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CYBERSECURITY PEDAGOGY AND PRACTICE JOURNAL

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Teaching Case

Identity Attributes in Teaching Privacy

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Privacy and the *GREEN APPLE!*

Abstract

This case method presented an activity as the basis for teaching *Privacy* as part of the *Professionalism and Ethics* course of the Computer Science degree program at a state research university. The purpose of the activity was to help the students internalize the key facets of identity (*GREEN APPLE identity attributes*) as an essential starting point in teaching *Privacy*. Data collected during the activity by means of an online survey designed to capture the opinions of the students regarding identity attributes and reflections on these attributes served as a teaching and learning tool. In addition, the student progress was continually monitored by the faculty member observations and evaluations. As a result of this activity, the students were able to develop insights into identity attributes related to privacy issues; understand the language of privacy; develop more awareness of the fundamentals of diversity, equity, and inclusion; interpret the process of ethical decision-making; and acquire beneficial skills. In addition, this activity laid the groundwork for the students to interpret the privacy theories with ease.

Keywords: Diversity, Ethics, Equity, GREEN APPLE, Identity Attributes, Inclusion, Privacy, Professionalism

1. STARTING POINT OF THE ACTIVITY

As the digital landscape takes over our entire lives, computer science professionals face increasing levels of ethical dilemmas. Ethics, according to Nissenbaum (1998), "affects not only how we do things but how we think about them; it challenges some of the basic organizing concepts of moral and political philosophy such as property, privacy, the distribution of power, basic liberties, and moral responsibility" (para. 2). To better prepare students for real-life issues of privacy from the perspectives of ethics, it is critical to offer meaningful learning which occurs when learning is active, constructive, intentional, authentic, and cooperative. One method is to use a teaching case in which students analyze, solve problems, and make decisions. According to Ellet (2007), students "give it meaning in relation to its key issues … the goal is to come to conclusions

congruent with the reality of the case … [and] communicate their thinking effectively" (p. 6).

In addition, teaching content by means of a case allows the students to work collaboratively and individually while engaging in dialogues involving a "stream of questions" and at times writing to "persuade the expert reader - all in a limited time" (Ellet, 2007, p. 5). Moreover, it is pivotal to use a real-life problem because it entails an "accurate causal analysis" of the problem (Ellet, p. 21); gaining insight; and being able to understand ethical decisions in real life.

This case (hereafter "activity") served as an essential starting point in teaching the unit *Privacy* as part of a required Computer Science course, *Professionalism and Ethics* (Lester, 2021). The objective of the course syllabus was "to examine the nature, need and value of well-formed ethical constructs within the digital forensics' profession" (Lester, p. 1). The method of teaching *Privacy*, particularly as it relates to the comprehension of *identity attributes* (Miller, 2021), cultural responsiveness, the fundamentals of diversity, equity, and inclusion (DEI), and being able to understand making ethical choices, had two purposes. First, this method met the internal program requirements regarding "developing ethical reasoning and/or ethical decision making" (Lester, 2021). In addition, the method complied with the Accreditation Board for Engineering and Technology (ABET) (2021) commitment to DEI: "ABET staff, volunteers and leadership are committed to the principles of diversity, equity, and inclusion through global leadership in STEM education, incorporating the highest standards of professional integrity, dignity, fairness, justice and respect for everyone" (para.1). Second, understanding the ethical implications of identity attributes allowed the students to have a social awareness, a cultural responsiveness, a solid foundation of DEI, and to be able to consider the consequential aspects of their actions when making decisions personally and professionally.

To teach this particular course, the faculty member (hereafter "instructor") developed an activity made up of five interrelated steps. The goal of the activity was to prepare the students to gain deep understanding of privacy. With this activity, the students would decipher the meaning of *identity attributes*; understand the essence of DEI; and "interrupt the fear that results in discriminatory attitudes and action" (Miller, 2021, p. 2) which would help students make more sense of ethical decision-making.

2. THE ACTIVITY PREPARATION

Prior to starting a case, explaining the "what" "why" and "how" to the students was fundamental as it provided more motivation and engagement, and eventually, leads to effective learning. The "what" "why" and "how" of this activity included three areas: 1) Types of case situations; 2) choice navigation and guidelines; and 3) learning theory and skills.

Types of Case Situations

It was essential to introduce the types of case situations including *Problems*, *Decisions*, *Evaluations* and *Rules* (Ellet, 2007) as it provided a framework for the students to "help organize their [sic] analysis" (Ellet, p. 20). This particular activity was categorized as a "problems" case, and involved understanding the notion of identity attributes, fundamentals of DEI, and ethical decision-making.

The instructor also explained that learning to understand, analyze real-life problems required to think deeply (Ellet, 2007) and be actively engaged. According to Marton and Säljö (1976) active engagement was about "*what* is learned, rather than *how much* is learned" (p. 4) and involved "deep-level processing" as opposed to "surface-level processing" (p. 4).

