**Educational Technology Users Group**
**Algorithmic Literacy: The Role of Academic Libraries in Creating Metaliterate Learners**
**BCcampus: November 4, 2022, Session 6**
**Presenter: Marta Samokishyn**

BONNIE JOHNSTON:
Okay. So it's just gone 2:00, couple of, one minute after. And so I'd like to introduce to you Marta Samokishyn, who is the Collection Development Librarian at St. Paul University. And she's also currently a student research fellow at BCcampus. Marta is going to share with us some very timely and relevant discussion on the role of academic libraries in creating metaliterate learners, which I think is a great follow-up from our previous discussion to help continue that discussion moving forward. So over to you Marta.

MARTA SAMOKISH:
Thank you so much for the introduction. It's great to be here with you. So the title of my presentation is Algorithmic Literacy: The role of Academic Libraries in Creating Metaliterate Learners. So I have a little introduction slide here. I just would like to let you know. So my name is Marta. I have been academic librarian for over 10 years now. I am also a student at Royal Roads University. I'm finishing my degree in educational technologies as well as the Student Research Fellow at BCcampus. And I would like to acknowledge that this project, supported by the BCcampus Research Fellow Program, which provides B.C. post-secondary educators and students with funding to conduct small-scale research in teaching and learning. To start my presentation, I would like to start with a land acknowledgment. So I'm located on the traditional unceded and unsurrendered territory of the Anishinaabe Algonquin People. The people of the Anishinaabe Algonquin Nation have lived in this territory from millennia, Their culture and presence have nurtured and continuing to nurture this land. I embrace the responsibility to help ensure that the next generation of land stewards are respectful and grateful for the bounty of the land on which we live, work, play, and study.

My agenda for today's presentation, we'll start with the metaliteracies and talk about the role of algorithmically in digital and information literacies. We'll talk about algorithmically literacy then and talk about some definitions and issues. Then I would like to discuss several ways how we can implement algorithmic literacy in academic libraries through a variety of different activities. And we'll talk at the end about the literacy as a human right.

I like this quote from George Dyson from the, from his book, Turing's Cathedral, which is a worthwhile read, which says that in the Black Box Society, Facebook defines who we are. Amazon defines what we want, and Google defines what we think. So this has been written in 2012 as a prediction for the future, but it's not that far-fetched from what we see today. The author also states that ability of computers to predict how people vote but make politician subservient to actual computers.

We see this in practise, whether algorithms, right now. They are embedded in almost every aspect of social, political, economic ecosystem. For example, when we think about impact on

elections, when Facebook tried to vote from people in 2010 to vote, 0.39% more users notified by it voted, which is enough to swing the outcome of the election. Note that Facebook is neither obliged by current law nor by terms of services to announce this intervention. In 2019, it was found that U.S. hospitals referred for further help only 17% of Black patients, because of algorithm decision about the high-risk categories based on cost. What it means is that Black people had to be sicker than White people before being referred for additional help. We see racial profiling a lot also in crime prediction software, which is targeting Black and Latino neighborhood as well as no-flight list. Another example of algorithm in action is the tool that was built by Amazon to do resumé screening. So they built it based on the decade's worth of job applications that was predominantly done by men. As a result, the algorithm learned to discriminate against women and it also ended up factoring in profiles for gender, like for example, whether the applicant went to a women's college. Another example of the gender-based bias is found by the Carnegie Mellon University where the Google ads were a gender bias and offering high-paying jobs to men and not to women. Also in 2021, The Markup, which we're going to look at in a second, found that Google also allowed [...] advertisers to exclude non-binary people from seeing specific job ads.

