### **Transcript for FLO Friday: Climate Conscious AI Use – Wrestling with Environmental Impacts**

### **BCcampus webinar hosted on February 7, 2025**

**Facilitator: Emily Simpson**

**Host: Helena Prins**

HELENA PRINS:

A good morning, everyone, and welcome to our FLO Friday on Climate Conscious AI: Wrestling with Environmental Impacts. That's quite the topic today, and we are very fortunate that Emily Simpson had the guts to take this on. So thank you, Emily. Behind the scenes, I've got my colleague, Paula, who is making sure that all tech things go smoothly. My name is Helena, and I am on the teaching and learning team here at BCcampus. Just a reminder that we are recording the session, and the recording as well as the slides will be shared with all of you in about a week or so. And at the end of the session, we'll also share a survey link with you and we really ask you input and feedback. We share the feedback with Emily, but also one of the questions is about what you think we should do for professional development. What are the topics that you are interested in? So please help us as we plan our year ahead. So Emily will do a traditional territorial acknowledgement, but I thought I would also just say that I'm zooming in from the unceded territories of the Lekwungen People, which includes Songhees Nation and Esquimalt Nation. And it's very interesting my path of understanding reconciliation and decolonizing practices. It actually started not that long ago, maybe around 2018 when I was at Royal Roads, and I was asked a question in a session: what's your relationship with the land? It was a very interesting question for me at that time because it was snowing everywhere, and we didn't have a snow day, so we were on campus. As an immigrant from South Africa, I looked at the snow and I just thought, I have no relationship with this land. So I have come a long way since that question in 2018. Why I bring this up is because this week again, lots of snow around us here in Victoria, it's not something we're used to. So I had lots of opportunity to think about my relationship with the land. I do think today's topic is part of that for me. When we think about how we use AI and the impact it has on the land that we have a relationship with. For me, this is totally intertwined. So I hope that as we sit here and we gather with Emily in the space that this will be a meaningful hour to you as well. So with all of that said, I'm handing it over to you, Emily, to take us through the next hour.

EMILY SIMPSON:

Thanks, Helena, for that lovely introduction. And welcome again to everyone who's here. I'm so excited to be gathered with you all and just feeling hope in having this conversation. I want to respectfully and honour and acknowledge that I am joining you from the traditional ancestral and unsurrendered lands of the Musqueam, Squamish, and Tsleil-Waututh nations who have stewarded this land since time immemorial and continue to live in relationship with and care for these lands today. This is a photo I took in one of my morning bike rides this summer around the False Creek Inlet. Given the topic of this workshop and the lands that I am on, I just want to acknowledge the deep wisdom from Indigenous nations around the understanding of dependence. Understanding of our dependence, all of our dependence on and respect for the air, the water, the land, and all that resides within it. The leadership and resistance and advocacy for the environment, whether it's Wet'suwet'en, the water protectors, the Qikiqtani Inuit Association National Marine Conversation. For myself as an individual, I can't recall when or where I first heard the idea of seven generations of caring for the world. Seven generations in the future, but even before I had children, it resonated deeply with me, and even more so now. I very belatedly looked up the source of that wisdom and want to raise up and acknowledge that it comes from the Haudenosaunee Confederacy. The seventh generation is a core value to take into consideration those who are not yet born, but who will inherit the world. Nations are taught to respect the world in which they live as they are borrowing it from future generations.

