­

Imagine Cup Junior

**Lesson Five – How to make sure your AI is good and cyber secure.**

**Introduction**

Welcome to Lesson Five of Imagine Cup Junior! The goals of this lesson are for your students to:

* + Start to think about the positive and negative impacts of their ideas.
  + Learn about the Microsoft AI for Good Ethical Principles.
  + Appy an ethical lens to their AI concepts, ensuring their AI concept is AI for Good.
  + Learn about cybersecurity and incorporate safeguards to their AI concept.

In this Educator overview of Lesson Five, we will again talk through how this lesson works, the PowerPoint slides that you can use, and some extra activities your students can go deeper into if they like.

We have a few different types of activities in each lesson. These include:

Rapid Reflection: A chance for your students to reflect on key questions to help guide their learning.

Sprints: These are short periods where your students need to work to the timer and try to achieve the goals listed on the slide.

Challenge Check-ins: This is a chance for your students to recap what they have and think about anything they may want to get done before the next.

Submission Hints: We are now in the second to the last of six lessons, so your students should be thinking about how to put the best PowerPoint submission forward. We offer some tips in this lesson.

Bonus Activity: If your class are enthusiastic about learning more, they can engage with the bonus activity provided.

It is time for some philosophy!

**Lesson Notes**

**Slide 1:** This is a title slide that you can have up at the beginning of Lesson Five of Imagine Cup Junior.

**Slide 2:**Challenge check-in. This slide is a check-in to recap what the students have gone through, and what is coming next!

**Slide 3:**This slide is a visual overview for the students of what they will be doing in Imagine Cup Junior. This is to show them that there is only one more lesson after this one, and that the focus of today’s lesson is to apply ethical and cybersecurity lenses to their AI concept.

**Slide 4:** Submission Hints. Here are some tips for your students to consider ensuring they are putting in a great submission. Submissions should include clear explanations of alignment to the ethical principles and how they will reduce cyber security risks. Both concepts are covered in this lesson but in the submission deck, students will need to develop two separate statements.

**Slide 5:**Rapid Reflection**.** To engage your students with this lesson, discuss as a class the positives of new technology. What do they think are some of the most important technological advances of recent history?

**Slide 6:**In this first video of the lesson, we examine how technology sometimes leads to unintended negative impacts on the people or planet and how our job is to anticipate and reduce those negative impacts whenever possible.

At this point, you should be around 7:00 minutes into your 45:00-minute lesson.

**Slide 7:** Sprint One. In the first ten-minute sprint of Lesson Five your students can work in their teams to discuss the negative impacts of technology and identify any negative impacts their idea could have. This sprint is to get students thinking about impacts of technology before we learn about the ethics of AI.

**Slide 8:** Your students have no doubt already come up with a great idea, and the benefits for the world will be positive if they were able to make this idea a reality. Ethics are a huge part of Imagine Cup Junior, and in particular the Microsoft AI for Good ethical principles are very important. Your students will see their scores go up or down by how well they engage with the 6 ethical principles.

**Slide 9:** In the second video students are introduced to Microsoft’s AI for Good Ethical Principles.

At this point, you should be around 20:00 minutes into your 45:00-minute lesson.

**Slide 10:** Submission Tips. Really encourage your students to spend some time thinking about their team’s ethical statements. Teams that simply say 'Our AI is fair because it does not judge people' will of course not score as many points as those who are able to show some good thought around the ethical considerations of their concept.

**Slide 11:** Submission tips continued. It’s important that students explain how they meet the ethical principles. An example of an ethics statement is on this slide. Specifically, we have shown an example of fairness: *Fairness: We believe our AI concept is fair because our AI Interviewer does not make any hiring decisions based on appearance. The AI does not see a picture or video of the person, or even see their family name, so that the AI is unable to make hiring decisions based on their racial or cultural background.*

**Slide 12:** Rapid Reflection. To help students prepare to craft their own detailed statements about each ethical principle, they will start by focusing on just one and generating a few ideas about how their idea is aligned with that principle.

