artifacts?

Design educators can convey the expected usage of GenAI by reminding students of their dual identities: students and future designers. When a person assumes an identity, they also take on associated behaviors, attitudes, responsibilities, and ethical expectations. Scholars in design have articulated such professional ethics of designers (Ledsome, 2014, 2019). By communicating the expectations associated with the identities of students and designers, design students can better understand and self-reflect on what is expected of them regarding GenAI use. Educators can facilitate this understanding by paralleling certain ethical uses of GenAI with the behaviors expected of individuals who identify as "students" and "designers."

Professionals are held to certain expectations when it comes to their values and behaviors. Ledsome (2019) explored the competencies that design engineers are expected to possess, which include taking responsibility for the safety of people, demonstrating personal integrity, and appreciating the historical and cultural evolution of technologies. There are values and behaviors that are expected in designers which are not imposed by GenAI. For example, creativity—designers are expected to be creative and not simply copy existing designs and treat them as their own works. For example, understanding human needs / empathy towards people in designing—designers are expected to build empathy towards people in order to design artifacts for them and improve their lives. For example, hard work—students are expected to do their own work to learn and gain experience.

Through guidance on whether students are allowed or encouraged to use GenAI in class, design educators can foster students' capacity for critical thinking about their identities and the associated ethical behaviors.

6. Communicating the use of GenAI

In this section, I outline several aspects that should be communicated to design students, along with a communication approach based on the viewpoint presented above. There are several topics to address when discussing the use of GenAI with design students. While this list may not be exhaustive, I hope it will prove helpful. The aspects below have been selected based on students' practical concerns when considering the use of GenAI in their design projects. The first consideration is whether using GenAI could be seen as committing plagiarism. Therefore, it is crucial to address the issue of claiming originality as the first aspect of discussion. Once students feel assured that they can use GenAI without facing accusations of plagiarism, the next concern is determining which parts or tasks of their design projects they can or should utilize GenAI for. The approach outlined in the following paragraphs is intended to be implemented before students commence their design projects, such as during the initial session of a class. Additionally, sample slides are included to illustrate the proposed approach.

6.1. Claiming originality

Before addressing the contexts or situations in which our design students may use GenAI, it is crucial to first discuss what they should do if they decide to use GenAI in their design projects. This discussion is vital to ensure that students understand how to avoid committing plagiarism. Therefore, the first thing to communicate is the necessity for students to declare any use of GenAI.

The approach I propose begins by revisiting what it means for students to claim the originality of their work. Figure 1 provides a sample slide. If a student claims a piece of work to be original, this implies that the work is entirely their own and not copied from others or reused from their own previous work. I would then remind them that their work often includes contributions from others (Figure 2). If a student's work incorporates work from others or if they have received assistance, they should disclose which part(s) of their work this applies to. This reminder reinforces the expectation for students and designers to properly claim originality.

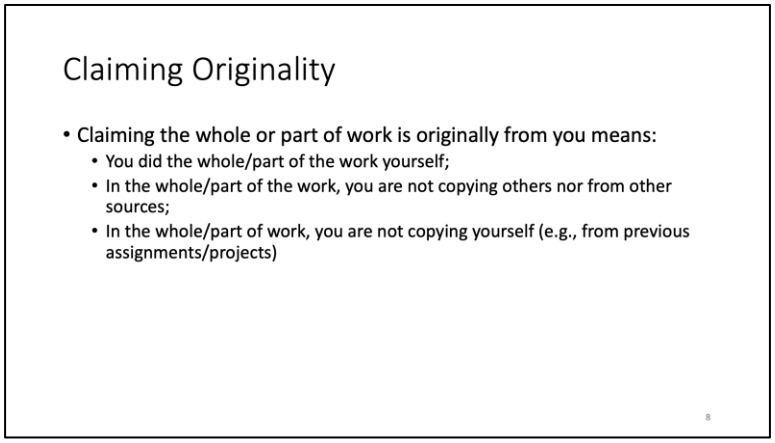

Figure 1 Revisiting the meaning of the claim of originality.