Due to the topic of the unit, the instructor also reminded the students that the activity was based on withholding judgement, exercising curiosity about the unfamiliar and differences and being able to adapt (Miller, 2021). In addition, this problem-case reiterated the importance of "diversity of identities" and "stepping away from euphemism…to get more specific and accurate in our goals, which can lead to more substantive and accurate conversations and strategies" (Bolger, 2020, para. 14).

Choice Navigation and Guidelines

Given that the activity required the students to "embark on the complex series of choices" (Duncan, Kim, & Soman, 2021, pp.100-101), leading to ethical decision-making, the students needed guidelines as iterated by Duncan et al., "one practical approach to help individuals navigate complex choice environments is to provide them with guidelines-in particular, a roadmap to help them make.…decisions" (p. 97). The activity guidelines enabled the students to "convert a complex goal choice into concrete actions … provide [sic] *vocabulary* to deal with a particular situation and a set of choice[s that are] … *expert-driven*, meaning they come from a credible source" (p. 99).

Moreover, it was also essential to discuss the taxonomy of guidelines (*anchor*, *procedural*, and *informational guidelines*) so the students could start their learning with a solid foundation. The instructor explained that this activity would fall under *anchor guidelines* as the purpose of was to "motivate users to take action and get started" (Duncan et al., p. 101).

Furthermore, it was necessary to understand how real-world organizations functioned regarding "specific behavioral tendencies" (Duncan et al., 2021, p. 100) or behavioral change challenges, categorized as *compliance*, *switching*, *consumption* and *acceleration* because "most organizations were [sic] fundamentally in the business of behavioral change" (Soman, 2021, p. 4).

Learning Theory and Skills

For the students to make sense of their learnings, the instructor also provided an explanation of the different learning skills and theories (Knowles, 1977).

First, the explanations of "experiential," "problem-solving," and understanding of the "immediate value" (Knowles, 1977, p. 39) in the context of learning, provided the students with another layer of awareness.

Second, the students were able to understand their positionality using skill such as self-reflection, critical thinking, synthesis, data driven decision making, engaging in difficult dialogues (dialogic dialogues) and discussions, question formation, causal analysis, and being able to collaborate. As part of a scaffolding strategy in teaching (Bliss, Askew, & Macrae, 1996), these skills had been covered earlier in the course, making it easier for the students to anticipate the expected challenges in this particular unit, *Privacy*.

Third, given that the activity involved both individual and group work, it was important for the students to understand what individual and shared learning entailed: "Individual learning is tightly coupled with how the collectively created knowledge evolves. Individuals learn more if a shared understanding is created in the group" (Ley, Seitlinger, Dennerlein, Treasure-Jones, Santos, Lex, & Kowald, 2016, para. 3).

Fourth, referring to the previous unit learnings (*Ethics*, and *Intellectual Property*), the students were reminded that this activity required discussions and *deliberative dialogues* (Lester & Dalat Ward, 2019) on sensitive topics such as identity attributes, cultural responsiveness, emotions, feelings, privacy issues. Therefore, they were asked to refrain from making assumptions and to work towards openness and information sharing. They were also asked to be actively engaged in these discussions and dialogues. According to Isaacs (1999) "we need both discussion and dialogue" (p. 45). While "*discussion* is about making a decision…*Dialogue* is about exploring the nature of choice…evoking insights, which is a way of reordering our knowledge-particularly the taken-for-granted assumptions that people bring to the table" (Isaacs, p. 45). Furthermore, "a dialogue not only raises the level of shared thinking, it [also] impacts how people act, and in particular, how they act together" (Isaacs, p. 22). Because such activities required deliberative dialogues, it was essential in guiding the students to better conduct themselves during difficult "learning conversations" (Stone, Patton, Heen, & Fisher, 1999, p. 16) as opposed to using these conversations to "deliver a message" (p. 16).

3. THE ACTIVITY

The required course, *Professionalism and Ethics* consisted of four units: *Ethics*, *Intellectual Property, Privacy*, and the *Internet of Things*. The unit, *Privacy,* followed the units *Ethics* and *Intellectual Property*.

The course was based on instructional scaffolding which allowed the students to understand the previous concepts used iteratively throughout the activity and to move progressively (Bliss, Askew, & Macrae, 1996).

Due to the Pandemic, the course enrollment included 25 undergraduate students as opposed to 50 students.

The activity prepared the students to gain deep insights into identity attributes, leading to better understanding the implications of privacy, fundamentals of DEI, and the process of ethical decision-making.

The role of the instructor was to provide guidance, direction, and explanation of the process, function as a facilitator to monitor and guide group discussions and serve as an observer and spectator.