So I, if you can just ignore that agenda for a second. I first wanted to explain how it came to this. I'm not an expert computer science or engineer or AI person, and I welcome any corrections in addition to the conversation around the information about to be shared. In my work in the Centre for Teaching and Learning where I support instructors with professional development, I've been helping departments over the last three years navigate and respond to the changes generative AI has brought to teaching and learning. Thinking about the basics, the risks, the applications. I just remember on my own point in the journey very early last year when that statistic around 20 to 50 prompts in ChatGPT uses up two cups of fresh water. The same shock when I read about how much energy it requires to generate a single image with AI. I wondered what else I didn't know about the environmental costs. Dr. Sasha Luconi's work around power, sorry, power requirements to train and run generative AI, as well as the associated emissions, and Dr. Shoalei Ren's work around the water use in the data centres for both the training of these AI models and the running of them. were really key to opening my eyes. I've been grateful to see an increasing amount of scientists and researchers and educators and community members raising this. But I still feel there is a gap. When I go to sessions around AI teaching and learning, there is a big focus on the applications and the way we prepare our students for future work with this. But it's hard for me to find places that talk about what we could do to reduce the environmental risk of these tools. I'm hoping through this session, there's an opportunity to discuss, to learn together, to wrestle with the tensions of sometimes we have to use these tools for our jobs. How can we teach students or other instructors about them if we don't? How can we bring our curiosity and wisdom together in this on how we can shape a sustainable future with responsible practices? The four points I thought we might journey together today thinking about a very basic overview of the environmental implications of generative AI. What are some of the positive possibilities? What are some of the negative possibilities? We have that same grounding understanding. Then I have a guiding question framework that I've been using to think about. Is this the right time to use AI? Is it worth it? Out of that, we're going to explore developing our own personal philosophies on AI use that embody your environmental values for where you're at right now, what your role requires of you, and maybe there's other constraints to consider. Finally, I want to share some practical strategies that have come out of the University of Tilburg around maybe some specific things we could do to minimize the carbon water use of generative AI. In today's session, we will be using Padlet and chat to interact. So I know our amazing BCcampus support team Paula will be helping facilitate that in the chat, so thank you very much. I welcome questions at any time. Please feel free to put those in the chat, and I will try to respond to them as they come.

Okay. I thought we'd start with seeing what our collective knowledge, what we think we know, what we know about GenAI's environmental costs or benefits. I should have said that question up more broadly. You can use the QR code on the screen or there is a link in the chat. I'll just give us a few minutes to add to that Padlet. If you haven't used Padlet before, there's a little plus icon in the bottom right corner in a circle where you can click that to add your thoughts to the tool. I just to go ahead. PARTICIPANT: Sorry to interrupt. Is there a way to get this sent via a text or an email or something? The QR code isn't working for me.

EMILY:

There's also a link in the chat if the QR... That's all right. I'm also happy to copy paste stuff from the chat into Padlet. Folks have some ideas that there's a lot of water required to cool the system servers, the data centres. Uses a ton of energy, heat production. Acquiring Three Mile Island. Some of these companies have been looking at restoring nuclear power generators in an attempt to meet the growing energy demand. Great. Also, some folks have heard the statistics about it takes more energy than a Google search, but yeah, it's hard to know which sources to trust. It's very true. And I think I found even from my own presentation on this last fall, there was some data I included that I felt like when I went back to the source wasn't quite accurate. There is, I would say, social media going on around it, so tracing that information back to the source. I will say We'll talk about part of the challenges. There are a lot of unknown factors that these researchers are estimating as best as they can without the full transparency of the companies running these models to try and estimate what the full impact is. Great. Thanks and I really appreciate somebody mentioning cobalt mining. That's a critical piece in producing the GPU and CPU chips that go into these models. I love that somebody's finally downloaded a local AI to reduce my impact. Awesome. So that's one of the practical strategies we're going to talk about. Thank you, everyone. I appreciate that.

I think even between this session and the one I did in the fall, I can see there's an impact of people seeing this coming up in conversation and in the news and media more.

So one let's talk a little bit about, is this a positive, is it a negative? I think there's a lot of information out there about the potential for both. Again, I'll try and keep this brief so we can get into the actual reflective parts of this. But as I was saying, the real challenges, there isn't a complete life-cycle assessment yet for generative AI. In part, it's because there is so much hidden information about the models in the first versions of these like GPT-3, GPT-2. Companies were a lot more open about what kind of hardware they were being trained on, how many hours of compute time were used, but now they're not. It's very challenging for researchers to get a good handle on what is the total number of GPUs or CPUs used? How long was the compute time? What was the data server? Where was that located in terms of the energy? That is it renewable energy? Is it coal, what's powering the data centre? All those pieces come into it. Most of the research focused just on this training part. There were lots of early statistics about energy and water use for training a model. Then we started to get at energy use and water use for the inference, which is us as the everyday users using it. But doing the actual full life cycle as somebody mentioned the cobalt mining, any of the rare earth minerals, the manufacturing, the shipping of those components to where the chips are assembled and then to the data centres, and then all of these stages of use. And also end of life, where does all of the e-waste end up, especially as you think about how quickly they are developing newer versions of chips that are more efficient or trying out new configurations. There's a lot of e-waste coming out of this process.

