



EDUCATION AND EMPLOYMENT RESEARCH CENTER

The Covid-19 Pandemic and Ivy Tech Community College's School of IT: Perspectives on virtual teaching and virtual advising

Sam Scovill and Michelle Van Noy

SEPTEMBER 2023



RUTGERS

School of Management
and Labor Relations



EDUCATION AND EMPLOYMENT RESEARCH CENTER

The Covid-19 Pandemic
and Ivy Tech Community
College's School of IT:
Perspectives on virtual teaching
and virtual advising

Sam Scovill and Michelle Van Noy

SEPTEMBER 2023

About

Sam Scovill is a researcher at the Education & Employment Research Center at Rutgers University.

Michelle Van Noy is the director of the Education & Employment Research Center at Rutgers University.

Acknowledgments

The authors would like to thank the many people who contributed to this paper. We appreciate the research partnership with William Worden, Matthew Cloud, and Danette Coughlan of Ivy Tech, who are exceptional research collaborators. Danette Coughlan was especially integral to the distribution and completion of our faculty and advisor surveys used in this paper. We appreciate the experiences and perspectives that Ivy Tech students, faculty and staff who generously shared their views through participation in surveys and interviews. We would also like to thank Melinda Karp for her thoughtful comments and feedback on the paper. At EERC, Victoria Coty and Tracy Cangiano skillfully provided research support through various phases of the project, Angel Butts of The Word Angel, LLC provided excellent editorial assistance, and Jade Zack provided graphic design. The authors are solely responsible for any errors.

Contents

Introduction	1
Background	2
Data & Methods	4
Virtual Learning: A Variable and Complicated Experience for Students	5
Virtual Advising: More Convenient, but Happening Less Often	9
Conclusion	11
Methodological Appendix	12
Faculty Survey	12
Advisor Survey	12
Student Survey	12
Student Interviews	13
Appendix	14
References	15

Introduction

In March 2020, the COVID-19 pandemic disrupted education in the United States at every level. The unprecedented conditions placed new and yet-unmapped demands on leadership and created the need for curriculum changes to adapt courses to online platforms that, in turn, increased demands for new technology and digital access. At the same time, institutions faced funding challenges and the need to find ways to navigate new challenges related to self and family (Floyd, Mullin, & Ramdin, 2022). Most importantly, educational institutions had to quickly implement drastic changes to support students and their education in the rapid move to an online environment. In some cases, this shift caused institutions to increase the pace of their response to trends that had already been in progress before the pandemic began. In other cases, institutions responded by dramatically expanding pilot programs that offered promising solutions for online learning under the unique conditions imposed by the pandemic. In this paper, we focus on how one institution, Ivy Tech Community College, adapted to these circumstances and on the lessons that institution's experience can teach us about the dramatic shift to online learning and advising brought about by the pandemic.

Background

With the move to online learning, colleges had many choices to make about how to offer instruction. While many colleges already had platforms in place to offer asynchronous online courses, synchronous virtual learning was new to most institutions. Scheiderer (2022) explains that asynchronous online learning is learning that a student does independently, on their own schedule, within a set of deadlines presented by an instructor, whereas synchronous virtual learning adds a live online component, at a set time, during which faculty lecture and host discussions for students over a video conferencing platform such as Zoom. Synchronous online courses offer unique benefits for students and faculty alike such as improving presentation skills and participating in real-time discussions (Scheiderer, 2022), but planning and delivering them effectively requires certain skills and abilities that many faculty and administrators did not possess at the onset of the pandemic. This was not the only challenge raised by the shift to online learning.