This activity consisted of five interrelated steps: Step 1. Exploration: Dissecting a Privacy Problem; Step 2. Awareness: Diagnosing Identity Attributes; Step 3. Self-Reflection and Introspection: Recognizing Self; Step 4.

Connectivity: Thinking Together; and Step 5. Action: Understanding Ethical Decision-Making.

Allotted time for Steps 1, 3, 4 and 5 were 45 minutes and for Step 2 was 90 minutes. An additional 45 minutes was required for the post activity.

The summary of the steps is shown in Table 1. The detailed instructions for the steps are included in the appendices.

Steps	Short Description of Step Exercises
Step 1. Exploration: Dissecting a Privacy Problem (Time: 45 minutes)	In groups, using guiding questions, students evaluate privacy policies (see Appendix A).
Step 2. Awareness: Diagnosing Identity Attributes (Time: 90 minutes)	Instructor explains the attributes of the GREEN APPLE survey (see Appendix B). Students take the survey (see Appendix B). Instructor shares survey results and holds an informal discussion (see Appendix C).
Step 3. Self-Reflection and Introspection: Recognizing Self (Time: 45 minutes)	Based on their individual survey results, students reflect on their own identities, behavior choices (see Appendix D).
Step 4. Connectivity: Thinking Together (Time: 45 minutes)	Based on the survey results, in groups of 4-5, students engage in dialogues, discussions using guiding questions (see Appendix E). Then, students share their group outcomes.
Step 5. Action: Understanding Ethical Decision-Making (Time: 45 minutes)	Students create model privacy labels in groups and share their models (see Figure 1 and Figure 2, and Appendix F).

Table 1: Summary of the Activity

The Five Steps of the Activity

Step 1. Exploration: Dissecting a Privacy Problem. This step required the students to use "reasoning and evidence" (Ellet, 2007, p. 8) to explore and evaluate real-life texts and the language of such texts in relation to privacy issues.

Because a real-life proof was pivotal, the instructor shared three publicly available policies which came from the official sites of Apple, Google, and Microsoft (see Appendix A). The policies covered topics ranging from software, application to apps and devices. The instructor also provided guiding questions (see Appendix A) for the students to be able to "take apart the language of the text to explore its critical assumptions" (Patton, 2015, p. 126).

Prior to evaluating the policies, the instructor prepared the students to act like qualitative researchers (see Appendix A) and decipher the texts using *linguistic inquiry* (Guest, MacQueen, & Namey, 2012, p. 51).

Acting like judges in groups of 4-5, each group explored the word choices and discussed the reasons for these choices, paying special attention to key-word-in-context (KWIC), as part of *thematic analysis* (Guest, MacQueen, & Namey, 2012).

The guiding questions allowed the students to carefully review, critique, and analyze as well as compare and confirm the outcomes of the statements and resulted in understanding what privacy meant in the real world. Connecting to real world problems better prepared the students to understand what was ethically good and bad; and right and wrong.

As a result of deciphering these policies, the students identified the following challenges: These policies were lengthy; they included legal terms making it difficult for laypeople to understand; and the personal data protection sections and options looked incomprehensible.

After having identified the problems related to the privacy policies as "a significant outcome…something important…but we don't know why" (Ellet, 2007, p. 21), the students were faced with making choices, decide, and evaluate "the worth, value, or effectiveness" (p. 23) of the appropriate criteria. Making choices would entail taking consumers into account and creating an ideal policy format made up of clear language.

Evaluating the quality of the authentic privacy policies of real businesses allowed the students to see what privacy meant in the real world.

Step 2. Awareness: Diagnosing Identity Attributes. This step required the students to first, take the GREEN APPLE (Miller, 2021) online survey (see Appendix B). Prior to taking the survey, it was essential for the students to understand the acronym, the history of the key facets of identity and what each attribute represented so they could understand what privacy entailed and how to select criteria for an ideal privacy language (see Appendix B). The

instructor referred to the book (Miller, 2021) and explained that GREEN APPLE was developed to build culturally responsive communities and included 10 attributes: "**G**ender Identity, **R**eligion, **E**thnicity and Race, **E**conomic Class/Socioeconomic Status, **N**ame/Family, **A**ge, **P**lace (Geography, National Territory), **P**erception of Belonging, **L**anguage, **E**xceptionality-Gifted or Challenged."

Once the students completed the survey, the instructor analyzed the data and shared the overall rankings (see Appendix C) in an informal discussion. The students also shared their reasons for selecting their rankings. The instructor observed that sharing the reasons in an informal manner allowed the students to recognize their positionality in relation to different identity attributes vis-a-vis privacy, and to become aware of the essence of DEI. Moreover, during these conversations, the instructor observed that the students felt more relaxed and prepared in respecting the privacy of others, and in were able to have difficult conversations in a culturally responsive community.

