The Role of an Artificial Intelligence Certificate in the Computing Identity Formation of Hispanic-Serving Community College Students who Work

Dr. Sarah L Rodriguez, Virginia Tech

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The Role of an Artificial Intelligence Certificate in the Computing Identity Formation of Hispanic-Serving Community College Students who Work

CoNECD 2024

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Hello and welcome to our presentation titled "The Role of an Artificial Intelligence Certificate in the Computing Identity Formation of Hispanic-Serving Community College Students who Work."

Agenda

- Introductions
- Project Context
- Discussion & Activity focused on Community College Students
- Background Literature on CC who Work
- Research Design & Participants
- Activity on Computing Identity Development & Findings
- Implications & Future Work

First, here is an agenda for this talk
we will first present the project context including the project context, partners, and project components

We will take some time for an activity to get folks thinking about community college students, and to present relevant literature on students who work

We will do a second activity where we get you all involved in the process and thinking about computing identity development,

We will then present the preliminary findings and conclude with implications and questions from you all.

Speaker Introductions

Taylor Johnson
Ph.D. Candidate in
Engineering Education
at Virginia Tech

Paul Bigby
Ph.D. Student in
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at Virginia Tech

Dr. Sarah L. Rodriguez
Associate Professor in
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As an introduction, my name is Taylor Johnson and I am a 4th year Ph.D. Candidate at Virginia Tech. I am Paul Bigby and I am a graduate student at Virginia Tech. And Dr. Rodriguez is the PI on this project.

Project Context

Four-year NSF DUE & HSI funded Program aims to develop:
- A series of artificial intelligence (AI) courses
- An interdisciplinary certificate focused on AI concepts
- Foundation for a four-year degree in AI at the college
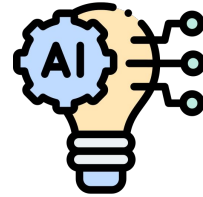
This project aims to serve the national interest by increasing community colleges' (CC) capacity to attract and train students in AI.

The focus of the four-year NSF DUE & HSI funded Program is to develop artificial intelligence (AI) courses and an interdisciplinary certificate for college students to gain exposure to AI concepts. Additionally, the development of the certificate program will lead to the development of a four-year degree in AI at the college.

This project aims to serve the national interest by increasing community colleges' (CC) capacity to attract and train students in AI, and specifically for this project, it is based at a Hispanic-serving community college.

Partners

This project has a team of community college, university, company and non-profit partners collaborating for the implementation of the certificate program.

Institutional Partners

Company and Non-Profit Partners

This project has a team of institutional partners from Miami Dade College, University of Florida, Virginia Tech, company partners, such as Amazon Web Services, IBM, and Microsoft, as well as non-profit partners, such as AI4ALL, that are collaborating for the implementation of the certificate program and professional development opportunities for students, faculty, and staff.
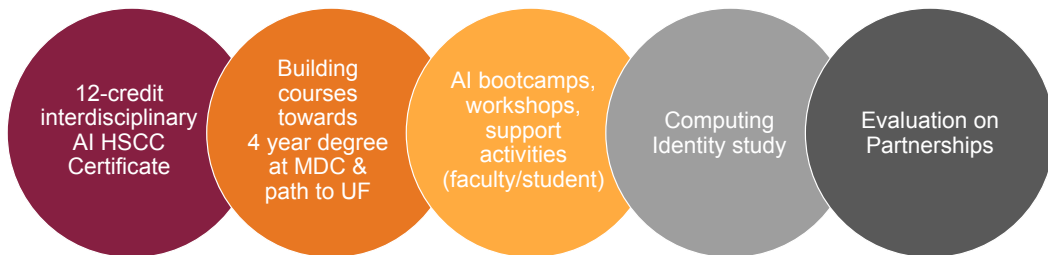
Acknowledgements

- Artificial Intelligence For All: A Framework for a College Certificate (Award #2115153)

- Miami Dade College, School of Engineering and Technology (EnTec)

- Collaboration between Miami Dade College, University of Florida, AI4All, and Virginia Tech (computing education component)

- Antonio Delgado (PI), Diego Alvarado (Co-PI), Sarah Rodriguez (Co-PI), Joseph A Weathers (Co-PI)

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This project is based out of the NSF Award for AI for ALL which comprises of a implementation and research team from four organizations and institutions.