With the abrupt shutdown of social activities due to the pandemic, many people felt lonely and isolated from their peers, and synchronous online learning was viewed as a way to help students combat the isolation they felt (McCarthy & Ferreira, 2022). Yet research published since the pandemic began reveals mixed reactions to virtual learning platforms from students. A study of students in an NSF SSTEM program by Washburn & Bragg (2022) revealed that while some students had confidence in their abilities to learn online and get good grades, others struggled in the online learning environment. This may be associated with certain personality characteristics. Penrod et. al (2022) found that characteristics such as being a self-starter and being self-disciplined were predictors of students' likelihood to successfully complete an online course. Personal circumstances may also play a role in students' perceptions of virtual learning, as observed by Thanawala, Murphy, & Hakim (2022). They found that nontraditional students in particular welcomed the opportunity to take online classes because the flexibility of the online environment made it easier for them to balance their academic work with their family obligations and other responsibilities (Thanawala, Murphy, & Hakim, 2022).

Much like faculty had various levels of experience with asynchronous online learning, many academic advisors were already practicing virtual advising prior to the COVID-19 pandemic, while others had to adapt to it with the onset of the pandemic (Argüello, 2020). Virtual advising can increase accessibility to advising for students who cannot or do not wish to be in-person for advising sessions (Mondo, 2021; Hu, 2020). However, there can be challenges both technological (e.g., Wi-Fi connectivity) and interpersonal (lack of nonverbal cues) with virtual advising (Mondo, 2021). At the community colleges in her study, Mondo (2021) found that faculty advisors had the most experience and training as well as the highest comfort level with virtual advising. At the same time, however, community college students indicated the lowest level of receptiveness to virtual advising (Mondo, 2021), indicating that even though virtual advising may make it easier for some students to attend, they are not necessarily open to it.

In this brief we examine the perspectives of faculty, advisors, and students to understand the impact virtual advising and virtual learning had on students' lives during the COVID-19 pandemic as well as whether and how

those virtual environments differentially impacted students' experiences with Ivy Tech's School of Information Technology. In the following sections, we first highlight our data and methods. We then discuss findings based on faculty and advisor observations of students' experiences with virtual learning as well as findings on virtual advising experiences. We conclude with an overview of IT students' advising experiences at Ivy Tech.

Data & Methods

In this brief, we report on data collected through a multi-year study of student decision-making about IT careers and majors conducted at Ivy Tech Community College. Our research, conducted from Fall 2020 through Summer 2022, raised questions about how students and the institution responded to the challenges posed by the pandemic and its associated shift to online instruction and advising. This brief contains data from multiple data sources that represent particular moments in time during the COVID-19 pandemic. This gives us perspective on how students experienced virtual learning and virtual advising over time. Our data sources consisted of a faculty survey, an advisor survey, five rounds of student surveys, and a batch of student interviews. We include the perspectives of students as well as those of advisors and faculty because our student data alone cannot paint a full picture of student experiences with virtual learning and virtual advising. We were only able to collect data from a small group of students in our interview and survey samples (see below for a detailed description of who we captured in our student interviews and surveys), but faculty and advisors have experiences teaching and supporting students who had even more diverse experiences with the COVID-19 pandemic. In the methodological appendix, we describe each of the data sources and the timing in which the data were collected.

Virtual Learning: A Variable and Complicated Experience for Students

Perhaps the greatest and most universal change to education brought on by the COVID-19 pandemic was the shift to virtual synchronous learning. In the process of making this shift, Ivy Tech faced many of the same problems that other institutions experienced and responded to them in ways that were typical of the pandemic period. For example, while Ivy Tech already had a robust online program called IvyOnline prior to the pandemic, the institution had to move the rest of its instruction online quickly and in a synchronous manner. Many IvyTech faculty lacked the skills necessary to make this transition effectively at the onset of the pandemic, and many students lacked the tools necessary to access online learning altogether. In response to the latter issue, Ivy Tech, like many other educational institutions, distributed laptops to students and provided Wi-Fi hot spots where they could access their courses and accompanying materials.