Step 3. Self-Reflection and Introspection: Recognizing Self. This step required the students to reflect on their own survey results by taking into consideration the three guiding questions provided by the instructor (see Appendix D).

First, the instructor shared the definition of the term *reflexivity* (Patton, 2015) and what self-reflection meant so students could make sense of this task (see Appendix D). One definition was: "A sense of self is a collection of schemata regarding one's abilities, traits and attitudes that guides our behaviours, choices and social interactions followed by the definition of *introspection,* which is believed to be a reflexive, metacognitive process, attending to or thinking about oneself or what is currently being experienced by oneself" (Overgaard, 2008, p. 4953). Another definition was: "The accuracy of one's sense of self will impact ability to function effectively in the world" (Johnston, Baxter, Wilder, Pipe, Heiserman, & Prigatano, 2002 p. 1808).

Then, the instructor invited the students to "consciously reflect on…sense of self….an important aspect of self-awareness" (Johnston, et al., p. 1808).

The self-reflection step served to bring awareness to each student regarding "respecting privacy of others" with an open mindset and demonstrated that identity attributes were fundamental in understanding what the concept of privacy entailed, what the fundamentals of DEI were, and the process of ethical decision-making.

Step 4. Connectivity: Thinking Together. This step involved the students sharing their survey results which involved sensitive discussions and dialogues. The students used the five guiding questions provided by the instructor (see Appendix E).

The students first worked in groups of 4-5. To be able to engage in effective discussions, each group assigned roles to their group members as follows: Moderator, Note-taker, Timekeeper, and Collector of Materials. Then, the groups presented their outcomes and compared notes with others.

Due to the sensitive nature of the survey results, the instructor reminded the students to refrain from drawing conclusions that might not be accurate (Argyris, 1990). The students were also asked to be open and be encouraged to exercise curiosity when discussing their results. Given that the students had already been practicing deliberative dialogues during the first two units of the course, discussing their findings became a straightforward task. They knew how to withhold judgment.

These interactions led to understanding diverse identities and the importance of building and sustaining culturally responsive communities. By discussing their survey results, the students were able to reorder their thoughts and learn how to think together (Isaacs, 1999).

Step 5. Action: Understanding Ethical Decision-Making. As Step 5, following the intense discussions and dialogues, the students were ready to implement their learnings. The requirement was to develop a model privacy label using their learnings on identity attributes.

It was important for the students to be able to distinguish the identity attributes that needed protection regarding privacy. The instructor asked the students to reflect on the language of privacy (see Appendix F). Initially, the students were instructed to evaluate the U.S. Food and Drug Administration (2021) "nutrition facts label" (para. 1) as seen in Appendix F. They would be transferring the "nutrition facts label" to create a model privacy label.

Considering what was ethically right and wrong; and good and bad, working in groups, the students selected their *Internet of Things* device

to use in this exercise. They transferred the concept of a "nutrition facts label" to creating, a model privacy label (see examples in Figure 1 and Figure 2).

Security Facts

1 serving per customer
Serving size varies

Amount per serving
Total Security 100

	% Security Value*
Critical Information	**80%**
Full Name	50%
Date of Birth	85%
Physical Address	65%
Social Security Number	**95%**
Phone Number	**20%**
Online Transaction History	**95%**
Online Search History	**10%**
Personal IP Address	**50%**

* The % Security Value (SV) tell you how much effort is put into the overall security of the each respective category of data, where 100% is maximum security and 0% is completely open/vulnerable.

Figure 1: Privacy Label Example A

Then, they shared their model privacy labels with other groups and discussed the values of these labels. They shared their experiences regarding how they avoided ambiguous phrases to eliminate misunderstanding and misinterpretation. This step re-iterated the students' learnings regarding how to interact with a diversified population, respect others' privacy, and stay open-minded to accepting the cultural and demographic differences.

As a result, as observed by the instructor, the students were able to create model privacy labels with clear texts, leaving no place for ambiguity and/or misinterpretation.

4. INSIGHTS

The instructor noted the following insights as part of teaching *Privacy* by using this activity.

Instructor Observations and Evaluation. Throughout the activity, the instructor unobtrusively observed and evaluated the progress of the students through nonverbals, formal and informal interactions, "what does and doesn't happen" (Patton, 2015, p. 383). The instructor made mental notes, transferring these notes into a notebook as "learning logs" (Patton, 2015, p. 375). These notes not only served to monitor the progress of the students but also as helped improve the course content.

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Email Address		100%
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Previous Insurance		100%
Social Security Number		100%
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Figure 2: Privacy Label Example B

The observations, particularly during the final step of the activity served as valuable feedback and revealed that the students were able to analyze and evaluate their learnings and demonstrate their understanding by means of creating successful privacy labels.