Program Context

The program takes place at Miami Dade College, and has a few key objectives and project activities:

| 12-credit interdisciplinary AI HSCC Certificate | Building courses towards 4 year degree at MDC & path to UF | AI bootcamps, workshops, support activities (faculty/student) | Computing Identity study | Evaluation on Partnerships |

As stated in the beginning, the program takes place at, Miami Dade College, which is a Hispanic serving community college [HSCC]. This project has a few key objectives and project activities such as:

- Developing and implementing a 12-credit course sequence for an AI certificate
- Establish a basis for the future associate and bachelor degrees
- Creating initial entry points to AI
    ▪ providing students with the opportunity to engage with the content and learn about applications of AI
- Coordinating mentoring and support activities to build engagement
- Conducting a computing identity study, which is where our research team comes in
- And finally, conducting an evaluation on partnerships

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12-credit Interdisciplinary AI HSCC Certificate

AI Thinking	Applied AI in Business	AI & Ethics	Machine Learning Foundations
• AI and digital competency	• Applied AI in industries and across business functions to support business strategy formulation, implementation, and evaluation.	• Ethics as relevant to the design, implementation, and administration of artificial intelligence and emerging technologies	• Machine learning concepts and Python applications, including data acquisition, supervised, unsupervised, and reinforced learning
• Concepts and ethical concerns around AI	• Data-driven outcomes and Ethical issues	• Biases of algorithms, autonomous warfare, the risks of surveillance technologies, and the effects of technologies on employment.	• Develop and deploy artificial intelligence (AI) models utilizing classification algorithms
• Basic understanding of coding, Python, and machine learning	• Pilot: Spring 2022 (Business)	• Pilot: Spring 2022 (Philosophy)	• Prerequisite: AI Thinking
• Pilot: 2021-2022 (EnTec)			• Preparation: Python
			• Pilot: Spring 2024 (EnTec)

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There are currently four courses included in the certificate program. There is AI thinking, which is an introductory course designed to help students learn the terminology and critical concepts related to AI. There is an Applied AI in Business course, which is offered through the Business department at Miami Dade. This course introduces AI in the business context. The hope is that more courses will be tailored to different industries, such as healthcare, and offered in the future. In the AI & Ethics course the students are introduced the philosophy aspect of AI concepts and how AI can be used to for the benefit, or sometimes the detriment, of society. And finally, there is Machine Learning Foundations, which is a course offered for the first time in Spring of 2024. This course is heavily based on coding and requires the AI thinking course as a prerequisite.

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AI Bootcamps, Workshops, & Support Activities for Faculty and Students

|		
AI Boot Camp for High School Students	Faculty Workshop: Leveraging Artificial Intelligence to Advance Student Success (500+ participants)	AI Guest Speaker Series (MDC, Microsoft, Intel, AI4All)
President's Innovation Fund ($10K) AI Implementation Projects	AI PD for Faculty (LinkedIn, Coursera, Applied AI, MIT AI Business Strategy)	Students completing AI4ALL Discover AI Certificate (Industry Mentor, Project, Career Development)

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There are also AI professional development opportunities for students, faculty, and staff as a part of the program offerings with this project.

There are boot-camps offered for the high school students, workshops and professional development for faculty for student success, guest speakers that talk about AI concepts and applications, and of course the certificate program which is the focus of this presentation.

Computing Identity Study

How do students at a
Hispanic-serving community
college develop and maintain
their computing identities?
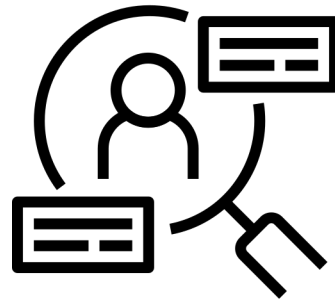
The computing identity study is where we, as the research team, are involved in the project. Our overarching question for the study is how do students at a HSCC develop and maintain their computing identities?

Computing Identity Study

How do students at a Hispanic-serving community college develop and maintain their computing identities?