Students had mixed experiences with online learning, but those with hands-on learning styles faced greater challenges. Overall, students reported mixed reviews of online learning. This finding is similar to those in the previously cited studies (Washburn & Bragg, 2022; Penrod et al., 2022; Thanawala, Murphy, & Hakim, 2022). One student said that while remote learning worked better for students in IT programs than in other, non-computer-based programs, it was not for him, and “it doesn’t work.” So, while he believed it was better for some subjects than others, his overall conclusion was that online learning was inferior to in-person learning environments. Another student had an initial apprehension about online learning but ultimately ended up enjoying it. She explained,

You know, initially, I was against it. I was like, “oh my god, I want a book.” I want to hold a piece of paper. I need to be in the classroom. But now, I don’t really mind it too much. I still like to have a copy of the books. I don’t like looking at the computer screen all the time. But it’s not as bad as I initially thought. I kind of like it actually.

This student overcame her initial apprehension of virtual learning and found that she was able to have a positive experience. She made her online courses work for her by adapting them to suit her own preferences and learning style where she could, which meant buying hard copies of books so she could take time away from the computer screen.

Such adjustments were easier for some students to make than others, however. For “hands-on” learners—students who learn best from firsthand experience—virtual learning was particularly challenging because they were provided with fewer opportunities to seek direct feedback from faculty or to observe or participate in demonstrations the way they would in an in-person learning environment. Hands-on learning styles are common among IT students at Ivy Tech, many of whom began their fascination with computers by taking them apart and

putting them back together as a hobby.¹ One faculty member said,

I think [online learning] has made it harder for students that need a kinesthetic [hands-on] learning experience. It has also left them at the mercy of email or office hours with their instructors, and waiting for answers can be very frustrating to the student.

For this faculty member, having to wait to get answers and support is an especially frustrating aspect of online learning for students—one that disproportionately affects hands-on learners, who may have more trouble grasping concepts in the virtual environment and thus are more likely to need to seek extra help. Another faculty member we interviewed raised the same concern, pointing out that some students need in-person instruction for their learning style: “[Online learning] has made it more difficult for those students who need face-to-face learning to learn and understand the course material.” He further noted that it was hard to encourage students in the virtual setting: “It is more difficult to encourage students ‘virtually’ than it is in the classroom.” This gets at the challenge of keeping students motivated and on top of their work when interacting with them exclusively online.

Faculty and advisors reported students’ heightened isolation as part of online learning due to the pandemic. They emphasized concerns about students being isolated from the college campus itself. Faculty felt that the move to meetings and classes being entirely online created an unwelcome distance between students and the college and its faculty. One faculty member explicitly said, “The students are feeling disconnected from the college.” Another faculty member echoed this concern: “Virtual learning has been difficult for many students; they feel left alone, and some have distanced themselves behind their name placard on Zoom.” This particular faculty member suggested that students’ use of technology was a potential indicator of their distancing from their educational experiences.

Another faculty member respondent highlighted the general isolation that many faculty experienced during the earlier years of the pandemic: “It has had the same isolating effect . . . on us. One of the most difficult things about education is getting trapped into feeling alone.” Rather than expressing a belief that students were distancing themselves, this faculty member felt that their sense of isolation had resulted from their experience of being trapped, in this case, by the pandemic. This respondent noted that it was not just students who experienced isolation; rather, there was a general sense of alienation among a wide swath of people during the pandemic.

Despite challenges, faculty members highlighted flexibility as a benefit of online learning. One faculty respondent explained,

My gut feeling is that students appreciate what they got from classroom learning now that they can’t get it. At the same time, students seem to appreciate some benefits of virtual learning. This combined with the new modalities being offered might energize enrollment at local campuses.

¹ Edwards, R., Peterson, E.K., Van Noy, M., & Espino, M.L. (2023), Exploring Student Decision Making: A Longitudinal Study of Information Technology Community College Students.

This faculty member was hopeful that the online learning adaptations made by Ivy Tech would generate increased enrollments because going forward, students would be able to choose to take courses offered on campuses outside of their own. This respondent also pointed out that the pandemic pushed educators to get creative with technology, which could have an energizing effect if prospective students were excited about these innovations.

