The SRI Homeroom – Episode 2

[Sounds of a students talking in a high school hallway]

[A school bell rings]

[A digital chime rings three times, with progressively higher pitch]

Kori Hamilton Biagas:
Welcome to the SRI Homeroom. Today: What are our kids watching when we're not watching them?

[Theme music begins]

Claire Christensen:
You can't always see that the television is on, and you can't always see that the kid is watching Mr. Rogers anymore. Now, the kid is watching who knows what, on a tablet too small for you to see, in a room far away. And we want to really help parents feel like media use is still okay, and there are still safe places for your kid to explore their interests online.

Kori Hamilton Biagas:
Making YouTube better, safer, and more educational. Today, on the SRI Homeroom. Welcome in.

[Theme music fades out]

Hello and welcome to the SRI Homeroom. I'm Kori Hamilton Biagas, and today, I'm thrilled to be talking with Claire Christensen, one of the nation's leading researchers in the realm of educational media. Welcome, Claire.

Claire Christensen:
Thank you so much, Kori. It's so nice to be here.

Kori Hamilton Biagas:
So let's just get started, because your work is extremely fascinating, and I want everyone to learn about some of the problems that you're working on solving. So can you give us a little bit of background or information on what is the thing that

you're really excited about working on, what is the challenge that you're trying to solve?

Claire Christensen:

Oh my gosh, yes. I love talking about this challenge. So I am a children's media researcher, and this is, I think, one of the most fascinating times in history to be in this work, because children's media consumption is undergoing a dramatic shift. For the first time, in 2020, kids spent more of their screen time watching videos and online streaming platforms than consuming screen time in any other way. And this might seem like, okay, kids are watching the same stuff, but just in a different place. No, what kids are watching has changed dramatically.

Until now, kids mostly watched TV shows that were created by the major media studios, and, of course, there were a lot of differences in those shows, tons of different kids shows have come out over the years, but they all had certain things in common. They'd gone through some level of quality review by a studio, they had a narrative arc, they had commercial breaks, they fell into defined genres that marketers could use, et cetera. But now, kids are watching user generated content, and there's such a vast volume and array of it. There's 500 hours of YouTube content uploaded every minute, there's just way too much. And we, as adults, as researchers, as parents, as teachers, we don't know what kids are exposed to or how it affects them.

Kori Hamilton Biagas:

Did you say 500 hours a minute?

Claire Christensen:

500 hours a minute, yeah, uploaded to YouTube.

Kori Hamilton Biagas:

Wow.

Claire Christensen:

Right.

Kori Hamilton Biagas:

So that is hard for parents to know what their children are watching, that is a lot of content.

Claire Christensen:

It's hard for parents, and it's hard for researchers even. And so, until now, what researchers did is we had lab assistants, research assistants, assigned to code manually the content kids watched, if we wanted to understand what kids were watching and how it affected them. With 500 hours of content uploaded every minute, we just can't do that with things like YouTube and other streaming platforms.

Kori Hamilton Biagas:

Wow. And so, how are you trying to address this? So we're not employing 100 million research associates to do coding for media that is posted, 500 videos a minute, we haven't employed that number of people, so what is the solution that we're working toward?

Claire Christensen:

Yeah, that's a great point. Can you imagine the challenge of having that large a staff and having to maintain reliability? It would be a nightmare. Although, it is a pretty fun job getting to watch them watch YouTube content.

Kori Hamilton Biagas:

That would be.

Claire Christensen:

Yeah. Instead, I am so glad to be at SRI, because this is just the right place to come up with a really innovative solution. So SRI, as folks may or may not know, is more than just education, more than just what you might hear from In The Homeroom podcast, we also have developers in a wide range of technologies, and that includes machine learning researchers who study all kinds of really interesting questions unrelated to education, like detecting whether videos are intended to radicalize soldiers, or even my collaborator was working on one study to figure out how to keep the scents released by air fresheners fresh in people's homes based on their satisfaction ratings. They do some really varied and interesting work.

And we partnered together to ask the question, can we train a machine learning algorithm to understand what YouTube videos might be exposing kids to and teaching? And we got funding from SRI, we have internal research and development funding, and we also have NSF funding to try to answer this question.