Latinx Students

Free Introductory AI Computing Course

Computing Identity at an HSCC

Latina Students

Students Who Work

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So far, the team has thought about a few aspects related to computing identity development, including specific populations such as:

- Latinx students, which focused on community cultural wealth and funds of knowledge in the computing pathway development of Latinx students
- Latina students, which discussed specifically the identity negotiation of Latina students
- Free and cost related aspects of the program, which discussed how offering the course at a Hispanic-serving community college influences computing interest development
- And finally, For this presentation, we will be discussing more about students who work.

Computing Identity Development for Latin* Students

Components of **computing identity** (Rodriguez & Lehman, 2018)

- Interest, performance, competence, recognition

Impact of students' social Identities (i.e., age, race, gender, etc.)

- **Sense of belonging** stands out for ethnic minorities (Sax et al., 2018)
- Various forms of **capital** and **funds of identity** support Latin* students' computing identities (Rodriguez et al., 2019; Rincon & Rodriguez, 2020)

Before we continue, we want to ground the audience with a brief overview of computing identity literature and frameworks, specifically from this research work thus far.

This computing identity framework is based on four constructs: Interest, Performance, Competence, and recognition. We will dive into what each of these mean a little later.

We also found that students with different social identities build their identities out of these constructs in different degrees. For example,

A strong **sense of belonging** is an important predictor for racially and ethnically marginalized students in computing (Sax et al., 2018)

Latin* students utilize many forms of **capital** (e.g., familial, navigational, resistant, social) and **funds of identity** to inform their STEM identities (Rodriguez et al., 2019; Rincon & Rodriguez, 2020).

Of course when we start talking about the students different social identities, it's important to recognize that we all have more than one. in cases where the students are in more than one minoritized category, we have to consider intersectionality, which we will also address in more detail in a few slides.
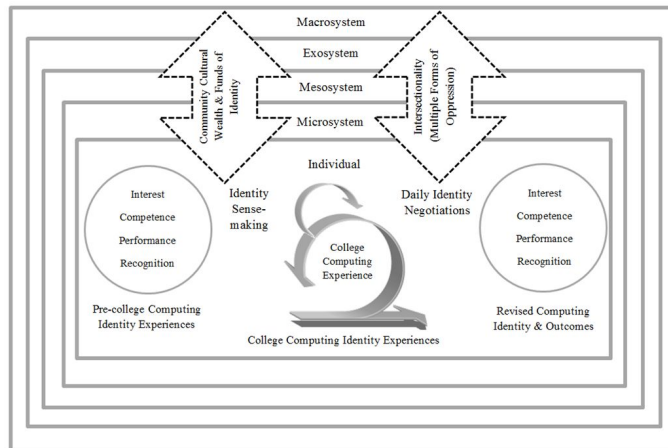
Computing Identity Development for Latin* Students

- **Engagement and centeredness with Latin* communities** was important for transfer students(Herrera & Sanchez, 2022)

- Few scholars have directly addressed the experiences of Latin* students and STEM identity, let alone the disaggregation by computing discipline, specifically within Hispanic-serving community college settings

Another thing we found about the interaction between social identities and developing computing identity, was that

- Latin* STEM community college students who transferred to four-year HSIs were shown to develop their STEM identities through their **engagement and centeredness with Latin* communities** (Herrera & Sanchez, 2022)

- There has been a lot of work on STEM identity over the years. There has been a fair amount of work on Latinx students. But there has been very little that crossed between the two, studying the experiences of Latinx students and how they relate to identity, and even less that disaggregates by computing discipline, or uses a Hispanic serving community college as its context.

Rodriguez et al. (2020) Conceptual Framework for Computing Identity development

For the theoretical framework, Rodriguez et al. (2020)'s conceptual framework for computing identity development, originally developed for Latinas, which is an expansive framework that focuses on the individual, micro, meso, and eco, and macrosystem levels computing identity development as well as elements of community cultural wealth, funds of identity, and intersectionality which connect the systems across levels.