Virtual learning can be particularly helpful for parents who are struggling to find childcare for their young children. With pre-K through 12 schools moving to online instruction, more parents needed to be home to care for children. Interestingly for one participant, this sudden change in his family demands combined with Ivy Tech's shift to online learning to create an opportunity to go back to school. This older adult student shared how his experience with virtual learning during the pandemic impacted his decision-making:

The pandemic helped me to make the decision to start this program. It affected me, my kids didn't go to school. So, initially it was good for some family time. Kids are at home, they're studying, but at this point... for the long term, it is not good. . . . [But] I can continue my studying; this is a good effect for my life. I get more time to myself, so I have completed some extra courses. So, I got lots of time. I have a bunch of time to use up.

This respondent demonstrated the ambivalence shared by many students about virtual learning during the pandemic. While he felt the changes brought on by COVID-19 had some positive effects in terms of creating more time for both his children and his coursework, he was challenged emotionally and expressed concerns grounded in the broader context of the pandemic: “[My kids] need to go to school. . . . We couldn't see family members for a very long time. So, it's affected me emotionally.”

Similar tradeoffs related to convenience extended to other students, including those who struggled with finding transportation to campus for one reason or another. Online learning made it possible to learn from home, eliminating that burden. However, according to one advisor, while some students appreciated the added flexibility virtual learning offered, many of those same students struggled with online coursework, leading to negative academic outcomes. One advisor explained,

The pandemic has been hard on students. The virtual options now offered for classes seem to be more popular because students need the freedom to flex with other responsibilities and burdens they now hold. COVID has also discouraged a lot of students from education, so we see many students in academic warning/dismissal statuses.

According to this particular advisor, an increase in the number of students who are in a warning or dismissal status is evidence that despite the added flexibility of online learning, COVID-19 placed obstacles between some students and their education, sometimes discouraging them from education altogether.

It is clear from the various perspectives presented here that students have mixed and varying experiences with online learning. While it certainly has its benefits, practitioners should be aware of and should attend to student struggles with the online learning process.

Virtual Advising: More Convenient, but Happening Less Often

While virtual advising offered the promise of increased access, students sought advising less often during the pandemic.

At the same time that classes were made virtual, advising appointments were also moved to online, distance formats. Our findings around online advising experiences are complicated. Overall, according to our student survey data, students interacted with advisors less often in the virtual environment than they had when meetings were held face to face in advisors' offices on campus. This was true despite online advising being more accessible to students who otherwise would have had trouble getting to campus for advising appointments. Students did not take advantage of those easier-to-attend advising appointments offered on Zoom and over the phone. In what follows, we illustrate the perspectives that faculty, advisors, and students had about students' experiences with advising during the COVID-19 pandemic.

Advising students during the pandemic was challenging for both advisors and faculty. Faculty found it more difficult to advise students about academics as well as about careers; this could partially be due to the fact that nearly all of the faculty who answered the survey (23 out of 27) reported that the pandemic made it more difficult to communicate with students overall. There was less agreement among faculty about whether they believed students sought out advising services more, less, or the same amount during the pandemic period as they had prior its onset. On their own survey, students indicated they sought help from advisors in Ivy Tech's advising center less often during the pandemic than they had prior to it. (See Table 1.)

Some advisors felt online advising options were a benefit for students, but for others, they became a source of frustration. As noted above, some advisors felt there was an increase in requests for virtual advising over the pandemic period. This may have been due to the convenience and accessibility of online advising—"the flexibility of joining a meeting without having to carve out additional time for travel," as one advisor pointed out. The lower stakes of joining a Zoom call, however, may have made it easier for students not to attend the meeting they'd requested. One advisor expressed frustration with an increase in no shows after advising services were made available online. This advisor said, "While we have the option of Zoom and phone appointments, no shows are happening far too often." Thus, although there was an increase in advisors' accessibility, students seemed to have challenges following through with meeting with them.