To recap, these are:

* Fairness: Treat all people fairly and equally. (That the AI does not bias people for any reason, and that all can access it equally. For example, a real-estate AI that scans applications for apartment rentals does not bias people based on their cultural background.)
* Reliability & Safety: Perform reliably and safely. (That the AI performs its task in a safe manner. For example, that a self-driving car is at least as safe as human drivers, or ideally, even safer!)
* Privacy & Security: Respect everyone’s privacy. (That the AI is very secure and responsible with the data it takes in. For example, with a mental health AI that provides automated counselling, users would want to know that what they say in their sessions would be very safe!)
* Inclusiveness: Empower and engage everyone. (That the AI provides opportunities for all people to access its services. For example, an AI that helps people to cook healthy recipes would strive to be used by those who are blind, deaf, or who do not speak a highly used language.)
* Transparency: AI systems should be easy-to-understand. (That the AI can be used in a way where people understand why it is collecting certain data, and what that is being used for. For example, if there was a skin cancer scanning device embedded in a mirror to scan a person’s face, they should be able to know that this image is only being used for the cancer screening, not for any other purpose they are not aware of.)
* Accountability: AI systems should be responsible and have algorithmic accountability. (That the AI can be understood and overseen by humans. For example, if there was an AI that was scanning social media to spot ‘fake news’ there should be some human oversight of this, an understanding of the ways that an AI is making this determination.)

**Slide 13:** In the third video we introduce the term cybersecurity. This is designed to prime your students to start to understand why cybersecurity is a big deal, and begin thinking about how their idea might have cybersecurity issues.

**Slide 14:** Rapid Reflection. In order to help students make the connection between ethics and cybersecurity, we are asking them to identify how cybersecurity aligns with the AI for Good Ethical Principles.

**Slide 15:** In the fourth video we look at common cyber security risks and the different tools hackers have at their disposal. This is designed for your students to learn about the different types of hacking risks and approaches.

At this point, you should be around 30:00 minutes into your 45:00-minute lesson.

**Slide 16:** In the fifth and final video of the lesson, we turn to look at cyber safe practices and tools. Students will need to incorporate some of the tried and tested tools into their submission. Encourage students to consider which tried and tested cyber safe tools are most relevant for their AI idea.

**Slide 17:** After learning quite a bit about cybersecurity, we recommend providing students with a brief recap of cyber safe practices and tools.

**Slide 18:** Submission Tips. The emphasis here is to encourage specificity and details whenever possible in their explanation of how they will mitigate cybersecurity risks to their AI.

**Slide 19:** Sprint Two. In the second ten-minute sprint of Lesson Five your students will work in their teams to begin drafting their Ethics and Cybersecurity statement. This statement will ultimately need to explain how their concept aligns to each of the six ethical principles and how they have planned to reduce cybersecurity risks.

**Slide 20:** Challenge check-in. Challenge check-in. This slide is a final check-in for the fifth lesson to recap what the students have learned and what is coming next!

**Slide 21:** Bonus Activities. There are two sets of bonus activities to choose from:

* **Class debate**: ‘Will AI make the world more inclusive?’ - discuss. Here are some links the students can look at and get the debated started: [AI, Ain’t I A Woman?](https://www.youtube.com/watch?v=QxuyfWoVV98); [In the Pursuit of Inclusive AI](https://medium.com/microsoft-design/in-pursuit-of-inclusive-ai-eb73f62d17fc); [Creating a more inclusive society through the power of AI](https://blogs.microsoft.com/eupolicy/2019/12/03/creating-inclusive-society-through-ai/).
* **Video and Discussion**: Watch this video of a car being hacked remotely. As a class, discuss what surprised you in the video, and whether the students think this was an ethical experiment? Link: [Hackers Remotely Kill a Jeep on the Highway | Wired](https://www.wired.com/2015/07/hackers-remotely-kill-jeep-highway/)

**Slide 22:** Judging Rubric - This is the rubric used by the judges to assess your student’s submissions. You can share this with your class and use it to guide their AI concepts as they fill out their PowerPoint Submission Template.

**Conclusion**

Lesson Five done! As you can see, this PowerPoint slide deck is set up to step your students through Imagine Cup Junior in a really simple way, and to help them learn about AI and invent a great idea to submit. This lesson saw your students engaging with the ethics of their AI concept and learned about methods and tools to reduce cybersecurity risks.

Great work running Lesson Five and have fun preparing for Lesson Six where your students will submit their AI concept!