Rodriguez et al. (2020) Conceptual Framework for Computing Identity development
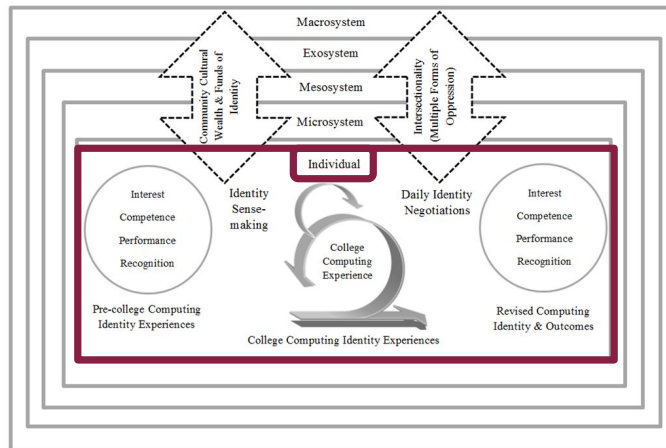
For this presentation, we will be discussing the individual aspects of computing identity, specifically on students' revised computing identity and outcomes. At an individual level, the model includes elements from pre-college computing identity experiences with interest, competence, performance, and recognition, and how college computing identity experiences contribute to students revision of each of the four aspect. This study aimed to examine how students build and maintain a computing identity: interest (e.g., wanting to learn or know about a field), performance (e.g., use of technical terms, tools),competence (e.g., knowledge of content), and recognition (e.g., as a "computing person").

Rodriguez et al. (2020)

Individual Aspects of Computing Identity Development

Interest Competence Performance Recognition
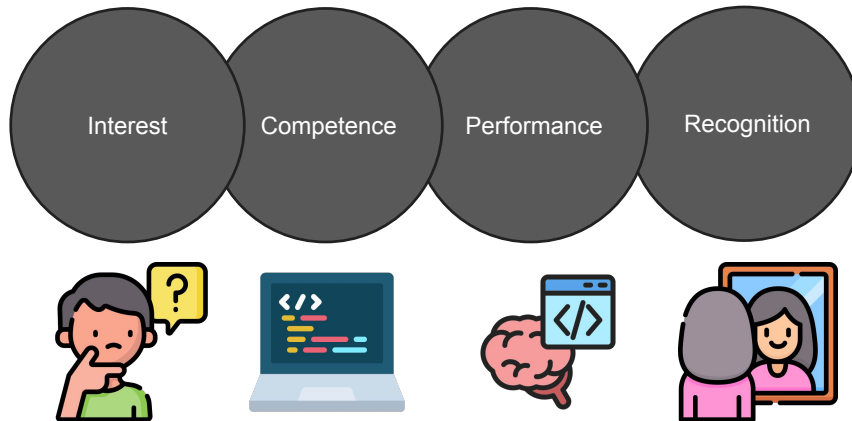
We are focusing on the individual aspects of computing identity development and how the students' experiences in the courses impacted their computing identity development.

The framework developed by Rodriguez and colleagues describes computing identity development with four elements:

Interest - a student's curiosity to learn about tech advancements and computing topics

Competence - a student's ability to utilize computing tools or technical skills, like programming

Performance - a student's ability to utilize knowledge to complete a task

Recognition - ways a student acknowledges themselves as the type of person that does computing and/or how others see the student as a computing person

Activity 1

Now, we will transition to our first activity of the presentation.

Activity 1: Mentimeter

Directions for Activity:

1. Visit Menti.com on your laptop/tablet/phone
2. Type in code 6594 5841
3. Submit your answer to the following question:

What student populations come to mind when you think of community college students?

For folks participating in the activity, please take out your laptop or phones and go to menti.com, enter the code (6594 5841) on the screen and answer the following question: What student populations come to mind when you think of community college students?

Feel free to submit more than one response. As you submit your answers they will populate on the screen for you to see what you and others answered.

[Note for presenter: Spend 5 minutes or less on this activity]

As you can see by the responses, there are many populations that come to mind! Some of which include adult learners, folks with full time jobs, folks going back for reskilling and learning about a different field. One particular population that came to our mind are students who work while attending school.