Probes and Guiding Questions. Step 1 (see Appendix A), Step 3 (see Appendix D) and Step 4 (see Appendix E) included *detail-oriented probes* and questions (Patton, 2015, p. 465) to guide the students to get a detailed picture of the activity and move forward in completing the tasks effectively. The instructor noted the way the students used these questions. Rather than a checklist, these probes and questions became "a menu of possibilities" (Patton, p. 382). They enabled the students to think critically, use their analytical and synthesis skills to manage the expected challenges.

The GREEN APPLE Survey and Survey Results. The goal of using the survey and the survey results as a teaching and learning tool was also pivotal. The online survey data provided a detailed picture of the student perceptions regarding identity attributes as it related to privacy. According to the results as indicated in

Table 2, the overall top three ranking attributes were as follows: The "**E**conomic Class/Socioeconomic Status" (one of the acronyms in GRE**E**N) was the top ranked attribute followed by "**R**eligion" as the second, and "**P**lace (Geography, National Territory)" as the third. Sharing these rankings together with the reasons of rankings in an informal manner during Step 2 added the expected layer of awareness regarding privacy issues.

Item as the Top 3 Most Private Attribute	
Economic Class/Socioeconomic Status	83%
Religion	48%
Place (geography, national territory)	39%
Exceptionality - whether gifted or challenged	30%
Perception of Belonging	26%
Age	26%
Name/Family	22%
Ethnicity and Race	17%
Gender Identity	9%
Language (discourse community)	0%

Table 2: Green Apple Survey Results

In addition, these results served as the foundation for reflexivity during Step 3. Self-Reflection and Introspection: Recognizing Self. The self-reflection step added yet another layer of awareness encouraging self-evaluation with an open mindset. This step demonstrated that identity attributes were fundamental in grasping the concept of privacy, and the process of ethical decision-making.

Moreover, the survey results paved the way for difficult conversations as part of Step 4. Connectivity: Thinking Together. Sharing their individual responses and reflections openly showed that the students were able to have difficult conversations on sensitive topics.

Post-Activity Student Reflections. Finally, upon completing the entire activity, the instructor shared three graphs on how the students ranked the three GREEN APPLE attributes, **G**ender, **R**eligion, and **E**thnicity and Race as it related to DEI and privacy (see Appendix G). The students were asked to provide their reflections using a minimum of 60 words.

Based on these reflections, the common themes shared by the students were similar. The three following texts represent the overall perceptions of the students:

Student 1: "What I learned about attributes leading to understanding DEI by completing this exercise was that not everyone has the same values about what should be private and what should not. I think that we should learn to accept each other's differences and not view another person differently because of it. In the work industry, you will never fully know what is "too private" of another person, so it is important to avoid asking them questions about these personal matters and above all, *respect them as a person*."

Student 2: "I learned that all people, regardless of their abilities, disabilities, or health care needs, have the right to be respected and appreciated as valuable members of their communities."

Student 3: "Our class's beliefs all differ, and certain information is not to be shared and should be kept private while other members may believe the complete opposite. This is the equality and inclusion aspect of the Green Apple exercise."

Rather than a lengthy thematic analysis of the reflections, the instructor used *Wordle* (Viégas, Wattenberg, & Feinberg, 2009), a web-based tool for visualizing text (see Figure 3). The most commonly used words in the student reflections were shared with the class.

At an initial glance, the most used words included "People, Private, Ethnicity, Race, Gender, Religion." The word "learned" was also noteworthy. This visualization helped the students see the whole picture and make more sense of the meaning of each attribute in the process of ethical decision-making.

Figure 3: Commonly Used Words in Student Reflections

5. CONCLUSIONS

This method of instruction promoted the understanding of identity attributes leading to the essentials of DEI and ethical decision-making. The perspective of the instructor was that 1) such cases can serve as a game changer, not only for

IT students, but for all students, preparing them for the constantly changing global economy and workforce. 2) Becoming more aware of the key facets of identity prepares students to better understand their moral obligations and the ethical implications of their actions whether in cyberspace or in face-to-face environments.

Teaching this activity and continually observing and evaluating the tasks, the instructor took notes on improving the course which included: 1) Add activities to emphasize the fundamentals of DEI in general. 2) Use a brainstorming and mind mapping session to identify familiar or common privacy attributes. 3) Provide more time on self-reflection and discussions on differences and similarities of identity attributes. 4) Hold a collaborative session on group reflection of learnings to further demonstrate the understanding of diverse identities. 5) Include a follow up session related to the implementation of learnings.

The authors would like to note that this paper shared the experiences of a particular group of students (N=25) at a time of the Pandemic. Under normal conditions, the class would have included an average of 50 students. With a smaller class size, it was easier for the students to share their learnings, discuss the topics. It was also easier for the instructor to deliver the content, manage the steps of the activity and observe and evaluate the student interactions and nonverbals.