Kori Hamilton Biagas:

What are you guys finding out? Can you?

Claire Christensen:

It's a great question. Yeah, so we're finding out that you can, but it's been a long road to get to that answer. So it's not a straightforward process when you want to train a machine learning model. First, you have to code YouTube videos. So machine learning models are trained to act and behave like humans would. So first, we actually had to do kind what you described at the beginning, Kori, where we do have a bunch of research associates and other folks on our team who are trained to watch YouTube videos and to compare them to a rubric we developed of learning standards, it's based on literacy and math learning standards for pre-K and kindergarten. And we have coded over 1,000 hours of YouTube videos. We have seen the weird, the good-

Kori Hamilton Biagas:

Wow.

Claire Christensen:

Yeah. Can you even imagine?

Kori Hamilton Biagas:

No.

Claire Christensen:

So much stuff. There are some that seem like they're perhaps made by someone in an altered state, shall we say, and are just really lo-fi, and you're like, what world are you inviting these children into? The characters go underground, and they're like, let's go to the number zone, and the number zone is completely trippy. I don't know. The point here is, there's a lot of varied content we've seen on YouTube. So we feed the model our codes, and then we try to see, can the model code like we can? And the answer is, yeah, it can. So 75% to 85% of the time when the machine learning model says that a video contains specific literacy or math content, humans agree, and that's really exciting.

Kori Hamilton Biagas:

Wow.

Claire Christensen:

That's a great number for this field.

Kori Hamilton Biagas:

Yes. Tell us more about the implications for this innovative, cutting edge, new technology that you're exploring. What does this mean for a person like me? I have a three-year-old son who is on YouTube and YouTube Kids. What are the things that we should be looking out for, taking away? Tell me more, this is so interesting.

Claire Christensen:

Right, yeah, we want this product, it's called Approve, we want it to have applications in your life. We want to make parenting easier for you, Kori, specifically.

Kori Hamilton Biagas:

Thank you, Claire.

Claire Christensen:

But also, for all parents and teachers, we want to make choosing YouTube videos a little easier, a little more straightforward. So we are now exploring different ways that we can use this model, and we have a bunch of ideas, I'll share some right now, but really, we want to hear from the podcast listeners. Check down in the show notes for ways to get ahold of us. We want to hear, what would you do if you could automatically understand the content of YouTube videos? So here's some ideas we're working on. Oh, Kori, did you have something?

Kori Hamilton Biagas:

Yes, so you said it's Approve. What's Approve? Tell me, what does that mean? Is it an acronym? Does it stand for something in particular? I know we like acronyms in education.

Claire Christensen:

We do. Gosh, everything has an acronym, doesn't it? Yes, Approve is assisting parents to review online videos for education.

Kori Hamilton Biagas:

Assisting parents to review online videos for education, Approve. Got it.

Claire Christensen:

Yes, exactly. And it can detect literacy and math content so far, but we can't wait to build it out. So we already have a rubric set up so it could detect science content,

and then we want to delve into the seedy underbelly of YouTube a little, we want to detect... Because we want to be able to screen inappropriate content out, so we would love to be able to train it to detect certain kinds of inappropriate content, maybe even consumerist advertising, subtle advertising content.

Kori Hamilton Biagas:

Yes.

Claire Christensen:

We know that YouTube videos for kids have a diversity problem from prior research, we would love to be able to detect characters of different races and ethnicities, and any stereotypes that the videos are demonstrating about those characters as well.

Kori Hamilton Biagas:

Wow.

Claire Christensen:

But you asked how this might be used.

Kori Hamilton Biagas:

Yes.

Claire Christensen:

So we have a couple of different ideas.

Kori Hamilton Biagas:

Okay.

Claire Christensen:

One idea is, imagine that you're a parent, you don't have to, you are a parent, Kori, so imagine that you've purchased Approve, the app, and it's an app that you log into, you enter your children's names and their ages, their grades, and then you can select what math and literacy content are they working on right now that you'd like them to see more videos about. You might even be able to select certain topics that are of interest to your kids, maybe they're into superheroes, maybe they're into certain animals or construction. And then, Approve would act like a filter over YouTube.