All right. Where is the excitement about the possibility for AI to have a positive impact on helping us mitigate and reduce climate change effects? Well, all has to do with the tool's enormous capabilities to analyze huge amounts of data and identify patterns and insights both faster than humans and find things that humans might miss. Where could this come into play? We're already seeing enhanced abilities to improve our climate and water modelling predictions for climate change and severe weather events. This also means better modelling for what possible climate mitigation strategies, what their overall impacts will be. Although we don't have a life-cycle assessment of GenAI itself, it's significantly improving our mission stats. It has significant potential to improve life-cycle assessment of other products and processes. It could optimize flight paths for airplanes to cut down the contrails. This accounts for 35% of the aviation sector's global warming impact. There's already studies showing that it can be used to improve monitoring of deforestation, air quality emissions, and it's also being looked at in materials research. Better and quicker ways to prototype, say, different molecules or reactions, and particularly with energy, this could improve the storage capacity of high performance batteries. You might also see city planners using it to cut down on traffic by strategically designing city plans. Sorry, I'm not a city planner. The other place where people are excited is actually using it to improve coding. If the code efficiency can be approved, there's studies that show it can reduce the application's energy use by up to 50%. There are many exciting areas. I think of, I would say, a large-scale impact where AI could strategically help us reduce and mitigate climate change impacts.

Now, in terms of the negatives, I know some folks were mentioning data centres. I want to start with that initial phase, the training phase of the model, and I actually had never seen a picture of a data centre before. This is from Dr. Shoalei Ren's work. But essentially, there's the power plant or some renewable energy source that is powering the data centres. This is the level too where there could be water used to provide cooling to the actual source of power generation. But at the data centre itself, as folks were saying, there's a lot of heat generated just the way your laptop heats up. They use either air cooling or water cooling. But for the majority of data centres, it's circulating fresh water and it has to be fresh water. Then the fresh water that comes out is actually evaporated. There's quite a lot lost before it's cleaned if it is cleaned and then returned to the water system. So in terms of the data centre, also more of them tend to run on non-renewable energy resources like gas-generated energy or coal-generated energy because they need continuous energy. Renewable sources tend to have less of that continuous flow. Interestingly enough, between 2021 and 2023, Microsoft reported a 34% increase in global water consumption, topping 1.7 billion gallons, while Google observed a 20% increase in global water consumption. And those are being linked directly to generative AI. According to a recent report in 2024, right now, we might think, AI is not so much. Data centres overall, are 3% of global energy demand. This includes everything that we're doing now. We're streaming video through the cloud, every time we're using Netflix, cryptocurrency. That's all part of that data centre demand. AI is accounting for about 15% of this data centre demand or 0.45% globally. By 2027, however, they're predicting AI energy demand will be equivalent to the annual use of Sweden or the Netherlands, and that is expected to grow. When you're thinking about the kinds of emissions related to these tools, so training GPT-3, which had only 175 billion parameters, has been estimated to have emitted 552 tons of carbon dioxide. This is very hard for me to link to anything. But I have a better time imagining if I say, Okay, this is about 39 Canadians' annual emissions based on 2021, That's Canada averages or 890 flights from LA to New York. Sorry, I could not find that number with Canadian cities, but I feel that we should work on that. ChatGPT-4, however, has about 1.8 trillion parameters. Researchers know far less about how it was trained, but they're estimating the emissions are about 12 times more. I think they're imagining that the water use is also more. In terms of overall water, training GPT-3 evaporated 700,000 litres of freshwater. This is about 3,139 Canadians' daily water use. That's the training phase and this was the big fear area or concern area to start with. But now it's actually shifting to inference.

ChatGPT alone as of December 2024 is getting 1 billion queries a day. That's just ChatGPT. We also have Claude, we have Gemini, we have Copilot. If you imagine all of these tools while a single inference use or request may seem very small when you look at the scale of however many people in the world using it multiple times a day, it's now the larger part of energy demand and water use for these tools. Jon Ippolito, I think, worked quite hard to review all these different articles as well and try to put the use of generative AI in the context of other regular tasks we do online. I found this really helpful because I often don't think about Zoom. And his work is actually what made me think about collectively overall use. Good thing. Do training costs don't stop? Well, for an initial model, like once GPT-3.5 was done, that training costs stopped, but then as soon as they start training GPT-4, yes, then there's whole new costs again, and you're right. They continue to build, for the most part, larger models. I will say there are some things that are making the training more efficient, I'll touch on those. But just the ones that I've highlighted in yellow are generative AI. For an hour-long Zoom call, which is us, we're a little bit more than ten people. This is 1,000 watt hours of energy and 4 litres of water. If you generate a single page with an online chatbot, that's about 30 watt hours and 120 cubic centimetres of water. Charging a smartphone, that's a bit less, 20 watt hours, 80 cubic centimetres of water. Generating an image online, 6 watt hours, 24 cubic centimetres of water. Generating a sentence with an online chatbot, 3 watt hours, 12 cubic centimetres. This is the statistics I believe somebody was referencing about a non-AI Google search vs. trying to use your chatbot as a Google search. Yes, there is definitely a distinct difference in energy use there. I love that somebody mentioned the local chatbot, generating text with a local chatbot is about 0.01 watt hour with 0.04 CC. I've actually seen another study that suggests there is actually no water use with the local chatbot, but I really like Jon's qualitative statement here. It's not that the sources are attempting to be contradictory. It's again that these researchers are seeking to estimate these black boxes because the more profitable generative AI, large number of models are becoming, the less information the developers are making available. But I think the scale of the estimate can give us a best and worst case scenario and an average.