When it comes to search algorithm, we see that a lot with a Google filter bubbles where they have the power to decide which population groups will see certain information online and which will not. And one of the authors that I have been using called Pasquale, who was, who's writing about Black Box Society. He says, I have heard someone say, I'm the top Google result for my name, but if I search for your name, would I see the same thing? Only Google knows, but very likely not. We also see a lot of biases, especially in social media. So when we look at the Facebook feeds, very often we'll see something like homogeneity of the Facebook feeds. Targeting content to specific group population or algorithm blocking users for expressing certain views. When I would like to demonstrate several things as I go through the presentation. So this is The Markup that I have been mentioning, their website. So they're talking about how split different Facebook feeds are based on the views of specific group populations. So we can actually decide specific date range here and identify who go on to see. So here I can see how the news feeds for millennials would be different from boomers. And also we can see how they will be different for women and for men. We can see here how they will be different for Biden voters and Trump voters. It's essentially creates this filter bubble, right? Where we are seeing the information that only confirms our existing beliefs. And you can see the hashtags that two different groups are seeing. And you can see different types of news as well and group recommendations that different groups will be seeing. We will go back to The Markup later.

So the issue with this is this algorithmic power to make many important decisions. They impact the end and reshape how social and economic systems work. And so this algorithmic power becomes extremely problematic due to several issues. One of them is systemic bias, the example which we just saw. So racial bias, gender bias, income based on income, on household location, et. cetera. And also, as Pasquale mentioned, the secrecy is one of the major issues with algorithms because of the proprietary nature of these tools and the automation, which are essentially a threat according to him. So e.g. we do not know why we were refused for a loan.

And then we are not able to argue this decision due to automation and perception that algorithm decision is superior to the human decisions so that data does not lie. So as a result, we have the why that actually motivates me to do this work is that we need to develop algorithmic awareness through the different algorithmic literacy interventions.

I would like to start with this idea of metaliteracy and talk about the role of algorithmic literacy and digital literacies. And how are they connected? Very often we see a lot of different literacies. New literacies are often added. So we have media literacy and cyber literacy, literacy, health literacy, and now we add algorithmic literacy. And so the term that is being used to identify this concept is actually metaliteracy.

And it's not about introducing just another literacy format according to my Mackey & Jacobson, but rather re-inventing an existing one, information literacy, which is the critical foundation, literacy that informs many others while being flexible and adaptive enough to evolve and change over time. Respond tool that needs, social needs of the learners. So when we think about metaliteracy, it expands the scope of traditional information literacy. So determine, axis, locate, understand, and use information to include the collaborative production and sharing and information in participatory digital environments. So we move to collaborate, participate, produce, and share.

So when we think about literacy as a metaliteracy we also incorporate this idea of metacognition, which allows students to assess their own learning and move beyond just acquiring a specific skill like for example, learning how to use the database or library catalog in the library context to being able to integrate deep thinking and critically reflect about their own literacy. We go to this concept of metacognition.

When it comes to algorithmic literacy, I like to use this definition which really closely resembles the definition of information literacy. That it can be defined as being aware and use algorithms in online application platforms and services, knowing how algorithms work and critically evaluate their decision-making.

The project. Information literacy has come up with a report entitled Information literacy in the age of algorithms. And it talks about student experiences and what were their concerns. So one of the things that they found is that the students were actually very aware about algorithmic biases, but they just didn't know how to handle them. So one of the biggest concern was that platforms were listening across the devices or other platforms that algorithm and automated decision-making reinforcing inequalities. So students were a lot aware about these issues.

Another one was, I'm sorry. That the platform is shaping individual content as an that they see. One of those three major concerns that students referred to them.

So how do we teach students about algorithms? Especially in the context of academic libraries? In the library we have a lot of different opportunities to do so. Either in library sessions, which could be a special event, movie screening and discussion. So for example a social dilemma

movie that is available on Netflix, reading clubs or self-pacing guides, and I will share some of those guides with you later. For credit courses. So I happen to teach credit-bearing course in the library and we do spend one week specifically on algorithmic literacy with students. That could be part of the critical evaluation of sources piece, as well as embedded information literacy. So very often, one of the authors of the report on Information Literacy Project mentioned that usually professors will be surprised that librarians would be willing and happy to offer these types of workshops. So in our institution, we have a problem on social communication and public assets that were really open to this type of workshops to scheduling them in our institution.