Kori Hamilton Biagas:

Wow.

Claire Christensen:

So your kid would go to YouTube as usual, and they might type in, I want to watch a video about horses. Approve is going to filter the results so that they have horses, your kid feels like they have some autonomy in their selection, but they also have whatever topic you selected, maybe it was letter names, maybe it's the alphabet of horses, I don't know. But it's got recommendations that have the educational content, but also some element of interest for your child. And the idea is then your kid has a pre-made playlist and recommendations that will come up that you'd be a little more comfortable with them watching.

Kori Hamilton Biagas:

Oh, wow. That sounds like a lot of fun. So how have you been able to test this out? Are you in a lab somewhere, in a white jacket, with laptops open all over the place? How do you see how this works? And how would it get to someone like me eventually?

Claire Christensen:

Right, that's a great point. So currently, we are just in the phase of testing out that Approve works. We want to make sure that the recommendations that we give to parents and to children are really rock solid. After that, the next phase we're entering into is figuring out, what is that ideal use case? So it could be this filter product, it could be something where we sell Approve to a device maker, and then if you buy a tablet for kids, it's automatically applying Approve filters. It could be something where we're working with a streaming content provider, like YouTube or others, so that Approve's filters are built in and it's an option that you get access to.

Once we figure out what that use case is, the next step is definitely to test out how well it's working for parents and kids. So far, we have done a little bit of it, and it was really exciting. So we showed parents from all over the country, we showed them some samples of Approve and how it would work, and we got their feedback, and parents resoundingly said, we can't wait to use Approve. They were really excited, and they said, over and over again, it would make me feel a lot more comfortable leaving my kid watching YouTube.

I think some people when they read that felt a little almost discouraged, like, oh my gosh, Approve is going to leave kids in front of television for hours. But I don't see it that way at all. I think that YouTube plays a really important role in families' lives the way that any other media does. Parents have to get things done, parents need a minute to breathe, whatever the reason is that families are using media, I think it's probably adaptive, and I think that if parents have simple strategies to make it work a little better for their kids, maybe select videos that are a little more educational, it just empowers parents more to use media in the way that works for their family.

Kori Hamilton Biagas:

Yes, I agree. Because we, in our home, definitely use YouTube, and we created our own parameters just to help keep it focused because of what you were describing, the underbelly. You can get into this very interesting place really quickly if you're not paying attention, 'cause it'll just keep playing videos. And so, our parameters are, we can watch food, so you can watch some sort of cooking show, you can watch construction, or we can watch music. And so, those are the things that it's like, if you're going to be watching YouTube, those are the things that we're expecting to see on the screen, which we still need to monitor and everything like that. And so, this tool, this app, this research, sounds so incredible, because it helps to take a little bit of the burden off of parents, families, and teachers, in the day-to-day. So we would have to do some work, it sounds like, selecting and programming and identifying the constraints in which we want YouTube to function, but once we've done that, it's a little liberating, it feels liberating.

So for you, if you could just dream, what would the future look like for Approve? If it could be anything is possible, what would the possibilities be?

Claire Christensen:

I have so many dreams. I hope that, in whatever way it is rolled out to families, and we'd love to hear from families how it would be most helpful, I hope that it helps families to feel like they're empowering their children to learn and to explore their interests on the internet. Now, selfishly, as a researcher, what I can't wait to do is use Approve to understand what kids are watching, what they're exposed to online, to get that more nuanced understanding, and then to learn how it's affecting them, because my ultimate goal is to be able to give parents really concrete guidance. If I can, in the future, do a study where I use Approve to say, kids who watch X kind of content have certain positive impacts, or certain negative impacts, suddenly we can use research to help parents so much by saying, choose videos like this, don't choose videos like that, and you can help your kid learn.

Kori Hamilton Biagas:

Yeah. So are there any age limits or parameters around the use of Approve? Is this really designed for early learning intervention type of work, or is it something that could be applicable for any age, any learning model? Tell me more about that part.