Again, I mentioned as part of that, it really depends where the data centre is located, what the actual climate is like in that area, what the sources of water are like. This was, I thought, a very helpful graph from Dr. Shoalei Ren, Shoalei Ren's Group, my apologies, around how many inferences could you get for 500 mls of water? It depends on the type of cooling used at that data centre. Is it a hotter climate? All those pieces. But you can see it's very different for say, you can only get 17 chats up in Sweden, but you could get I shouldn't do my world maps here, 26 chats in Australia for the same amount of water. Right? Okay. So that's a useful one.

So everybody has kind of spoken to the concerns. So again, the big concerns are energy demand and carbon footprint. So in 2022, carbon emissions from AI systems, I believe that was the eight biggest ones. Past emissions by 137 individual countries. Globally AI-related infrastructure, according to Alex Defries' studies could consume as much as six times of Denmark's annual water consumption. The piece we haven't talked about as much is the mineral mining and e-waste. Often mining is occurring in countries with less restrictive environmental or labour regulatory requirements. There's deforestation, soil contamination, toxic waste disposal, groundwater pollution, air pollution, as folks noted in Congo, it's leading to local conflict and war over these resources and child labour. There's a lot of this mining occurring on Indigenous lands, made without consent or compensation, and a lot of it is occurring in drought prone zones. E-waste is one of the fastest growing waste streams globally. I believe right now, there are 62 million tons in 2022, and generative AI could generate up to 16 million tons of e-waste to buy 2030. Again, that's part of that fast development. I'm not a computer person, but better versions of the chips that go into the servers. And what we're also seeing is widening disparity in social and economic impacts. Where these data centres owned by these giant corporations being set up. They may be trying to set up in towns that don't have a lot of choice, and they're competing for water. There's been recent articles in Central America and Latin America, where there's growing protests around the plans to build these data centres. The AI Now Institute warned as early as 2023 about these continued settler colonialism and racial capitalism impacts in unevenly distributing AI's environmental costs and keeping all the profits located far away.

HELENA:

Okay, I'm going to let you take a quick breather. This is a comment and the chat that I just wanted to highlight. Fantastic. Yeah, Jill says, do we know if any of these uses of generative AI result in a net improvement when considering the costs of using these models. Then she went on. Part of my question is because we don't fully know the costs and often we do know what we need to do to mitigate climate change. We just aren't doing it. Then when you spoke about the training piece, you said, Yeah, and the training cost also doesn't stop, right. Because if they want generative AI to be current, they have to keep training it. Just a comment there in the chat. And yeah, Joe also mentioned that is troubling as many people who are disproportionately impacted by these tools also can't easily use them either because the tools suck in any language other than English or because of the digital divide. Thanks for those comments.

EMILY:

