For Instructors:

These lesson materials are suitable for college-level or potentially high school courses in Information Science, Computer Science, Science & Technology Studies (STS), Information Technology, Sociology, Media Studies, Public Policy, Law, Urban Planning, Ethnic Studies, and Applied Ethics. It includes writing prompts, assignments, and readings to accommodate classrooms large and small, in-person or online.

Learning Objectives

• Articulate security risks and concerns of technology from the perspective of various stakeholders
• Identify relationships between inequality and technology
• Iterate on and create meaningful security policy alternatives

About These Materials

This packet contains lesson plans for encouraging ethical reflection during a security policy writing exercise using one of three case studies: COVID-19 Contact Tracing, Network Traffic Monitoring, and Exam Proctoring Technologies.

Each of these three case studies requires two class sessions, and contains a set of unique readings and materials. Each case study contains three modules:

• Module 1 is an assignment that asks students to draft a security policy that represents the interests of a particular stakeholder group
• Module 2 gives students feedback through either instructor critique or a peer review assignment.
• Module 3 is an assignment that asks students to revise their security policy by integrating critiques and proposing policy alternatives.
For Instructors:

These materials are premised on two concepts: that technologies reproduce patterns of inequality and harm, and that these patterns disproportionally affect vulnerable communities. We have included suggested readings below which help us surface the political and social dimensions of technology in our work.

Further Reading

Background

With the move to remote education, universities and schools are turning to remote exam proctoring technologies developed by private companies, such as Proctorio, Examity, HonorLock, or ProctorU. While these companies claim remote exam proctoring technologies reduce cheating during online tests, the surveillance techniques involved can be quite invasive, creating privacy and security concerns. These concerns can be particularly salient for those from marginalized communities, since technologies often reproduce patterns of inequality and harm.

To help operationalize security concerns, organizations will draft security policies, or rules and definitions involved in securing a system. Security policies articulate who and what is to be protected, and from whom; protocols for when threats are detected; and enforcement procedures for ensuring security.

Required Readings


Diwan, Fahad (2020, April 7). “Concordia University is undermining the privacy rights of its students and this must stop”. Medium. https://medium.com/swlh/concordia-university-is-undermining-its-students-privacy-rights-by-using-proctorio-5e1ff03ecaab

Group Assignment

Complete the required readings, keeping track of what data exam proctoring technologies capture and how, where data is stored, who has access to data, and how remote proctoring technologies might be more concerning for specific groups of people. Now imagine that your school is looking to better understand the potential security concerns of using Proctorio. To do this, your school’s administration has asked a variety of stakeholders to draft a security policy that reflects their needs and concerns.

Select and Analyze a Stakeholder Group

Select a specific entity with some vested interest in the security policy of Proctorio at your school to represent. For this assignment, your stakeholders must be someone other than “students”. Some examples include:

- Instructors who will use Proctorio
- A school’s disability services department, such as the University of Washington’s Disability Resources for Students.
- A school office that supports victims of sexual harassment or domestic violence
- A student group that represents the interests of undocumented students, such as UW’s Leadership Without Borders.
- Parents or guardians of students

Do a small amount of research on your chosen stakeholder group. For formal organizations, you might look at their mission statement, website, or social media accounts. Consider questions such as:

- What goals or concerns might your stakeholder group have about Proctorio?
- What power does your stakeholder group have over Proctorio at your school?
- What other stakeholder groups might have similar interests?
- What other stakeholder groups might have divergent or conflicting interests?
- What system abuses might be particularly concerning to your stakeholder group?
- What data or procedures involved in Proctorio might be particularly or uniquely concerning for your stakeholder group?
Group Assignment: Drafting a Security Policy (continued)

Now that your group has selected and analyzed a stakeholder group, answer the following questions to begin your security policy draft.

**Drafting Security Policy Sections**

**Acceptable use** - What student devices can Proctorio access or require? How can student data be used? Are any procedures or uses restricted? Is Proctorio allowed to gather any other data (e.g., social media data)?