Claire Christensen:

So currently, Approve is designed to detect pre-kindergarten and kindergarten math and literacy. So it's really only intended for those grades, or for children who would want to learn content around those grade levels. But we think it could be extended to many other grades and other subject areas, as I mentioned, science, also social emotional learning. So I have a background in developing rubrics to detect social emotional content in online videos, and we would love to use Approve to be able to say, here's the videos to watch if your kid needs some help self-regulating, or some help understanding other people's emotions. We also think we could extend it up. But the interesting challenge, if you start applying Approve for older grades, is that the content becomes a lot more didactic teaching and less teaching by entertainment.

Kori Hamilton Biagas:

Yes.

Claire Christensen:

That's a different model, and that's not something that we've encountered yet, so it will be a new challenge for us to figure out.

Kori Hamilton Biagas:

Yeah, and it seems like there would also be, once you get into a certain age range, more autonomy that the children are operating within. And so, the oversight that parents have on some of that consumption, it shifts as children get older, and so there may not need to be as tight of a grasp on what the older kiddos are watching in the same way as with the early learning, when we're really trying to develop skills that are foundational to success in academics throughout their life.

Claire Christensen:

That's right. That reminds me of one other potential application of Approve. So we've heard anecdotally from teachers that when they feel less confident teaching a certain subject area, they tend to turn to video more, and that can be a great way to get some higher quality instruction, maybe inspire the teacher to try new activities. And I think especially perhaps in the older grades, maybe Approve isn't

used in the home as much, maybe it's used for teachers who are looking for standards aligned content to support that math or that science topic that we're just getting our feet wet in, something like that.

Kori Hamilton Biagas:

Yeah, that sounds like an excellent application for this product.

Claire Christensen:

Yeah.

Kori Hamilton Biagas:

So if there are any big takeaways that you want our listeners to have, what might they be? First, we definitely want them to contribute in giving us some feedback, right?

Claire Christensen:

Oh, yeah, we would love to know how folks see Approve being useful. I think one thing I would say to the parents out there listening is that if you feel like managing your kids' screen time and their online video viewing is difficult, and maybe even like your parents' generation doesn't understand, it was a lot easier for parents in the '90s, you are not mistaken. I think that the introduction of user generated online video streaming content, and the introduction of personal tablets kids can take anywhere, has made parenting around technology a lot more challenging, it has changed the challenge level, and I think that our tools for supporting parents in that way have started to improve, have started to catch up to the challenge, but they're not all the way there yet.

Approve is intended to help meet parents where they are. You can't always see that the television is on, and you can't always see that the kid is watching Mr. Rogers anymore. Now, the kid is watching who knows what, on a tablet too small for you to see, in a room far away. And we want to really help parents feel like media use is still okay, and there are still safe places for your kid to explore their interests online.

Kori Hamilton Biagas:

I love that.

Claire Christensen:

And another takeaway I'd like to say is watch this space. One of our next goals with approve is to describe the videos that real kids watch online. Until now, we've

been using Approve with videos that we find online, using keywords related to our topics, but that's not the end goal. The end goal first is to be able to say, what do kids watch online?

So back in 2019, we did a study where we gave a bunch of four and five-year-olds tablets, and we said, do whatever you want. So this was the control group of a randomized controlled trial. Half the kids, we said, watch a certain intervention, watch a certain PBS Kids show. The other half though, we said, use any educational media that you want.

Kori Hamilton Biagas:

Okay.

Claire Christensen:

We did block PBS Kids, but everything else was available to them. And ever since then, I have been itching to understand the data better. So I have a data set of 4,600 videos that 55 four and five-year-olds watch during this eight week period, and that's actually really rare to get-

Kori Hamilton Biagas:

Yes.

Claire Christensen:

... is a dataset of kids' online video viewing, because there are so many videos. Other studies currently have asked parents, what's the 10 last videos your kids watched? That's as deep as we can get.

Kori Hamilton Biagas:

Right.

Claire Christensen:

But I have every video the kid watched on the tablet over eight weeks.

Kori Hamilton Biagas:

Wow.