Yeah, I appreciate those comments. I think again, the net improvement. I think some of those examples I gave earlier. Again, I'm a lay person, but for me, I think, yes. The cost of using this tool, if it's used for say, monitoring deforestation or better modelling a climate mitigation strategy. Like for me personally, that feels worth it compared to me using it to write an email. I guess I think one of those questions, which we'll get to in those guiding questions of, in this particular use case, who benefits and who does it cost? What's the scale of that use in terms of positive outcomes or negative outcomes? I think that's something we're all grappling with, for sure. Um, I do want to say there are groups who are working hard to reduce the environmental impacts of AI. Again, out of Dr. Sasha Lucioni's research group, they've promoted this idea of an AI energy star rating for AI models. But my understanding is we really need, particularly Canada, North America. We need more regulation around forcing those things to happen. I think the EU is showing a lot more leadership in that. They are definitely looking at things that can reduce the energy consumption during training. Capping power draw can reduce energy consumption by 12 to 15%. I saw another study that talked about, they realized at some point in the training, the improvements of letting it go longer were so minimal that they could cut the training off earlier and still have a really good model for less energy training costs. Again, there's lots of work going on towards quantize computing, so changes in the hardware so it'll be more energy efficient. There's that idea of strategic optimization. Scheduling jobs or training at night or during winter when there's less demand for cooling, where you choose to locate your data servers, either it draws a more renewable energy or again, considers how much cooling would be needed. There's also studies showing that if I compare the right hardware with the right AI model, I can decrease its energy use. Again, algorithms that can reduce the training energy for models. I really want to go back to somebody's work to figure out installing a local AI model, which sounded really intimidating to me, but I feel like now is very doable. But using smaller task-focused AI models. They don't require as many parameters to train, they're not as large to run. I thought this was a really great example of comparing size of models. GPT-4, which I think we said was something like 108 billion parameters. I have to go back to that slide. Using that to write an 120- to 200-word email could cost 3 litres of water. But using Llama 3-70-B, which is a much smaller model, would only consume 0.13 litres of water. There is a huge difference in the energy use and water use required if we can use smaller models. I really love. I forget who set it now, but it's like when I go to the store, which is 10 blocks away, I don't need to drive a really souped up Ferrari, I could walk, or I could bike there, or I could take a scooter. Can we think about AI that way? The large language models are designed to do everything. Good question around the energy carbon footprint of 137 individual countries. According to the article, I would say those are much smaller countries on the list, but comparing it to what is the footprint compared to specific countries? I think about that question more in the sense of, again, the disproportionate distribution of impacts or use of resources for a much smaller portion of the world. But I will go back and make sure I add that into the slides. Thank you for that question. Okay.

That was a lot of data. I hope the numbers maybe there was just one piece that stood out for you as a thing to take away. I'd like to do another quick reflection on what stood out for you and what was shared around both the potential positive applications of AI to mitigate or reduce environmental impacts as well as the possible negative repercussions. Thank you, Paula, for putting that in the chat. Oh, no. My goal is not that we feel doomed, but I can absolutely resonate with that feeling. Thank you for sharing that honestly. Don't worry. I really appreciate that perspective of staying informed to make informed decisions. And I think again, that's my hope of these conversations to bring together, what do we know? How can we make informed decisions? And, I mean, we can't not acknowledge that we're operating in a very capitalistic model right now, and profit is for sure the end goal of many of these big corporations. Yeah. Again, it could be the scale of rollout feels like we can't maybe do much to stop it and maybe there are potential positive use applications. For example, I read one where it's being used to support diagnosis of scans and it improved detection of one particular type of cancer by 85%. I'll have to go pull that paper. But again, thinking about are there particular applications or applications we could push for or regulations we could push for that can help guide how this is coming out. Yeah, I appreciate that intention. How important is intention is when we use AI. Yes, Google started to always give an AI answer. That's a really great observation to notice that's happening. Worried about future generations for sure. I hear guilt. I have been told guilt is not a useful emotion. Can let that emotion sit with you, and then at some point you can make a decision to be except, you have to use it in this way. Maybe for me, I'm like, Okay, maybe I can't change the few ways that I have to do AI at work, but can I pay more attention to how much I'm streaming Netflix at home? I think about trade-offs that I can do where I have control. I try to say, what do I have control over? Yeah, so much potential, especially in the era of accessibility. Thank you for bringing that up. That is definitely a key consideration for this tool as you're thinking about what are ways it could improve things for a large number of people. We need more info and legislation. Yes. We are in the baby phase of this tech. It's exploding so quickly and we're trying to catch up. Thank you. I really appreciate everybody sitting with those feelings and sharing so honestly. I know there are no easy answers, but I do believe in being with others and figuring it out together, there is a way forward.

You all have already brought a lot of wisdom in those responses that you shared because you were bringing up intentionality. You were bringing up when and where do I use AI. These are three guiding questions. I was inspired by. Helena shared Brent De Waal's Ethical Framework for AI Image Generation, which was at a previous FLO, BCcampus FLO course, and I've condensed them, repurposed them to these three questions. I ask myself, Why am I using AI? I ask myself, What is the reusability of what I'm creating with AI. Then I ask myself about impact. Who will gain through my use of AI? What are the costs and who bears them?