Despite some respondents' perception that the number of advising requests increased during the pandemic period, the number of students seeking advising decreased. Since students have different needs for advising, the increased flexibility of virtual advising would not necessarily have increased the number of students seeking out that form of assistance during the pandemic. As we observed with regard to virtual learning, students reported having mixed experiences with virtual advising. One student participant felt his advising experience had improved due to the move to online services, describing it as "better than before, because when we go to the in-person meeting, I have to make the appointment, and I have to go to there, and it's time consuming." Though virtual advising appointments could be more convenient for students compared to having to make the plans to attend

in person, student surveys showed that students attended advising meetings less often (see Table 1) than they had prior to the pandemic. In fact, the number of students who had never seen an advisor from the advising center more than doubled, from 6 percent prior to the pandemic to 13 percent after. This demonstrates that the convenience of virtual advising may not have been enough to overcome students' feelings of being disconnected from the college and their advisors as a result of the pandemic.

Table 1. Number of Times Students at Ivy Tech Engaged with an Advisor from the Advising Center (Virtually or In Person)

	Pre-Pandemic Student		Post-Pandemic Student		Total	
<i># of Times Engaged with an Advisor</i>						
I have not seen an advisor from the						
advising center	35	5.9%	37	12.8%	72	8.2%
Once	131	22.2%	82	28.4%	213	24.3%
2-3 times	309	52.5%	124	42.9%	433	49.3%
4 or more times	114	19.4%	46	15.9%	160	18.2%
<i># of Times Seen a Faculty Advisor</i>						
I have not seen a faculty advisor	150	26.1%	104	36.1%	254	29.4%
Once	122	21.2%	68	23.6%	190	22.0%
2-3 times	195	33.9%	85	29.5%	280	32.4%
4 or more times	108	18.8%	31	10.8%	139	16.1%

Note: Pre-pandemic students include those surveyed in Fall 2018, Spring 2019, and Fall 2019, before the March 2020 shutdown. Post-pandemic students include those surveyed in Fall 2020 and Fall 2021, after the March 2020 shutdown.

Conclusion

The move to virtual learning and advising can make attending class and advising meetings more accessible to some students. However, that does not necessarily mean that these virtual options create an equitable learning environment for all students. It is true that the added flexibility of online classes can make it easier for students who are parents or caregivers to continue their education despite the personal responsibilities that might otherwise lead them to leave school. Yet for hands-on learners, virtual learning can be a challenge, creating a barrier to completion that would not be present in a traditional classroom.

The benefits of virtual advising are also unclear. It may be easier for students to dismiss a virtual advising meeting, for example, than it would be to fail to show up for a scheduled in-person meeting on campus. For the most part, when students discussed virtual advising, they appeared to be appreciative of the added flexibility and accessibility it offered, but based on our survey data, that appreciation did not necessarily translate into high rates of engagement with advising services.

Overall, students described having mixed experiences with the move to virtual education during the COVID-19 pandemic. For some, the added flexibility provided useful benefits to their education, but for others, the change made their educational experiences more challenging. There was no one-size-fits-all solution to the educational challenges both students and institutions faced during the pandemic, but recognizing the diversity of student experiences is critical for building future supports and developing sound policies to meet their needs in the post-pandemic era.

Methodological Appendix

Faculty Survey

Faculty in Ivy Tech's School of IT were surveyed about one year into the pandemic—during the Spring 2021 term—a point at which they could observe and reflect on how the changes implemented in response to the pandemic might have impacted their students. During this time, faculty were teaching both synchronously via Zoom as well as asynchronously on the IvyOnline platform. Attendance was mandatory for students registered in courses with a synchronous component. One of our faculty research partners at Ivy Tech had access to a list of full-time IT faculty that was developed by statewide program chairs. We used this list to email 53 faculty members from 18 campuses on May 10, 2021. Faculty were periodically reminded to take the survey, and we received 27 responses for a response rate of about 51 percent.

The survey had questions on how faculty members perceived their role, how advising worked on their campus, and whether it had changed recently and what those changes looked like. We asked questions about the faculty advising role, when they typically began to see students, and what they advised students about (e.g., taking 8- versus 16-week courses). They were asked about the time they had to dedicate to advising and if they thought they had enough time to effectively advise students. The survey asked about teaching responsibilities and then concluded with questions about their students' experiences with the COVID-19 pandemic. These data were then cleaned and analyzed using Stata statistical software.