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Community College Students Who Work

In the U.S., a large majority of college students work while pursuing their education:

- 80% of CC students working while attending college.
- 40% of that population work full-time while attending college
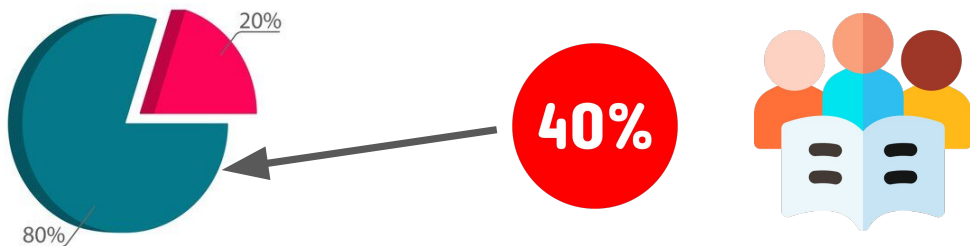
There is a body of literature in higher education that is focused on students who work, which is a large majority of students. According the National Center for Educational Statistics (NCES) National Postsecondary Student Aid Survey, ~71% of students had a regular paid job or internship while enrolled during the 2019-2020 academic year.

More specifically, about 80% of community college students work while attending college with about 40% of those students working full-time (Horn & Neville, 2006).

Work is oftentimes a huge part of what community college student do and how they manage their priorities. There is also an important distinction in employees who study, such as folks that are reskilling and going back to school to learn about another field, versus students who work, individuals who describe their studies as their primary responsibility. It is important to think about how these populations are different when creating support structures for students.

Community College Students Who Work

Literature argues that work is a detriment to CC students' persistence:
- Work is a "situational constraint" (Levin et al., 2010)
- Students are juggling multiple priorities while pursuing their education
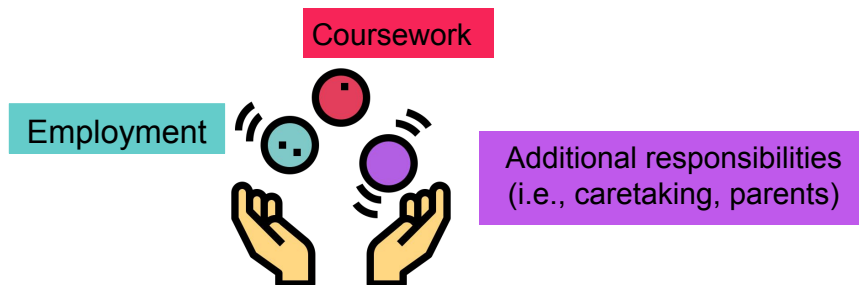
In this literature, work is described as a situational constraint for students (Levin et al., 2010) which imposes time constraints on their schedules and impacts their ability to dedicate time outside of class time to studying or homework.

Post-traditional students and students at CC are said to face more negative effects of balancing work and school, as well as other responsibilities such as caretaking for children or parents.

Community College Students Who Work

Reframing the circumstances of students who work to highlight their assets and resourcefulness.

- Support and guidance can help working students' personal, academic, and professional development
- Students who work can be affirmed in their computing identity development through their jobs, coworkers, and employers
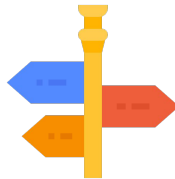
When thinking about students, we aimed to reframe the circumstances of students who work to highlight their assets and resourcefulness.

Support and guidance can help working students develop personally, academically, and professionally.

Looking at data from our study population, we saw that many of our students were employed in some capacity. We were curious about how students who work be affirmed in their computing identity development through their jobs, coworkers, and employers.

Research Design and Participants

- Semi-Structured Interviews
- 19 students interviewed total
- Majors ranged from Cybersecurity, Business Analytics, Philosophy, etc.
- Ages from 20-50+
- 11 Students that confirmed they were employed, 4 not reported, 4 not employed
- Highlighting the stories of **five students** for this presentation who are working a variety of jobs

For this research project, the PI conducted semi-structured interviews with 19 students total. The students were majoring in many different disciplines, such as cybersecurity, business analytics, music business and philosophy. Many of the students were taking an AI course to learn a bit more about AI as a discipline, and learn about how it could be applied to their specific contexts. Students interviewed were enrolled in at least one of the three courses in the AI Certificate program. Out of the 19 students interviewed so far, 11 of them reported that they were employed at least part-time.

To keep this presentation within a reasonable time limit, we wanted to highlight the stories from five of the students who worked while taking one of the AI courses.

Participants

Participant Pseudonym	Major	First-Generation Student?	Enrollment
Maya	Business Intelligence	Not Reported	Part-Time
Mia	Business Analytics	Yes	Not Reported
Kinsley	Data Analytics	No	Part-Time
Doreen	Supervision and Management	Yes	Full-Time
Kim	Data Analytics	Yes	Full-Time

The five students highlighted for this presentation are Maya, Mia, Kinsley, Doreen, and Kim. As you can see on the participant table, they each had different majors and enrollment patterns.