When I think about why am I using AI, these questions might help you as they've helped me figure out, is this a case where I want to use it, where I feel it's worthwhile? I ask, is this necessary or is it for fun? I will confess in the midst of the postal worker strike in December, I did use AI to write the two Santa letters back to my children. But that was the only time I used it personally in December. I'm not going to be perfect at this. I asked myself, is speed and resources are critical. Have I been asked to do something where I just haven't been given the resources and let's say, for example, I don't know about you folks, but the IRCC changes and the rapid pace at which we are trying to develop a new curriculum to respond. It has been critical to support those departments to do it in a timely manner. Am I trying to create or do something I couldn't on my own? Before I answer that one, I ask, has someone already done this? Is there an OER out there? Is there something on Creative Commons that I could use instead of turning to AI first? Is this the right tool for my task? As somebody mentioned, do I need Google search with AI? Or could I just go choose another browser where AI is not integrated in the web search? Could I spend the time doing the research myself? Is there some other tool that could do this for me instead at less energy use, less water use. Is my use of this aligned with my pedagogy and ethics? Are there certain cases where I think it's actually not appropriate to use AI in this specific context, or I have this particular ethics of say, I have this particular ethics of resistance? I know there are some artists who because of the way data was scraped around art, are just saying no. This is a flat no. Is it aligned with my pedagogy and ethics?

The second question about reusability. I always think about this one when I think about creating an email. I'm like, the stress of creating an email. Then I think, is this a one-time use or a multi-use? Is this like I am singly driving my car to the store or am I carpooling with five other people? Am I saving or storing the generated content, so I can reuse it without having to regenerate? Am I labelling my AI-generated materials? I know I think BCcampus current recent workshop on the stated AI generated content can't be labelled as Creative Commons, but we still can label it as AI, so we know, so we're transparent. I'll give you an example. Once I read about the energy for image creation, I've just been reusing my five images that I created in 2023 when I was learning it. But I learned I had to save when did I create this image, what tool did I create it with because it wasn't embedded in the image itself. If I am integrating this into my students’ learning experience, will their generated content be reused? Am I having them do something that's a one-time use or is there something where they will reuse it? Yes, exactly.

The third question is, who benefits from it and who or what does it cost? This one it's a little harder for me. I don't know specifically necessarily who's bearing the cost because I don't know which data server I'm drawing water from. But I think, I love that somebody raised the accessibility question, who benefits the most? I can think about what is the scale of this impact, who is it benefitting? Who is bearing the cost? Will it solve a significant problem? That goes back to my question of is this going to diagnose patients more successfully and save more lives or am I creating something for entertainment? We also think about, is a company benefiting, profiting off the data I put in for training? Am I giving up intellectual property rights? Am I willing to use two cups of clean water to do this? Again, that's 20 to 50 prompts. Whose two cups of clean water am I using? If I had to pay for each prompt, would I use it as much as I am? I think that's often what makes it so easy is so many of these tools have a free amount of use, or we don't sign up for an account or pay for it, but we can still use it. When we don't pay for things, I don't often recognize the inherent cost. Oh, I just found my quote. "A trial conducted at five John Hopkins medicine system affiliated healthcare facilities, found that using AI algorithms to analyze medical images led to a 20% reduction in sepsis deaths in their hospitals. Again, for me, that goes to who is it benefiting and what's the purpose of that? How are those guiding questions resonating for folks? Is there anything you would add or that you ask yourself when deciding? Please feel free to share that in the chat or if you want to unmute. Thank you. Yeah, I appreciate hearing which ones resonate the most for folks as well. Thank you. Oh, Derek, I'm sorry you missed your bus stop, but I'm glad the conversation is good. Taking those questions.

The final part of the session today is putting what we've been talking about, what you're thinking about into action and creating your philosophy. This is an evolving philosophy that you're creating. It's not I must follow this to a T all the time and it will last for the next two years because we don't know where AI is going in the next two years. Our particular contexts are specific to us. Our values are specific to us, our needs are specific to us. This is where I'm at for my personal philosophy for AI use for now.