To conclude, the authors would like to share one student's narrative which summarizes the value of the activity: "This exercise highlighted some key topics that some people may find uncomfortable to disclose and thus should be avoided to maintain a healthy work environment. Diversity is a good thing within people but should not be a factor in any decision. Making a decision from this would be unfair and impartial."

6. RECOMMENDATIONS

This paper presented an activity designed to teach *Privacy.* The goal of using data as a teaching tool provided the instructor with a "deep understanding of both the nature of learning and the conditions in which it is likely to flourish" (Bain, 2004, p. 84). Moreover, "because the methods work in helping students achieve, students develop faith in their instructors, and that trust becomes its own force" (Bain, p. 85).

To obtain more insight into student perceptions and student learnings, the authors recommend that additional textual and numerical data be collected by means of using instruments such as in-depth student interviews, surveys, and/or focus group conversations.

The authors also recommend that an inductive analysis such as the applied thematic analysis (ATA) (Guest, MacQueen, & Namey, 2012) be conducted to have a more "descriptive and exploratory orientation" (Guest at al., p. 7).

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Appendix A
Instructions for Step 1 (45 minutes)*

- **The instructor explains the task (10 minutes)**

Here are three publicly accessible privacy policies of three major companies including: 1) Apple, 2) Google, and 3) Microsoft. Please refer to the links.

Your task is to judge the worth and value of the meaning of these policies related to privacy (Guest, MacQueen, & Namey, 2012).

At this point before you go into your groups, let me present two qualitative research strategies which will be helpful in your "meaning-making process" (Patton, 2015, p. 3). Think of this as learning a beneficial skill which may be useful in your work.

These policies are considered texts. Take into consideration two strategies: 1) You can review the "key-word-in-context," or KWIC….like exploring and tagging text (Guest, MacQueen, & Namey, p. 51). You identify "a word as the locus for a theme or concept in a body of text without predefining the textual boundaries of the locus" (p. 51). 2) You can refer to "codebook development" (p. 52) which helps us sort the statements into categories, types, and relationships. The idea is to evaluate and interpret the meaning of these words, phrases and make sense.

- **The students work in groups of four or five**, using the following questions. They these policies apart, review the language, the word choices. **(30 minutes)**

    1. Regarding your learnings, what meaning is conveyed in these three statements?
    2. What are the specific elements which stand out?
    3. Which words/phrases are clear? Why?
    4. Which words/phrases are confusing? Why?
    5. How would you change the parts or the statement which are confusing and why?

- **The groups share their "meaning-making process"** with class and compare notes. **(20 minutes)**

*** Instructor's Note**: Allocated time for each step is added to give the reviewer(s) an idea. Given the class size (N=25), and the nature of the tasks, timing worked well for this particular class. Understandably, the timing can be adjusted depending on the class size and the user.

Appendix B

Instructions for Step 2 (45 minutes)

- **The Instructor explains the GREEN APPLE Acronym and Identity Attributes (20 minutes)**

Before you take the GREEN APPLE survey to rank the top five attributes related to privacy (based on your perceptions), let's review the acronym GREEN APPLE and each identity attribute including "**G**ender identity, **R**eligion, **E**thnicity and Race, **E**conomic Class/Socioeconomic Status, **N**ame/Family, **A**ge, **P**lace (Geography, National Territory), **P**erception of Belonging, **L**anguage, **E**xceptionality-Gifted or Challenged" (Miller, p. 3).

*** Instructor's note:** At this point, it is important to refer to the book (Miller, 2021) and talk about using Cultural Identity Literature (CIL) to bring awareness to differences as it relates to privacy.

Miller, D. L. (2021). *Honoring identities: Creating culturally responsive learning communities.* Rowman & Littlefield.

- **The students take the GREEN APPLE Online Survey (25 minutes)**

Now you will take the GREEN APPLE online survey. Click on the following link to access the survey: XX. Rank your top 5 attributes (1 being the most important) related to privacy. Once you complete the survey, I will share the overall rankings with you so we can have a conversation on these rankings and your reasons for these ranking.

***The GREEN APPLE Survey Instructions:**
Below are the GREEN APPLE identity attributes: "**G**ender Identity, **R**eligion, **E**thnicity and Race, **E**conomic Class/Socioeconomic Status, **N**ame/Family, **A**ge, **P**lace (Geography, National territory), **P**erception of Belonging, **L**anguage, **E**xceptionality-Gifted or Challenged."

Rank your top five attributes (1 being the most important) related to privacy issues. Using the column "Reasons" (in a couple of sentences) provide your reasons for your ranking.

For confidentiality, the survey does not require your personal information.