Activity 2: Computing Identity Development

Directions:

1. Each pair or group will receive a printed piece of paper with a quote or interview excerpt from one of the five participants
2. Each group will use the information provided on the Computing Identity Development Framework provided on the next slide to identify themes in the interview quote

Overarching Question for Activity

How do students who work describe the influence of their job, supervisors, and coworkers on their computing identity development?

Time for the second activity. In this activity we will have you all look at an excerpt from one of the five student interviews. Each group will use the information presented so far and information that is on the following slide to work together and take note of how they believe the quote relates to computing identity development.

An overarching question we would like you all to think about while you look at your quotes is: How doe students who work describe the influence of their job, supervisors, and coworkers on their computing identity development?

Constructs of the Computing Identity Development on the Individual Level

Construct	Interest	Performance	Competence	Recognition
Description of Construct	Student expresses or demonstrates interest in computing topics and/or relates to a topic.	Public/social performance of computing practices; experiences and perceptions related to the real-world aspects of computing. Student discusses ways of talking and using tools related to computing.	Knowledge and understanding of computing content; may be less visible than performance. Student is confident that they know/learned/developed knowledge of something/found themselves to be knowledgeable of computing concepts	Being recognized as a computing person.

[Note for presenter: 10-15 minutes total for activity and report out]

You should all now be in a pair/group with a slip of paper with an interview excerpt on it. Here are the constructs of the Computing Identity Development framework again for your reference. Please take time to read your excerpt out loud to your group and discuss the constructs that are mentioned and how the coworkers, supervisors, and the students' roles at their place of employment could contribute to their identity development.

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Group Activity: Report Out

What identity development constructs did you find in your quote or excerpt?

Overarching Question

How do students who work describe the influence of their job, supervisors, and coworkers on their computing identity development?

Probing questions for the audience:

Main question: What identity development constructs did you identify in your quote or excerpt?

How do the students' jobs/role/supervisors/coworkers impact their computing identity development?

How are they leveraging their newfound knowledge from the AI courses in their roles at their jobs?

Preliminary Findings

1. Participants were motivated to pursue the AI certificate for future job aspirations and **interests in computing**

2. Participants implemented what they learned from the course in their jobs immediately & demonstrated their **competence**

3. Participants' co-workers and supervisors contributed to their **recognition** as computing people

Now that each of you had an opportunity to look at some of the interview data, we will present on some of our preliminary findings. We will hear about what motivated the students to sign up for the courses (besides being free, because that came up a lot), and how the courses contributed to their interest in computing.

We will also hear about their increased competence and how they performed in their jobs, and how they were recognized by their co-workers. Let's take a look at what they had to say.

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Participants were motivated to pursue the AI certificate for future job aspirations and **interests in computing**

Do you consider yourself a computing person?

Now, yeah…**I think I've I put more tools in my, my tool bag…**learning how to use them. And I know, like, knowing the, knowing the language is not everything, but **how to use them is also important.** So right now it's like, it's like, I have the screwdriver, but I don't have the screws yet. So **I'm still trying to get this, like, the application part**…

So when do you think you'll have a full toolset?

Oh, hopefully by the time I graduate, so like next summer? **I'll have my tools**.

What do you envision as like a, like a full tool bag?

Definitely the **application part**, and understanding it in a in a real business scenario. So **part of me wants to get a job as a data analyst,** even though it's like, I'm jumping between staying in my current job and doing something more related, like directly with what I'm studying, is because if I were to jump into something that I'm studying already, and knowing that as an entry level person, they would help me with my tool bag. Versus right now where I'm kind of staying away from it. And I kind of, **even though I am working on small things that relate to it, it's not fully, like, it's not fully in the field.**

- Kim

The AI courses are contributing to the student's competence as a computing person, by putting more tools in the tool bag.

This student has a clear goal for the job they want to get, wants to add more tools to her toolbag, and is using the course to increase her skill to that end. When asked:

Do you consider yourself a computing person?