**Data access** - Once created, who should have access to student data, and under what conditions? What about employees of Proctorio?

**Security incidents** - Who is likely to want to breach or gain access to student data? What should happen in the event the system is abused or breached?

**Special protections** - Are there types of student data or groups of students who should have special protections? If so, how should they be implemented?

**Data retention** - How should student data be kept? For how long? By whom? Are there any exceptions?

**Remediation** - How are conflicts, problems, or flaws resolved (e.g., a student who does not have a webcam or other required device)?

**Compliance** - Who verifies that the rules in the policy are being followed? What are the penalties for security breaches, data misuse, and other noncompliance?

**What To Submit**

Synthesize your work into a security policy (1000 - 1500 words) that you believe represents your stakeholder’s interests. Your group’s security policy should have a section for each of the seven categories above.

**Tip**: If you are having trouble getting started, the SANS Institute has a number of security policy templates. In particular, pay attention to the Policy sections: https://www.sans.org/information-security-policy/
For Instructors:

For large classes, we recommend providing student critique using the Peer Review assignment (next page). For smaller classes, we encourage instructors to critique individual policies and use these critiques to guide classroom discussions. In either format, instructors may want to keep in mind the guidelines below.

Security Policy Critique Guide

Critique can be a powerful mechanism for encouraging students to engage deeply with complex and ambiguous problems. However, critique is a practiced skill, and some instructors may not have experience critiquing student work. We offer a few tips from our experience as educators in the policy/ethics space to prepare instructors for some of the challenges in providing constructive critiques.

Constructive over destructive: A harsh critique can prevent students from taking chances or participating in activities. Try to emphasize potential paths forward for students to take instead of identifying shortcomings. This can include using phrases like “bring out” or “make visible” instead of “this lacks” or “this is missing”.

Ask questions instead of give answers: Unlike math problems, there are few “right” answers in security policy. Rather, policies represent a number of tradeoffs and compromises. Try to guide students in identifying tradeoffs by asking questions; what are their justifications for a particular rule? What are the tradeoffs? Who wins and who loses?

Assess trends across groups: While reviewing student work, you may find systematic problems, misunderstandings, concerns, or opportunities. Use these trends as opportunities to engage students and promote learning.

Treat stereotypes as a teachable moment: The open-ended nature of this activity may surface racial, geopolitical, gendered, and other stereotypes or biases in student work, ranging from the overt and easily identifiable to more embedded and less visible assumptions of how particular groups of people live. These are important moments, and addressing them considerately is important since students may come from a variety of marginalized backgrounds (such as undocumented or homeless students).
Peer Review Assignment

Giving constructive feedback is a skill that takes both guided practice and time. For this assignment, you will individually peer review a different group’s security policy. To help you write a great peer review, we have provided some scaffolding questions for you think about as you read this group’s security policy. You do not have to submit your answers to these questions:

- Does the security policy account for all the ways Proctorio can monitor students?
- Whose needs are being met? At whose expense are these needs being met?
- Are the needs of your stakeholder group being met?
- Would your stakeholder group object to anything?
- Are any of the security policy’s exceptions or protections concerning for your stakeholder group?
- Are the obligations placed on different stakeholders achievable? Are the obligations reasonable?
- Are there any foreseeable conflicts that the policy does not address?

What To Submit

Synthesize your feedback into a 500 - 600 word peer review. You should answer the following questions directly in your peer review:

- What did you think was the best part of this group’s security policy?
- Where was this group’s security policy clear?
- Where did you get confused?
- Do you think this group overlooked or missed something that might make their security policy more complete?
Group Assignment

Your group has received feedback on your draft security policy. Your next step is to integrate this feedback into a finalized security policy.

Each group member should individually and independently identify at least three (3) points from your critique that are interesting, complicate your draft security policy, or make you want to change your draft. For each point, write down:

• What was the critique?
• Why has this critique made you consider changing your security policy?
• How do you think you should amend your security policy?