My personal life, I'm trying to make a boundary that I'm not going to use it except to help my children learn AI literacy. I think about we've been planning a trip lately and I know there's AI trip planners and instead, I was like, No, going to do it the old school research way with my Firefox searching skills to find out all the things we want to do on our trip. For work, I put a boundary for myself. I'm not going to use it for image generation, for image captioning, or writing emails. I feel those are one-time uses and not worth it. However, I recognize there are times I do need to use it because I am supporting faculty exploring it. For me, supporting major curriculum development when I have limited resources and time. For first drafts of major reports that go to the whole institution or social media posts that are about the whole institution or collating research and documents in our program review processes where we are looking at curriculum alignment with, say, entry to practice competencies. This is a huge time saver and I think does a much better job often than we do as individuals. Those are three use cases for myself. I've also been looking at, in order to enhance UDL in instructors’ Moodle courses, teaching them prompts that can help them quickly generate H5P quizzes or H5P interactive videos. Trying to balance that who benefits? Is it multi-use? Is it reusable? I've also gone back to reusing as much generated content as possible. I am switching to all my web browsers without any embedded GenAI. For right now, I'm sticking with Duck Duck Go and Firefox. My next step. One thing I have done is I'm trying to do more work when I have to use AI using poe.com where I can pick a smaller model, but I do need to get my own smaller model downloaded on my computer. I tested it six months ago and it was still too big for my computer to effectively run, but I think they built smaller models now and so I have a link for that. To keep, it's very easy and I don't know about you all if you're in workshops on using AI with instructors, but it's so easy to go right into look at all these great applications. I always feel awkward, but I try and bring it up to be like, Okay, these tools, like all the Zoom tools that we're using, have water and energy risks, and they may look free, but are you thinking about when and where you want to use them?

I'm going to give you all 5 minutes on this Padlet. Yes, I'm going to share the link of downloading a look at smaller AI. I give you all 5 minutes or 3 minutes, whatever seems right, to start pondering what your personal philosophy for AI use looks like and you can put it in the Padlet. Again, everybody is going to have different definitions of this, but should just start exploring what it could look like for you. There's great sharing coming up in the Padlet. And I appreciate folks saying, whether you need a full philosophy or whether it's just stopping to think before you use it. Just that intentionality and the willingness to take that conversation out to others. I think it's really fantastic. I do appreciate the use raising the fact that there aren't just environmental costs. When I say environmental costs, I really do mean beyond the Earth, I mean all of our relations with other humans. And that definitely covers the concerns about exploitation of labour, the bias and hallucination that can impact our relationships with each other. All of those, I think, are bound up in that work. Thank you all. Appreciate that. Yeah, it's definitely something that evolves, for me, has continued to evolve.

Okay, so what are a few practical strategies? I really want to acknowledge, I actually have problem pronouncing his name, but it's Matthijs at Tilburg University who came up with these tips very early last year.

He is the one that pointed out choosing the right tool for the task is a key way we can be effective and we talked about the right AI model for the task. As I mentioned, Poe is a website you can log into where you can selectively pick a smaller model, and I have a link to Leon Furze has a great post about getting started with downloading and using a local model on your computer and that is at the end of this. Again, you know, I think we are all still learning about do I need the full on large language model for the task that I'm doing? Or is it something much simpler where I can use a smaller model and still get a quality output? I think that's something we're all still learning.

The second one which we talked about. This feels like my childhood song I learned in fourth grade, reduced, reuse, and recycle. So I thought about this in the classroom, this idea of not asking every student to use AI, but could they do it in groups, or could you demonstrate it to minimize the computation request with AI? Or when I'm working with a co-worker, is there a way we could collaborate on something together? I think now with my faculty workshops, I actually try and just pull up a chat I had before instead of generating a new chat, so I'm not recomputing. Again, as folks mentioned, that checking, open educational resources, Creative Commons, literature, what already exists. I think again, about how this supports our relationships with each other. I think about, do I know somebody in another centre for teaching and learning who's done something on this that they're willing to share and I can share something in return, so we can reuse that. Again, recycling. I was touching on this. Can you reuse your previous AI-generated outputs to save re-computation?

Another one I learned about is to limit the output length. I thought somebody touched on this really well in their philosophy. They said, I really need to think about the prompt before I put it in. Sometimes we think , it's like with my friend when I'm writing a text and it's this incoherent thought that then takes me five more texts to get right, and how much compute power that's adding to the tool. Can I be very precise in my original prompt? Also can I tell it to limit its own output to save energy? This was a really nice example again from the Matthijs, I'm sorry. I have no idea how to pronounce this, but I can put his name in the chat. Maybe somebody here knows how to pronounce this. There we go. Instead of starting with the prompt, "Explain climate change." This is a very broad prompt, doing a contextualized audience specific prompt for a policy briefing, summarize in 100 words, and this is the part where he's limiting the output of the tool to save compute power, the primary causes of climate change, emphasizing human activities. He gave some examples of language you could put in the prompt to make sure the output is brief.