They responded "Now, yeah. Now more…**I think I've I put more tools in my, my tool bag,** like Python SQL, learning how to use them. And I know, like, knowing the, knowing the language is not everything, but **how to use them is also important.** So right now it's like, it's like, I have the screwdriver, but I don't have the screws yet. So **I'm still trying to get this, like, the application part**…Hopefully by the end of the summer, The second course, with the second course I'm hoping, but I still have a ways to go…

They mention that they are working on building their toolbag or skillset, hoping that they will continue adding to their "tool bag" and will have all the tools they need by the time they graduate

Kim also mentions that the application aspect of the knowledge is important, and that she hopes to be in a role where this is a foundation to the work she

will do.

Participants were motivated to pursue the AI certificate for future job aspirations and **interests in computing**

That is my personal interest. **The professional interest is that I want to know how to manage databases,** be able to do the queries, be able to develop those reports, **and then integrate that to what I do at work. And Miami Dade, they provided the training to be able to do that** and to learn the terminology. This is the first course, and I wanted to dab my feet in the water, but then go aggressively after that.

- Maya
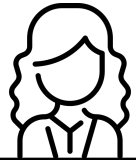
Maya is using this opportunity to slowly become acclimated to the discipline of AI to advance her personal interests. She hopes to continue to learn more to learn how to manage databases for her job.

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Participants implemented what they learned from the course in their

jobs immediately & demonstrated their **competence**

So I've actually applied some of the knowledge that I've learned here. **I've already applied it to my job.** Pretty much I've mentioned things in meetings and stuff just to get the idea out there like, "Okay, this is a good idea for marketing. This is a good idea for communicating with on social media and getting new followers." So it's more the subtle things that are eventually going to be big for the company… **So it's been helpful to see how you can actually use all of that in your current job because I feel like you can use any job**-- most of them if they don't have one in place, **you can easily see how it can benefit that company**.

- Doreen

The skills learned in the course are benefiting the student's employers right away. We will see another example of this in an upcoming slide, but a common theme we have observed is that all of these students took the initiative to upskill on their own. None of them were pushed into this by their employers, they put in the time and effort on their own.

Participants implemented what they learned from the course in their jobs immediately & demonstrated their **competence**

So it sounds like you're actually applying in real time what you're learning from the class.

Yeah. To be honest, when I say I want to have another job, I do. But I'm thinking the other part of me says, I mean, **I'm applying everything that I'm learning over here and this is like my lab.** I'm applying and if I get better at this, then I'll quit or then I'll go to the-- and I tell people, I know how to do this because I am doing it.

- Mia

This student signed up for these courses with the intention to leave their job for a better one, but now they see their job as "the lab" for the classwork they are doing. She may be able to transform the job she has into the job she wants. Lets hope her employer recognizes that she is transforming herself from the employee the have, into the employee they need, and pays her for it!

Participants implemented what they learned from the course in their

jobs immediately & demonstrated their **competence**

I let my boss know about it later. I said, "By the way, I am taking this class. I am taking a BI [Business Intelligence] class. I'm going to be taking Power BI [Business Intelligence]. I'm going to be doing stuff in databases and machine learning." But it was in my off time so it was my own thing. I was not asking for a reimbursement from where I work. So it was on my own time so it didn't matter.

Okay. And did she seem receptive?

Yeah, she's like, "Do whatever you--" When we've had a one on one conversation **she was like, "do whatever courses you can, it makes you more powerful,"** learn a terminology…

- Maya
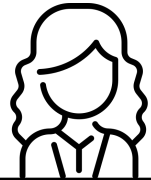
As we mentioned before, here is another example where the participant's employer is explicitly praising the increase in competence that comes from taking the course, and how it benefits the company.
But to stick with our theme of building computing identity, the student has built up their computing competence, and gained recognition through their workplace.

Participants' co-workers and supervisors contributed to their

recognition as computing people

When you think about the people around you, do you think they recognize you as a computing person?

So since I do work with a majority of older people at work? Everybody's like, **"Oh, wow, you knew to do that quick." I don't know how to do that quick. I think it's just because of my generation.** So I was raised with it. I was raised with Word, Excel, so none of that is intimidating to me. To older people, I know that it could be. So majority of my office is like, "Oh, that's a report." Oh, yeah. Somebody younger can do it because they know about it. So, I mean, I would say yes, but **I don't consider myself tech-savvy or really good at computing. I just know how to use my computer, how to use my apps, and all of that, but don't ask me to reset anything because I have no idea, yeah.**

Yeah. So they kind of see you as techie but you don't necessarily see yourself as techie?