GREEN APPLE Identity Attributes	Your Top Five Identity Attributes	Reasons
Gender Identity	1.	
Religion	2.	
Ethnicity and Race	3.	
Economic Class/Socioeconomic Status	4.	
Name/Family	5.	
Age		
Place		
Perception of Belonging		
Language		
Exceptionality-Gifted or Challenged		

***Note:** The instructor used Qualtrics for this survey.

Appendix C

Instructions for Step 2 (45 minutes)

- **The instructor shares the GREEN APPLE survey results (10 minutes)**

Below are your GREEN APPLE Survey results which display your selected rankings. Let's review your overall rankings and your reasons and have a conversation on and what the rankings reveal and how these attributes relate to privacy.

Student Priority Order Regarding Privacy from the GREEN APPLE Attributes	
Economic Class/Socioeconomic Status	**83%**
Religion	**48%**
Place (geography, national territory)	**39%**
Exceptionality - whether gifted or challenged	**30%**
Perception of Belonging	**26%**
Age	**26%**
Name/Family	**22%**
Ethnicity and Race	**17%**
Gender Identity	**9%**
Language (discourse community)	**0%**

- **The instructor starts an informal discussion sharing the survey results (35 minutes)**

* Instructor's note: It is important to refer to the book (Miller, 2021) and talk about the key facets of identity, cultural responsiveness, and demographics.

Miller, D. L. (2021). *Honoring identities: Creating culturally responsive learning communities.* Rowman & Littlefield.

Appendix D

Instructions for Step 3 (45 minutes)

- **The instructor explains reflexivity (10 minutes)**

Remember as part of Step 2, you took a survey and ranked the GREEN APPLE attributes from 1 to 10.

Now I invite you to "consciously reflect on…sense of self….an important aspect of self-awareness" (Johnston, et al., p. 1808) regarding "respecting privacy of others" with an open mindset. This will allow you to understand what the concept of privacy entails, and how to make ethical decisions.

For this step, I ask you to review your own survey results and become aware of your own voice and perspective. Use to following questions, analyze your responses: 1) How did you rank your attributes? 2) What does your top-ranked attributes reveal? 3) What shaped these views?

But before you go on, let's review *Reflexivity* in detail, what it entails. First, according to Patton (2015): "Reflexivity is a critical self-exploration….it [sic] involves self-questioning and self-reflection...is to undertake an ongoing examination of what I know and how I know it" (p. 70).

Second, let's consider two more definitions of self-reflection. What do you think of these definitions? One definition is "a sense of self is a collection of schemata regarding one's abilities, traits and attitudes that guides our behaviours, choices and social interactions followed by the definition of *introspection,* which is believed to be a reflexive, metacognitive process, attending to or thinking about oneself or what is currently being experienced by oneself" (Overgaard, 2008) p. 4953). Another definition is: "The accuracy of one's sense of self will impact ability to function effectively in the world" (Johnston, Baxter, Wilder, Pipe, Heiserman, & Prigatano (2002, p. 1808).

- **The students individually reflect on their own survey results (15 minutes)**

- **The whole class informally discusses their personal survey results and reflections (20 minutes)**

Appendix E

Instructions for Step 4 (45 minutes)

- **The Instructor explains the survey results, explains the task and the role of probes (10 minutes)**

Here are the overall results of our survey. Now that you discussed your individual results, you will have discussions and deliberative dialogues with your peers to discuss the overall findings of the survey. You will use the following five questions.

Remember you know how these discussions work. Given that you had already been practicing deliberative dialogues during the first two units of the course, discussing the survey results should be a straightforward task. You know how to withhold judgment. Please refrain from drawing conclusions that might not be accurate (Argyris, 1990). Please remain open. I also encourage you to exercise curiosity when discussing these results.

Let's review what these dialogues entail:

1. Share your input regarding why 83% of you considered the attribute "**Economic Class/Socioeconomic Status**" as the highest ranked GREEN APPLE attribute.
2. Share your input regarding why 48% of you considered the attribute "**Religion**" as the second highest ranked GREEN APPLE attribute.
3. Share your input regarding why 39% of you considered the attribute "**Place**" as the third ranked GREEN APPLE attributes.
4. Are your top three selected GREEN APPLE attributes aligned with your peers' GREEN APPLE attributes? If not, please share your views regarding why your top 3 selected attributes are important for you.
5. Taking into consideration your newly discovered awareness of privacy and diversity, equity, and inclusion, how would you use these GREEN APPLE rankings in your future career(s)?

- **Working in groups of 4-5 the students have discussions and dialogues (25 minutes)**

The instructor unobtrusively observes interactions, nonverbals, language of the students.

Reference for deliberative dialogues:

Lester, L. J., & Dalat Ward, Y. (2019). Teaching professionalism and ethics in IT by deliberative dialogue. *Information Systems Education Journal*, *17*(1), 4-17.