Advisor Survey

IT advisors, who were specific to the School of IT at the various Ivy Tech campuses, were surveyed during the summer of 2022. Our faculty research partner developed a list of IT advisors to contact. The survey was sent to 31 IT advisors from 19 campuses on July 13, 2022, and we received 17 responses for a response rate of 54 percent.

The survey asked questions about the participants' roles, their experience with advising both in general and on their specific campus, and how many students they advised every semester both in IT and beyond. They were also asked to select the advising model that best applied to their campus. They were asked about their collaboration with faculty members, what they advised students on (academic vs. career pathways), and then they were asked questions about how the COVID-19 pandemic impacted students and the advising experience. These data were then cleaned and analyzed using Stata statistical software.

Student Survey

We conducted multiple waves of the student survey. We surveyed students at Ivy Tech during the Fall 2018, Spring 2019, Fall 2019, Fall 2020, and Fall 2021 semesters. In this paper we use each wave to examine how students engaged in advising both before and during the COVID-19 pandemic. In Fall 2018 we surveyed both first-semester and third-semester students. We recruited students predominantly through Informatics 109 (INFM

109). This course was chosen because it is a requirement for all IT students, who typically took it in their first semester. We included some other 100-level and 200-level courses to capture data from students in their third semester. After Fall 2018, we surveyed only first-semester students in INFM 109. For a more detailed discussion of survey sampling and recruitment, please refer to the methodological appendix in Scovill et al. (2023). Survey respondents were demographically typical of IT students at Ivy Tech. They were predominantly white and younger than 25 years old, and about half were full-time students at the time they were surveyed. See Table A1 following this paper for the demographic breakdown of survey respondents by semester.

Students were asked to respond to both closed-ended and open-ended questions that detailed their experiences with advising, their awareness of IT programs, and their understanding of math and transfer requirements. They were also asked questions about how they made academic pathway and career decisions. The data from these surveys were cleaned and analyzed using Stata statistical software.

Student Interviews

We conducted 17 interviews with students who started their IT program at Ivy Tech after the onset of the pandemic in March 2020. Participants were chosen from among respondents to the student survey, who were asked to provide their email address if they were interested in participating in an interview. From the resulting pool of students, a total of 93 were invited to participate in an interview via email. The 17 students interviewed were compensated for their time with a \$25 Amazon gift card. All interviews were conducted remotely via Zoom or phone and were transcribed and edited by a research assistant using Otter.AI. Transcripts were then uploaded to NVivo and coded for themes around student decision-making. During the analysis process, we met regularly as a team to discuss the coding and themes that were emerging.

Appendix

Table A1. Respondent Demographics by Academic Term

	Fall 2018	Spring 2019	Fall 2019	Fall 2020	Fall 2021	Total
Age*						
18–24	-	-	61%	69%	67%	65%
25–34	-	-	22%	22%	17%	20%
35–44	-	-	10%	10%	9%	10%
45+	-	-	6%	0.0%	7%	5%
Gender						
Male	74%	91%	81%	74%	80%	78%
Female	26%	9%	19%	26%	20%	22%
Race						
<i>White/Caucasian</i>						
Did not identify	28%	20%	19%	32%	23%	26%
Identified	72%	80%	81%	68%	77%	74%
<i>African American/Black</i>						
Did not identify	91%	96%	91%	88%	86%	90%
Identified	9%	4%	9%	12%	14%	10%
<i>American Indian/Alaska Native</i>						
Did not identify	99%	100%	99%	98%	99%	99%
Identified	1%	0%	1%	2%	1%	1%
<i>East Asian</i>						
Did not identify	96%	98%	96%	96%	96%	96%
Identified	4%	2%	4%	4%	4%	4%
<i>South Asian</i>						
Did not identify	98%	98%	97%	97%	99%	98%
Identified	2%	2%	3%	3%	1%	2%
<i>Native American/Pacific Islander</i>						
Did not identify	99%	96%	97%	99%	99%	99%
Identified	1%	4%	3%	1%	1%	1%
<i>Mexican/Chicano</i>						
Did not identify	96%	98%	96%	94%	92%	95%
Identified	4%	2%	4%	6%	8%	5%
<i>Puerto Rican</i>						
Did not identify	99%	98%	99%	99%	99%	99%
Identified	1%	2%	1%	1%	1%	1%
Part-Time or Full-Time Student						
Part-time	46%	39%	37%	47%	31%	41%
Full-time	54%	61%	63%	53%	69%	59%
Survey Response Rate	37%	11%	20%	13%	28%	-