Right.   - Doreen

This participant is already recognized as a computing person by her coworkers. She doesn't really think what she is doing is in-depth enough to be considered a computing person, but she is using the class to increase her competence so she will. Her own self assessment of her computing abilities is lower than that of the people around her.
Is there some level of imposter syndrome here? and will the courses get her to give herself the credit she is due and increase her confidence in her computing skills?

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Participants' co-workers and supervisors contributed to their

recognition as computing people

For example, there's a software in my office. They pay $200,000 a year, okay? This software, now I know that it takes the variables of how many calls we got, how many sales agents are there, how many calls for different programs like American line cruises or carnival cruises or two day cruises, one week cruises, all those variables, it takes them in, and it spits out how many agents you're supposed to have, from 8 to 9, 20, from 9 to 10, 30. I can do that right now. If I know how to gather all the data, put in the Dataiku. After I got all the data, I use one of the existing algorithms that Dataiku has for prediction. And I can say, "Okay, I want to use this variable and this variable and this variable for my outcome," and it will just spit it out.

So it sounds like you're also making the connections to your work.

Yes. Yes And I talk to my boss and say, "Look, I want to do that just for fun. I mean I just want to do it because it's $200,000 a year I know." If it's good guess what? You don't have to you don't have to spend that money.

Yeah. What was the response?

They're interested.   - Kinsley

Here is another example of a benefit to the employer, with a price tag attached to it. When the student can present the employer an opportunity to save that kind of money, what was the response?
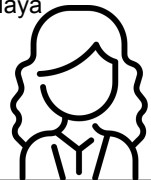
"*They're interested.*"

Participants' co-workers and supervisors contributed to their

recognition as computing people

Okay. So in terms of other people like, you would say, your professor, who would you say recognizes you [as a computing person]?

My employer, my working employees, the people that work under me, they look for me as a source

- Maya

This is recognition as a computing person that only happens because of the participant's work. A non-working student at a similar stage in their computing education may not have this source of recognition. While we may often look as working students as having a obstacle to their studies, this is of evidence of positive contribution to identity development specifically because of their work.

Implications & Future Work

Implications

AI coursework concepts can be applied directly to a variety of work, in a variety of different ways

Students are taking initiative in identifying ways to implement new processes and help their coworkers

The courses contribute to computing identity through competence at work directly, and recognition at work indirectly.

Future Work

Further exploring the data with additional frameworks

- Community Cultural Wealth
- Intersectionality

More work on students who work:
- What jobs do students have?
- How many hours per week are they working?
- Where are they working?

As we seen from the participant quotes, what they are learning is showing up at their jobs almost immediately. They work in a number of fields, from trucking to travel planning to floral delivery, and the AI concepts are helping them all. Computing identity has been augmented through interest, performance, competence and recognition, and all four constructs are on display through interactions at work.

So what comes next?
A future direction for research will be to investigate other aspects of the framework for students who work on the microsystem, mesosystem, and other levels

Also better exploring the sources of community cultural wealth such as familial capital or navigational capital of the students, along with the intersectional impacts of their various social identities.

Future Work and Questions to Consider

As the students continue to take the courses in the certificate program:

- How will the student continue to implement and create connections between what they learn in class and in their jobs?
- What other factors in their jobs, in connection to the coursework, contribute to their computing identity development?
- Hispanic-servingness indicators were largely absent in the interviews. How can the institution better integrate servingness?
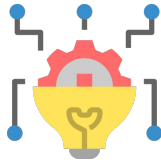
As we continue to interview students as they take these AI courses, we can take what we've already learned and adjust the interview questions. The first couple of question here allow us to see if there are new ways that the students are developing identity through their work, or if we've reached a saturation point.
The last one starts to explore another theme that we observed in the data. There were very few indicators of intentional servingness that the students pointed out, so how can our institutional partners improve this? This line of inquiry could be of use to all community colleges, especially those that are hispanic serving.

References

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Here are the literature references for this presentation

Thank you for your participation and attention, we will now take any questions you may have.