- **The groups share their notes (10 minutes)**

Appendix F
Instructions for Step 5 (45 minutes)

- **The instructor explains the task (5 minutes)**

Review the information on "nutrition facts-label" as presented on the U.S. Food and Drug Administration webpage https://www.fda.gov/food/new-nutrition-facts-label/how-understand-and-use-nutrition-facts-label#NutritionFactsLabelVariations The example below shows a common nutrition label of pretzels.

Nutrition Facts

3 servings per container

Serving size **3 pretzels (28g)**

	Per serving		Per container	
Calories	**110**		**330**	
		% DV*		% DV*
Total Fat	0.5g	**1%**	1.5g	**3%**
Saturated Fat	0g	**0%**	0g	**0%**
Trans Fat	0g		0g	
Cholesterol	0mg	**0%**	0mg	**0%**
Sodium	400mg	**17%**	1200mg	**52%**
Total Carb.	23g	**8%**	69g	**24%**
Dietary Fiber	2g	**7%**	6g	**21%**
Total Sugars	<1g		3g	
Incl. Added Sugars	0g	**0%**	0g	**0%**
Protein	3g		9g	
Vitamin D	0mcg	0%	0mcg	0%
Calcium	10mg	0%	30mg	2%
Iron	1.2mg	6%	3.6mg	18%
Potassium	90mg	0%	270mg	5%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

This exercise will help you develop a similar privacy label. As indicated in the U.S. government website "many consumers would like to know how to use this information more effectively and easily. The label-reading skills are intended to make it easier for you to use the Nutrition Facts labels to make quick, informed food decisions to help you choose a healthy diet" (para. 1).

Now you are ready select one of the *Internet of Things* to market your device by creating a privacy label such as a smart tv, robot, etc. You will focus on the GREEN APPLE identity attributes and design a model privacy label using the six variations listed below. It is critical to be aware of your consumers' needs and to include the protection of identity attributes. Remember a quick scan of a "privacy label" reveals at least the following information.

- Product-specific information
- Serving target
- Benefits
- Limitation
- Facts Label Variations
- Quick guide to percentage/value

- **The students review the "nutrition facts label" and discuss it (10 minutes).**
- **The students work in groups to create a model privacy label and (20 minutes)**
- **The students share their model privacy with class (10 minutes)**

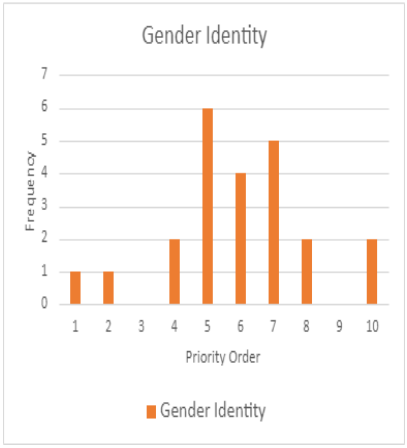
Appendix G

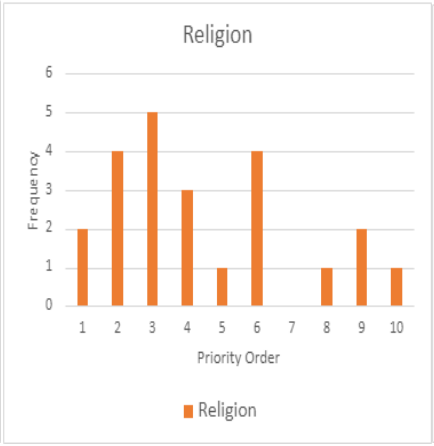
Instructions for the Post Activity Reflections (90 minutes)

The instructor explains the fundamentals of Diversity, Equity, and Inclusion (DEI) as it relates to privacy and the task (15 minutes)

The instructor talks about the fundamentals of Diversity, Equity, and Inclusion (DEI) and what it entails when it comes to identity attributes and privacy issues referring to the book (Miller, 2021) and goes onto explain that the three attributes of the acronym Green Apple, **G**ender, **R**eligion, **E**thnicity and Race, play an important role in our privacy issues and require our attention.

Here's your task: I developed the following three graphs showing how you ranked the attributes **G**ender, **R**eligion, **E**thnicity and Race regarding privacy. Now that you have the graphs, I would like you to provide your reflections describing what you think (a minimum of **60** words) about these three attributes, particularly as it relates to the fundamentals of Diversity, Equity, and Inclusion and privacy.





- **The students complete their reflections (20 minutes)**
- **The instructor uses the reflection data to create a Wordle or Word Cloud to display the most commonly used words (15 minutes)**
- **The instructor shares 1) the following Wordle, 2) discusses the implications with the students, and 3) wraps up the unit, *Privacy* (40 minutes)**