So here are several different activities that could be used to teach students about algorithmic literacy. This one was adapted from these authors. So they have developed these videos that I want to share with you. So it talks about algorithmic literacy and echo chambers, which essentially means that its environment where a person only encounters information or opinions that reflect or reinforce their own. So what the students can do is watch this video after login to their Google account, either their phone or laptop. Go to manage your Google account, click on data and privacy tab and then scroll down to My Center. What they will find there is information that Google knows about them. So just to let you know, based on what I have found about myself. And the students were able to find work themselves. So you will find presumed age, gender, relationship status, household income, education level, industry, whether you are homeowner, whether you are a parent, and to watch what grade, to what age group you're a parent. And so in my case, Google was correct about every single item except for the amount of languages I speak. So there was actually very interesting. So how accurate they can respond to, how accurate is Google about you? And what information would they recommend to somebody with these characteristics? So this helps them think about how they could actually, how this algorithm might be using that information to recommend things to them. So we'll just move forward.

Another one is essentially AI Bingo, which is really interesting. If we had time, we could have played this, but here you could ask students who has used a save and search on Google or seen a recommended products on Facebook. So this is use the stamp natured, etc. So these are different examples of AI.

You can also ask students to doodle their perception of algorithms. This is one example from the Information Literacy Project. Here is a video by the author of Algorithms of Oppression and some discussion questions that might be helpful. And moving forward.

So this one is really interesting. This is called Search Atlas. So what this does, I'm going to go and show it to you. So essentially they're still in developing phase, but what they are able to do is represent a specific concept, as it's seen by the different search engines in different countries. So, for example, when we were looking here, they have examples of somebody looking for God. They will see mostly Christian images. And then when they were looking in other language, in another country, they will see different images. So this was really, really

interesting and eye-opening tool. And I'm looking forward to see when they actually release it, because right now it's only available in a beta version.

Here are some other resources, so for example algorithmicliteracy.org is just such an excellent tool. And they have a lot of different games that students, instructors can play with students. So for example, one of those choose your own fake news, kind of allow students to choose their persona and go through different stages. Here is a link to AI Bingo, and then there are a lot of other different links that also have a lot of activities and resources. And there is also a common censored or which is for specifically for K to 12. So I just wanted to highlight those for you.

And in conclusion, both since algorithm serve as gatekeepers and arbiters of truth online, it is really important the way we perceive the algorithm and the way we teach students about algorithms as well. So algorithm awareness is essential for students' critical thinking skills. So for example, identifying misinformation and disinformation news consumption propaganda and social media use for identifying biases. So addressing those misconceptions about algorithms or marginalization of certain groups based on the algorithmic recommendations. And lastly, the digital citizenship. So as we live in the technological society today, we allow learners to be aware digital citizens, and use this information to be critical about the algorithms that they encounter every day.

And lastly, I wanted to highlight that both Prague Declaration and a Alexandra Declaration affirmed in 2003 and 2005 respectively, affirmed that the algorithmic list is a human right. So based on this information literacy as metaliteracy that we discussed at the beginning, it is a social responsibility and a human right to also include algorithmic literacy, especially as algorithmic literacy poses a lot of human rights-related issues to those learners as well. So that's it for me. I'm sorry, I went a little bit over the time, but please let me know if you have any questions. I'm more than happy to discuss this further and collaborate on this. And here are some of my references.

BONNIE:
Thank you, Marta. Just watching the chat. There was a lot of interest in you sharing your resources as well as the references. So I think you've supplied the answer to that question, as well as others are also sharing other resources as well. Is there any more questions for Marta? Marta you've offered to answer questions if we want to continue in the chat. Otherwise. Thank you. And at 02:30, we've got a new session, so we've got an eight minute break if you want to continue to chat with Marta in the chat or go and stretch your legs and we'll be back in eight minutes.