Claire Christensen:

And so, now that the model is functioning more accurately, our next step is to run it on these 4,500 videos, too many videos for humans to code, and to be able to say, okay, when kids are told to just watch something educational on a tablet, is it

educational? What might they be learning? And if so, what are the channels that kids enjoy watching that were also educational? That might be a really fruitful place for recommendations to parents.

Kori Hamilton Biagas:

Yes.

Claire Christensen:

We can't wait to share what we learn.

Kori Hamilton Biagas:

This sounds like such a dream, for both the researchers to have this set of data that came straight from the hands of young children, and it sounds like such a relatable thing for parents, once you're able to really dig in there and come out with some findings and recommendations, it sounds like something concrete and tangible that parents can use as well. So, ooh, I'm excited for you.

Claire Christensen:

Yeah, as a researcher, I love to understand things better, but what I love even more is when I can take away really concrete insights for parents. Things like, tell your kid to watch this, tell your kid not to watch that. I want to be able to help parents in realistic ways, and I think that this dataset is going to let us do that.

Kori Hamilton Biagas:

That sounds really exciting, and I look forward to hearing about that, and maybe we'll have you back here to share some of those findings with us.

Claire Christensen:

Oh, yeah, that'd be fun.

Kori Hamilton Biagas:

So I have one final question for you. What keeps you doing this work? Why do you keep coming back to this space? What makes you excited about it?

Claire Christensen:

It all starts with a picture you can imagine of Baby Claire in a high chair, eating a muffin, watching Mr. Rogers. Mr. Rogers had a huge impact on my life as a kid, and you know why? It's not just because it was great kids' TV, it's because Mr. Rogers spoke to me about something that no one else was talking about.

Kori Hamilton Biagas:

Yes.

Claire Christensen:

I was a kid with anxiety, I was a kid with a lot of feelings, at a time when maybe the adults in my life weren't equipped to talk about those things with me. And I think about how Mr. Rogers impacted me, how I would sing those songs to myself to help myself with my difficult feelings. And then, I think about the fact that there are kids all over the world who are watching media as part of their family's routines, they may be watching a little or a lot, but whatever they're watching is affecting them. And I want to help parents select, and creators develop, media that will speak to those kids, that will teach them things they need to learn, that will help them develop skills that make them successful in life, so that when they look back on the screen time they spent as kids, they think, oh, I'm glad I did that, or, oh, I learned something from that, that it makes them better people and makes our world a better world.

Kori Hamilton Biagas:

Wow, Claire, you are the type of person that we want to be doing this research, because it's not only about subjects out there, you are also one of the subjects. The adult version of you is helping the past version of you, and I think that coming from a place that is heartfelt in doing this work, in changing the lives and being impactful for kids to reduce barriers and optimize outcomes, is such a beautiful and warm place. And you're wicked smart and an amazing researcher, and so you bring those things all together, and now we have Approve, and this is this wonderful tool that will really have long-lasting effects and impacts on children's lives. I feel like I've learned so much about your work, and I am looking forward to hearing more about Approve when it gets closer to the market and closer to families, and just learning more from you in general. You can find Claire on LinkedIn, you can find Claire on Instagram.

Claire Christensen:

Yeah, on Instagram, I have really short quick tips based on research to help parents support their kids' healthy media use.

[Theme music fades in]

Kori Hamilton Biagas:

Excellent. So everyone, you can find how to contact or connect with Claire in the show notes, and we look forward to hearing more about Approve and all of the incredible work that you're doing in this space. Thank you so much for joining us today, and we look forward to talking to you again soon.

Claire Christensen:

Thanks, Kori.

Kori Hamilton Biagas:

Thank you for joining us on the SRI Homeroom, produced by SRI Education, a division of SRI. Our guest today was Claire Christensen, Senior Education Researcher with SRI Education. Learn more about Claire and her work in today's show notes. You can find a transcript of today's show, or browse our entire archive of episodes, by visiting srieducationnews.org. You can also connect with us on social media with the links in today's show notes. The views expressed in today's podcast belong solely to the participants, and do not represent the views of SRI or any organizational funder or partner.

[Theme music fades out]