Synthesize these thoughts into an individual 500 word reflection document.

Discuss your reflections with your group. When discussing your reflections with your group members, you may find disagreements, inconsistencies, blind spots, or other items which will require negotiation between group members. We also ask you to document your group's negotiation process. Record agreements, disagreements, and reconciliations into a separate document. There is no minimum word limit for this, but try to be as thorough as you can.

After negotiating your policy changes, synthesize your collected reflections into a finalized security policy to govern Proctorio at your school. A comprehensive security policy will be about 2000 words.

What To Submit

Each group should submit:

• Your group’s initial security policy (1000 - 1500 words)
• Each group members feedback reflection document (500 words each)
• Your group’s final security policy (~2000 words)
• Documentation of your group’s process of negotiating and implementing changes to the policy

One group member is responsible for submitting all documents.
Background

The COVID-19 pandemic created an urgent need for contact tracing. Contact tracing involves identifying and notifying people who may have been exposed to a known infected individual. In manual contact tracing, patients are asked where they have been recently, with whom, and when. Automating this process using cell phones has the potential to improve accuracy and speed, helping to “flatten the curve”. While automated contact tracing seems promising, such tracing also poses privacy and security concerns. These concerns can be particularly salient for those from marginalized communities, since technologies often reproduce patterns of inequality and harm.

To help operationalize these concerns, organizations will draft security policies, or rules and definitions involved in securing a system. Security policies articulate who and what is to be protected, and from whom; protocols for when threats are detected; and enforcement procedures for ensuring security.

Required Readings


Group Assignment

Complete the required readings, keeping track of what data contact tracing technologies capture, how contact data is combined with other data, who has access to data, and how contact tracing might be more concerning for specific groups of people. Now imagine that your school wants to deploy a campus-wide contact tracing app. To do this, your school’s administration has asked a variety of stakeholders to draft a security policy that reflects their needs and concerns.

Select and Analyze a Stakeholder Group

Select a specific entity with a vested interest in the security policy of your school’s contact tracing app to represent. For this assignment, your stakeholders must be someone other than “students”. Some examples include:

- A local University’s epidemiology department or a hospital.
- A school office that supports victims of sexual harassment or domestic violence
- A student group that represents the interests of campus diversity and inclusion, such as the University of Washington’s Women in Science and Engineering.
- Your school’s Information Technology (IT) department.
- A student group that represents the interests of undocumented students, such as the UW’s Leadership Without Borders.

Do a small amount of research on your chosen stakeholder group. For formal organizations, you might look at their mission statement, website, or social media accounts. Consider questions such as:

- What goals or concerns might your stakeholder group have about contact tracing?
- What power does your stakeholder group have over contact tracing at your school?
- What other stakeholder groups might have similar interests?
- What other stakeholder groups might have divergent or conflicting interests?
- What system abuses might be particularly concerning to your stakeholder group?
- What data or procedures involved in contact tracing might be particularly or uniquely concerning for your stakeholder group?
Now that your group has selected and analyzed a stakeholder group, answer the following questions to begin your security policy draft.

### Drafting Security Policy Sections

**Acceptable use** - Should there be limits on what data is captured or how it is used? Are there limits on combining other data (e.g. social media) with contact tracing data?

**Data access** - Who should have access to contact tracing data, and under what conditions? Should data be made public? If so, how?

**Security incidents** - Who is likely to want to breach or gain access to your school’s contact tracing data? What should happen in the event of an intrusion or breach?

**Special protections** - Are there types of data or groups of people that should have special protections? If so, what should those protections be? How will these protections be implemented?

**Data retention** - How should network data be kept? For how long? By whom? Are there any exceptions?

**Remediation** - How are conflicts, problems, or flaws resolved (e.g., discovering a vulnerability in a database holding contact tracing data)?

**Compliance** - Who verifies that the rules in the policy are being followed? What are the penalties for security breaches, data misuse, and other noncompliance?