Another example he gave is batch prompting, where you group multiple questions or tasks into a single request. This uses less computational resources by reducing the number of server requests. Say for example, one Let's say hypothetically, I had five programs and they each had a list of student characteristics. I wanted to analyze each of them and say, what is actually an academic prerequisite and not a recommended characteristic? I might say, please complete the following tasks and restate each prompt before the answer. I might say, analyze this program, here's the list. Analyze this program, here's the list, and then please output your responses this way. This is a way you can group responses.

This is number five, run a local model on your device. Again, your small local model doesn't use cloud storage or communication, consume way less energy than interacting with a cloud model. This is a great article from Leon Furze. "Three Ways for Educators to Run Local AI and Why You Should Bother." These things are all in the slides you'll receive. Then the other level I thought about. How we can change things at the institution level? If our institution is getting to a place around procurement, many post-secondary institutions are signed on to support UN sustainable development goals. But are we asking if we have to do these measures of environmental impact for our institution or carbon footprint, is AI being factored into that when we measure it? If we're part of purchasing an AI tool, how can we communicate those values of sustainability and transparency and asking them to be accountable for what the environmental impact of their product is? It could also mean as an institution, we don't just say, not to mock California public universities, but that we're going to all buy ChatGPT licenses for every student. Is there a smaller task-specific model that would do the things we need to do for our institution? Um, so those are just some practical strategies that I've come across.

But I welcome folks contributing, other ideas they've heard that could be practical strategies, other than the very obvious one of not engaging, but other practical strategies if you are using these tools to reduce the impact. So I just wanted to open that up in this time very briefly, is there anything we haven't considered? Again, generative AI is not alone. You know, we are operating in a cloud-based world where we're storing so much data on servers, we're continuously communicating through streaming. So, I don't want to say this is like an evil in and of itself when we're all probably using SharePoint and OneDrive, and I don't know how many videos I have stored yet. But just thinking in the context of the whole France apparently has this phrase or idea called digital sobriety around the use of the internet and technology in thoughtful and responsible ways. Uh, Yeah. Yes. I appreciate Sarah's comments. What else hasn't been considered? Yeah, we have to prepare people for the real world and shaping the real world. I think having these honest conversations with students as part of AI digital literacy to be like, well, what do you know about the environmental implications of these tools? How do you feel about them? How will this shape your use? Those are really important questions. Yeah. Yeah, I'm hoping life-cycle analysis is going to improve, and I'm very curious to see what will happen with the EU legislation.

Okay. So here's just some of the articles I did try and find. There's some more recent ones that have come out from Lucioni in January 2025. So just adding some more recent articles for folks to draw from, but I welcome fact checking and engaging with these articles for folks.

Yeah. And really just grateful for folks’ engagement in this workshop for asking questions, for struggling together, for sharing, where we feel scared, where we feel just like where are we going in this world together? I just really I'm grateful to have people to be in this space with, and that gives me hope for our collective capacity to shape things towards better futures.

HELENA:

Thank you so much, Emily. I put a survey link there in the chat. Before you leave the room, just click on the link that you can fill it out quickly. I think it takes three minutes or so to just give Emily some feedback, but also please provide some feedback to us. So thankful that you took on this topic. I mean, usually people send us FLO proposals, but in this case, I nudged Emily and said, I need you to do a FLO for us. I'm so thankful that you did that. Thank you, Emily. Then just a plug, I saw Derick put a plug in for something else in the chat, but I want to plug something that Derick is going to be involved in. That is the upcoming Digital Pedagogy Lab. It's an in-person event in Vancouver. There's three tracks. We have Jesse Stomel coming, the author of "Ungrading." He's one of the keynotes. It is a very exciting program and we will be in person together. The registration for that ends on Monday. If you are still interested, you can join us. The next FLO Friday happens in two weeks. And it's also a topic around AI. It's called Should I AI, Could AI, and Would AI? I think this will also be time spent well. I had the link, but I just lost link in here. I'll try again. Then finally, this month in February, we're really focusing on neurodiversity, and we have a few very exciting workshops coming up and a panel on Tuesday. I also like to invite you to those. But now it is Friday afternoon. It's a beautiful day out there, so go and enjoy some time in nature, and, let's think about how we want to work with AI. Thank you, everyone. Thank you, Emily.