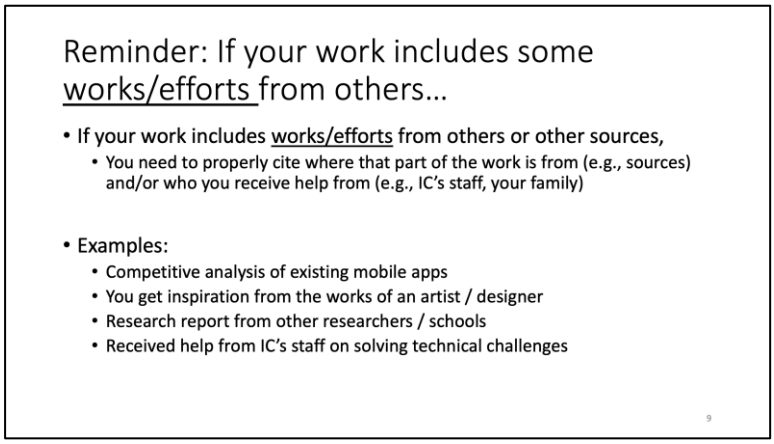

Figure 2 Reminding students that their work may include work or effort by others.

The next step is to extend this logic to GenAI by using an analogy that compares it to a reference source or a person from whom students receive help (Figure 3). Consequently, if students use GenAI to prepare their design work, they need to accurately declare which parts include outcomes generated by GenAI or where they received assistance from GenAI. This approach expands the expected behaviors associated with the student and designer identities to include interactions with GenAI. Analogies have been discussed in psychology as an educational approach to explain concepts (Holyoak & Thagard, 1995). By using an analogy, students can relate to their identities and understand the recommendations provided. Moreover, this can help them adapt their "student" and "designer" identities to the era of GenAI.

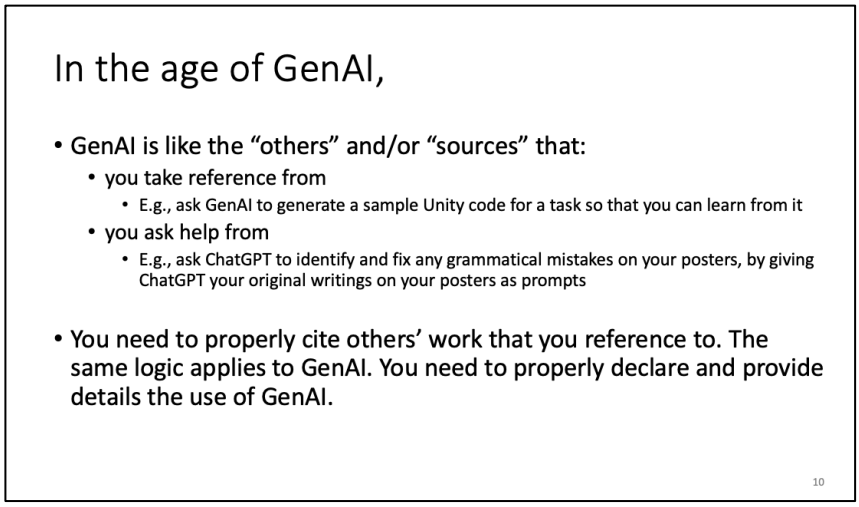

Figure 3 Analogy wherein GenAI is like a source or a person who helps.

In an analogy, a concept is often treated as being similar to one other concept only, instead of two concepts. However, AI can be seen as like a tool or a person (e.g., Hu et al., 2023; Raj et al., 2023). When communicating the issue of originality concerning the use of GenAI, I

avoid making a definitive conclusion as to whether GenAI is like a tool or a person. The primary reason for this is to avoid confusion among students.

6.2. Allowed to use vs. encouraged to use

Another aspect to communicate to design students involves when they are permitted to use GenAI. My approach is to differentiate between when students are *allowed to* use GenAI and when they are *encouraged to* do so. This distinction is crucial because there are instances when design educators not only permit but also want students to gain exposure to GenAI. Distinguishing between "allowed to use" and "encouraged to use" provides room for educators to encourage their students to gain experience with GenAI, thereby alleviating concerns about preparing students for the future.

The strategy for communicating the boundaries of when design students are allowed or encouraged to use GenAI involves revisiting the concept of intended learning outcomes. This concept, rooted in the tradition of outcome-based education, is widely adopted by universities worldwide (Spady, 1994). In outcome-based education, programs and courses outline a list of intended learning outcomes, which describe the knowledge and/or skills that students are expected to gain upon completion. Design programs and courses in higher education also utilize outcome-based learning. These intended learning outcomes are typically outlined in subject syllabi, which students may overlook.