### What To Submit

Synthesize your work into a security policy (1000 - 1500 words) that you believe represents your stakeholder’s interests. Your group’s security policy should have a section for each of the seven categories above.

**Tip:** If you are having trouble getting started, the SANS Institute has a number of security policy templates. In particular, pay attention to the Policy sections: https://www.sans.org/information-security-policy/
For Instructors:

For large classes, we recommend providing student critique using the Peer Review assignment (next page). For smaller classes, we encourage instructors to critique individual policies and use these critiques to guide classroom discussions. In either format, instructors may want to keep in mind the guidelines below.

Security Policy Critique Guide

Critique can be a powerful mechanism for encouraging students to engage deeply with complex and ambiguous problems. However, critique is a practiced skill, and some instructors may not have experience critiquing student work. We offer a few tips from our experience as educators in the policy/ethics space to prepare instructors for some of the challenges in providing constructive critiques.

Constructive over destructive: A harsh critique can prevent students from taking chances or participating in activities. Try to emphasize potential paths forward for students to take instead of identifying shortcomings. This can include using phrases like “bring out” or “make visible” instead of “this lacks” or “this is missing”.

Ask questions instead of give answers: Unlike math problems, there are few “right” answers in security policy. Rather, policies represent a number of tradeoffs and compromises. Try to guide students in identifying tradeoffs by asking questions; what are their justifications for a particular rule? What are the tradeoffs? Who wins and who loses?

Assess trends across groups: While reviewing student work, you may find systematic problems, misunderstandings, concerns, or opportunities. Use these trends as opportunities to engage students and promote learning.

Treat stereotypes as a teachable moment: The open-ended nature of this activity may surface racial, geopolitical, gendered, and other stereotypes or biases in student work, ranging from the overt and easily identifiable to more embedded and less visible assumptions of how particular groups of people live. These are important moments, and addressing them considerately is important since students may come from a variety of marginalized backgrounds (such as undocumented or homeless students).
Giving constructive feedback is a skill that takes both guided practice and time. For this assignment, you will individually peer review a different group’s security policy. To help you write a great peer review, we have provided some scaffolding questions for you think about as you read this group’s security policy. You do not have to submit your answers to these questions:

- Does the security policy account for all the ways contact tracing can monitor people?
- Whose needs are being met? At whose expense are these needs being met?
- Are the needs of your stakeholder group being met?
- Would your stakeholder group object to anything?
- Are any of the security policy’s exceptions or protections concerning for your stakeholder group?
- Are the obligations placed on different stakeholders achievable? Are the obligations reasonable?
- Are there any foreseeable conflicts that the policy does not address?

**What To Submit**

**Synthesize your feedback into a 500 - 600 word peer review.** You should answer the following questions directly in your peer review:

- What did you think was the best part of this group’s security policy?
- Where was this group’s security policy clear?
- Where did you get confused?
- Do you think this group overlooked or missed something that might make their security policy more complete?
COVID-19 Contact Tracing: Revising Your Security Policy

Group Assignment

Your group has received feedback on your draft security policy. Your next step is to integrate this feedback into a finalized security policy.

Each group member should individually and independently identify at least three (3) points from your critique that are interesting, complicate your draft security policy, or make you want to change your draft. For each point, write down:

- What was the critique?
- Why has this critique made you consider changing your security policy?
- How do you think you should amend your security policy?

Synthesize these thoughts into an individual 500 word reflection document.

Discuss your reflections with your group. When discussing your reflections with your group members, you may find disagreements, inconsistencies, blind spots, or other items which will require negotiation between group members. We also ask you to document your group’s negotiation process. Record agreements, disagreements, and reconciliations into a separate document. There is no minimum word limit for this, but try to be as thorough as you can.

After negotiating your policy changes, synthesize your collected reflections into a finalized security policy for your school’s contact tracing app. A comprehensive security policy will be about 2000 words.