Note: We did not collect data on age of participants during Fall 2018 or Spring 2019.

References

Floyd, D. L., Mullin, C. M., & Ramdin, G. (2022). Community colleges evolve during the COVID-19 pandemic: What worked, what did not work, and lessons learned. *Community College Journal of Research and Practice*, 46(1-2), 8-11.

Hart, C. M. D., Xu, D., Hill, M., & Alonso, E. (2021). COVID-19 and community college instructional responses. *Online Learning*, 25(1), 41-69.

McCarthy, L., & Ferreira, D. (2022). Recommendations for community colleges in a post-COVID-19 world: What worked, what did not and assorted commentary on lessons learned in one community college. *Community College Journal of Research and Practice*, 46(1-2), 134-137.

Penrod, D., Shaw, T., Nash, J., Dierkes, M., & Collins, S. (2022). Community college students' perspectives on online learning during COVID-19 and factors related to success. *Teaching and Learning in Nursing*, 17, 267-271.

Scheiderer, J. (2022, July 27). What's the difference between asynchronous and synchronous learning? *Ohio State Online*. <https://online.osu.edu/resources/learn/whats-difference-between-asynchronous-and-synchronous-learning>

Scovill, S., Peterson, E. K., Edwards, R., & Van Noy, M. (2023). *Community, computer and campus: Information sources for community college student decision-making about IT programs and careers*. EERC. <https://smlr.rutgers.edu/sites/default/files/Documents/Centers/EERC/Information%20Sources%20Report%20-Final%205.25.23.pdf>

Thanawala, A., Murphy, C., & Hakim, T. (2022). Sustaining STEM Student Learning Support and Engagement during COVID-19. *Community College Journal of Research and Practice*, 46(1-2), 74-84.

Washburn, K., & Bragg, D. D. (2022). How NSF S-STEM scholarship students experience college during COVID-19: Lessons to improve STEM education. *Community College Journal of Research and Practice*, 46(1-2), 49-59.

About

The Education and Employment Research Center

Rutgers' Education and Employment Research Center (EERC) is housed within the School of Management and Labor Relations. EERC conducts research and evaluation on programs and policies at the intersection of education and employment. Our work strives to improve policy and practice so that institutions may provide educational programs and pathways that ensure individuals obtain the education needed for success in the workplace, and employers have a skilled workforce to meet their human resource needs. For more information on our mission and current research, visit smlr.rutgers.edu/eerc.

EERC Areas of Focus

Community College
Innovation



Student Choices
and Pathways



STEM and Technician
Education



Noncredit Education and
Non-Degree Credentials



Education and Labor
Market Connections



Rutgers' School of Management and Labor Relations

Rutgers' School of Management and Labor Relations (SMLR) is the leading source of expertise on the world of work, building effective and sustainable organizations, and the changing employment relationship. The school is comprised of two departments—one focused on all aspects of strategic human resource management and the other dedicated to the social science specialties related to labor studies and employment relations. In addition, SMLR provides many continuing education and certificate programs taught by world-class researchers and expert practitioners. For more information, visit smlr.rutgers.edu.

Rutgers Education and Employment Research Center

Janice H. Levin Building

94 Rockefeller Road

Piscataway, New Jersey 08854

smlr.rutgers.edu/eerc | Email: eerc@smlr.rutgers.edu



RUTGERS

School of Management
and Labor Relations