Although the intended learning outcomes of a course focus on the outcomes, they reflect what students are expected to learn in the context of the subject. The logic behind the boundary of when design students are allowed to use GenAI and when they are encouraged to do so is as follows: In terms of the learning outcomes that students are supposed to achieve in a subject, they are allowed but not encouraged to use GenAI. That is to say, students can utilize GenAI to accomplish the tasks outlined in the intended learning outcomes, as long as they transparently acknowledge and declare their use of GenAI. However, by doing so, students limit their own opportunity to acquire the skills or knowledge that the class aims to impart, thereby undermining the purpose of the course. In terms of the learning outcomes that are not covered in the subject, students are encouraged to use GenAI. An example slide is presented in Figure 4a. Figure 4b shows a graphical illustration summarizing the boundary.

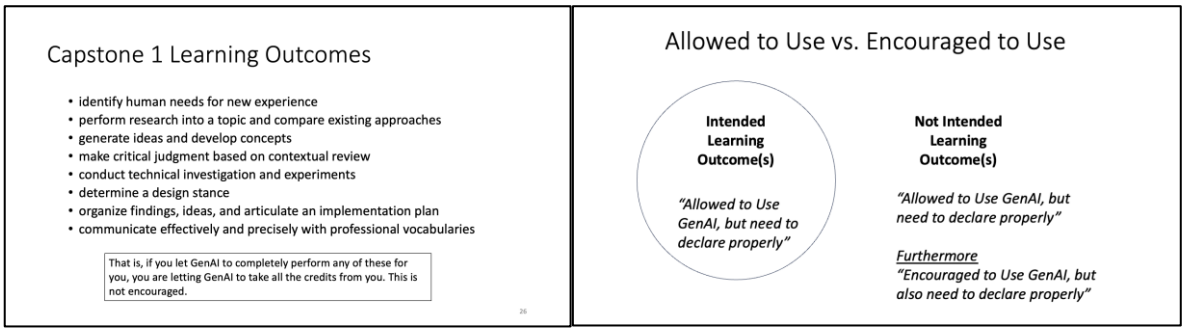

Figure 4 Left: 4a. Intended learning outcomes of a course called Capstone 1. Right: 4b. Graphical Illustration of a context where students are allowed or encouraged to use GenAI.

6.3. Scenarios as a support

In communicating the two aspects outlined above, scenarios are utilized as supportive tools to illustrate the recommendations. First, scenarios depicting situations prior to the existence of GenAI are presented (e.g., a design student includes references to the work of others). Subsequently, these scenarios are adjusted to replace the inclusion of the work of others and/or receiving help from others with the use of GenAI. Figures 5a and 5b provide an example of this.

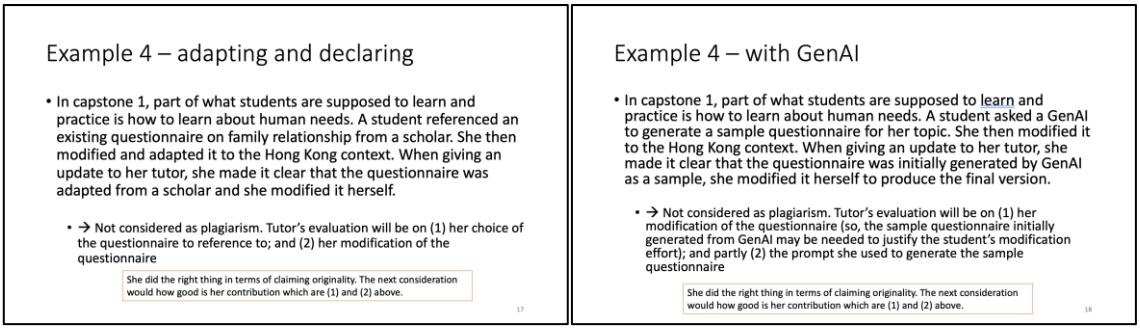

Figure 5 Left: 5a. A scenario without GenAI. Right: 5b. The same scenario with GenAI.

Scenarios can assist students in visualizing potential uses of GenAI, thereby making the principles more tangible.

7. Limitations and conclusion

This approach may appear to limit new design students whose designer identity is not mature. Further development is needed. One possible future direction is to take the popularity of GenAI in everyday life as an opportunity to gradually nurture new design students in terms of what elements constitute design and the designer identity.

One point worth highlighting is that the proposed approach does not depend on how advanced GenAI is. It relies on fundamental concepts, including originality, intended learning outcomes, and (most importantly) "student" and "designer" identities. However, it can serve as a first step in tackling the impact of GenAI on design education. Furthermore, it opens up space for design educators to review and reflect on the fundamental elements of "student" and "designer" identities.

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