What To Submit

Each group should submit:

- Your group’s initial security policy (1000 - 1500 words)
- Each group members feedback reflection document (500 words each)
- Your group’s final security policy (~2000 words)
- Documentation of your group’s process of negotiating and implementing changes to the policy

One group member is responsible for submitting all documents.
Background

As networked devices like cell phones and Internet of Things (IoT) proliferate, so does their network footprint. Increases in the volume and variety of network traffic make it difficult to quickly detect and respond to potential network intrusions. **Network traffic monitoring** can improve network intrusion detection and response by recording network traffic metadata at routers, switches, and other network nodes. However, this capacity for surveillance creates privacy and security concerns for individuals. These concerns can be particularly salient for those from marginalized communities, since technologies often reproduce patterns of inequality and harm.

To help operationalize these concerns, organizations will draft security policies, or rules and definitions involved in securing a system. Security policies articulate who and what is to be protected, and from whom; protocols for when threats are detected; and enforcement procedures for ensuring security.

Required Readings


Left image credit: https://www.scnsoft.com/blog/detecting-apt-activity-with-network-traffic-analysis
Right image credit: https://tcf.org/content/report/disparate-impact-surveillance/
Group Assignment

Complete the required readings, keeping track of why monitoring network traffic is useful, what data and devices are involved, how network data can be combined with other data, and how network monitoring may be more concerning for specific groups of people. Now imagine that your school wants to improve their network monitoring practices to better serve students while maintaining network security. They have asked a variety of stakeholders to draft a security policy that reflects their needs and concerns.

Select and Analyze a Stakeholder Group

Select a specific, entity with a vested interest in network traffic monitoring at your school to represent. For the purposes of this assignment, your stakeholders must be someone other than “students”. Some examples include:

- School employees (e.g., teachers, administrators, janitors, or contractors)
- A school office that supports victims of sexual harassment or domestic violence
- A student group that represents the interests of campus diversity and inclusion, such as the University of Washington's Women in Science and Engineering.
- A student group that represents the interests of undocumented students, such as the UW’s Leadership Without Borders.
- Your school’s Information Technology (IT) department

Do a small amount of research on your chosen stakeholder group. For formal organizations, you might look at their mission statement, website, or social media accounts. Consider questions such as:

- What goals or concerns might your stakeholder group have about network traffic monitoring?
- What power does your stakeholder group have over network monitoring at your school?
- What other stakeholder groups might have similar interests?
- What other stakeholder groups might have divergent or conflicting interests?
- What system abuses might be particularly concerning to your stakeholder group?
- What data or procedures involved in network traffic monitoring might be uniquely concerning for your stakeholder group?
Group Assignment: Drafting a Security Policy (continued)

Now that your group has selected and analyzed a stakeholder group, answer the following questions to begin your security policy draft.

**Drafting Security Policy Sections**

**Acceptable use** - Should there be limits on what network data is captured or how it is used? Are there limits on combining other data (e.g. social media) with network data?

**Data access** - Who should have access to network data, and under what conditions? When is it okay to share network data (e.g., with researchers, law enforcement)?

**Security incidents** - What should happen in the event of an intrusion or breach? Who might want to breach or gain access to your school’s network data?

**Special protections** - Are there types of network data or groups of people that should have special protections? If so, what should those protections be? How will these protections be implemented?

**Data retention** - How should network data be stored? For how long? By whom? Are there any exceptions? Who or what decides when data is deleted forever?

**Remediation** - How are conflicts, problems, or flaws resolved (e.g., a court order for a school’s network data)?

**Compliance** - Who verifies that the rules in the policy are being followed? What are the penalties for security breaches, data misuse, and other noncompliance?

**What To Submit**

*Synthesize your work into a security policy (1000 - 1500 words) that you believe represents your stakeholder’s interests. Your group’s security policy should have a section for each of the seven categories above.*

**Tip**: If you are having trouble getting started, the SANS Institute has a number of security policy templates. In particular, pay attention to the Policy sections: [https://www.sans.org/information-security-policy/](https://www.sans.org/information-security-policy/)
For Instructors:

For large classes, we recommend providing student critique using the Peer Review assignment (next page). For smaller classes, we encourage instructors to critique individual policies and use these critiques to guide classroom discussions. In either format, instructors may want to keep in mind the guidelines below.

Security Policy Critique Guide

Critique can be a powerful mechanism for encouraging students to engage deeply with complex and ambiguous problems. However, critique is a practiced skill, and some instructors may not have experience critiquing student work. We offer a few tips from our experience as educators in the policy/ethics space to prepare instructors for some of the challenges in providing constructive critiques.

Constructive over destructive: A harsh critique can prevent students from taking chances or participating in activities. Try to emphasize potential paths forward for students to take instead of identifying shortcomings. This can include using phrases like “bring out” or “make visible” instead of “this lacks” or “this is missing”.

Ask questions instead of give answers: Unlike math problems, there are few “right” answers in security policy. Rather, policies represent a number of tradeoffs and compromises. Try to guide students in identifying tradeoffs by asking questions; what are their justifications for a particular rule? What are the tradeoffs? Who wins and who loses?

Assess trends across groups: While reviewing student work, you may find systematic problems, misunderstandings, concerns, or opportunities. Use these trends as opportunities to engage students and promote learning.

Treat stereotypes as a teachable moment: The open-ended nature of this activity may surface racial, geopolitical, gendered, and other stereotypes or biases in student work, ranging from the overt and easily identifiable to more embedded and less visible assumptions of how particular groups of people live. These are important moments, and addressing them considerately is important since students may come from a variety of marginalized backgrounds (such as undocumented or homeless students).
Peer Review Assignment

Giving constructive feedback is a skill that takes both guided practice and time. For this assignment, you will individually peer review a different group’s security policy. To help you write a great peer review, we have provided some scaffolding questions for you think about as you read this group’s security policy. You do not have to submit your answers to these questions:

- Does the security policy account for all the ways network traffic can be monitored?
- Whose needs are being met? At whose expense are these needs being met?
- Are the needs of your stakeholder group being met?
- Would your stakeholder group object to anything?
- Are any of the security policy’s exceptions or protections concerning for your stakeholder group?
- Are the obligations placed on different stakeholders achievable? Are the obligations reasonable?
- Are there any foreseeable conflicts that the policy does not address?

What To Submit

Synthesize your feedback into a 500 - 600 word peer review. You should answer the following questions directly in your peer review:

- What did you think was the best part of this group’s security policy?
- Where was this group’s security policy clear?
- Where did you get confused?
- Do you think this group overlooked or missed something that might make their security policy more complete?
Group Assignment

Your group has received feedback on your draft security policy. Your next step is to integrate this feedback into a finalized security policy.

Each group member should individually and independently identify at least three (3) points from your critique that are interesting, complicate your draft security policy, or make you want to change your draft. For each point, write down:

- What was the critique?
- Why has this critique made you consider changing your security policy?
- How do you think you should amend your security policy?

Synthesize these thoughts into an individual 500 word reflection document.

Discuss your reflections with your group. When discussing your reflections with your group members, you may find disagreements, inconsistencies, blind spots, or other items which will require negotiation between group members. We also ask you to document your group's negotiation process. Record agreements, disagreements, and reconciliations into a separate document. There is no minimum word limit for this, but try to be as thorough as you can.

After negotiating your policy changes, synthesize your collected reflections into a finalized security policy for your school’s network traffic monitoring practices. A comprehensive security policy will be about 2000 words.

What To Submit

Each group should submit:

- Your group’s initial security policy (1000 - 1500 words)
- Each group members feedback reflection document (500 words each)
- Your group’s final security policy (~2000 words)
- Documentation of your group’s process of negotiating and implementing changes to the policy

One group member is responsible for submitting all documents.