Online Learning for First-Generation and Underrepresented Minoritized Students: A Literature Review Using a Model of Student Engagement

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Abstract
First-generation and underrepresented minoritized (URM) students may have greater challenges in online learning than other students. Communities of support can help these highly motivated students be more engaged and successful in the remote learning environment. In this scoping literature review, we identified fifteen categories of first-generation and URM student challenges in online learning as found in peer-reviewed research of the last ten years. We placed these challenges within the Student Engagement model and found them to be barriers of student engagement. The results of our analysis may help guide practitioners and educators in the continuance or creation of theoretically grounded interventions for student support.

Keywords: first-generation students, underrepresented minoritized (URM) students, minorities, online learning, undergraduate students, student engagement

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Online learning functions as a viable option for many students in higher education. One benefit of online learning is that it allows for the convenient and needed flexibility in students' schedules, which can accommodate students who are employed, caring for dependents, and commuting (Joosten & Cusatis, 2020). Along with opportunity, online learning can bring unique challenges for undergraduate students. For example, students in online learning have "less access to classmates as a social resource" and may need to rely more on their families for support (Brubacher & Silinda, 2021, p. 142), an option that some students may not have. Additionally, online courses require other student attributes for success, such as skills of time management, organization, and knowledge of online technologies (Joosten & Cusatis, 2020), which some students may not possess.

While the rapid shift to emergency remote teaching (ERT) due to the COVID-19 pandemic may not have represented true online learning (Hodges et al., 2020), it did underscore some of these difficulties. Barber et al. (2021) noted that the increased student workload and struggles to stay focused on school proved challenging for all students and limited their ability to succeed. DeRossett et al. (2021) stated that university students experienced higher levels of strain, such as depression, anxiety, and stress, compared to individuals who were not students. Additionally, the shift to ERT contributed to feelings of detachment or isolation and impacted student learning. Surveys conducted at multiple universities (Kimble-Hill et al., 2020) revealed many ways that students were impacted by the quick shift to remote learning, including tech challenges, maintaining the school pace, distractions from the home environment, student housing concerns, and decreased motivation. Students also struggled with issues of internet connection, computer cameras, video-conferencing software, and lack of access to computers and printers.

ERT during the COVID-19 pandemic also highlighted the disparities that disproportionately affected URM and first-generation students. While research reported most students experienced various barriers, including distractions, anxiety, and decreased motivation, non-white, female, and first-generation college students were more affected (Gillis & Krull, 2020). Similarly, URM students were more at risk of experiencing academic obstacles (Means & Neisler, 2021; Soria et al., 2020) or increased home responsibilities and decreased economic security (Barber et al., 2021) in the unexpected shift to remote learning. COVID-19 also underscored the digital divide (unequal knowledge of and access to internet and devices) that exists among students of underserved backgrounds and can impact online learning (Moore et al., 2018).

Beyond ERT, first-generation and underrepresented minoritized (URM) students may have greater challenges in online learning than their counterparts. Research reports they are more likely to suffer mental health problems, food and housing insecurity, and financial and other difficulties that can impact online learning (Moore et al., 2018; Soria et al., 2020). Even early researchers sought to identify challenges or barriers to attrition for online learners, such as Rovai (2003), who found that many external factors, including demographics, skills, outside employment, family responsibilities, along with other internal factors, like integration, programs, and self-esteem, influenced student retention.

Purpose

While many challenges facing these students in online learning have already been identified, this scoping literature review uniquely analyzes and categorizes the challenges of first-generation and URM students in online learning, with the goal of providing informed support for these student populations. Evidence shows that programs that combine academic and socioemotional support can improve success rates for college students that are low-income and first-generation (Holcombe & Kezar, 2021). Thus, theoretical support is needed to ensure programs are designed to support the populations they seek to help.

The largely accepted affective, behavioral, and cognitive (ABC) classification of student engagement (Ben-Eliyahu et al., 2018; Borup et. al., 2020)**,** identifies three ways in which a student engages in an online or blended course. Further, the Student Engagement model provided by Borup et al. (2020), provides deeper insights into understanding the *facilitators*, *indicators,* and *outcomes* of student engagement. These factors help to potentially identify the influences that affect the performance and success of online student populations. By placing the identified challenges of first-generation and URM online students into the Student Engagement model, practitioners and educators may be guided in the continuance or creation of theoretically grounded interventions to better promote success for first-generation and URM students in online learning. This research answers the following questions:

1. What are the challenges of first-generation and URM students in online learning?
2. How do these challenges align within the model of Student Engagement of Borup et al. (2020)?
3. What specific support would be most beneficial for first-generation and URM students in online learning?

Definitions

We use the term "underrepresented minoritized" (URM) students throughout this paper, slightly adjusted from the term underrepresented minority, which is defined in the U.S. context as Black, Hispanic, Native American, Alaska Native, or Pacific Islander (Institutional Research, 2019). Milner and Jumbe (2020) of the United Kingdom offered that using the term "minoritized"—coined in 2003 by Yasmin Gunaratnum— "provides a social constructionist approach to understanding that people are actively minoritized by others rather than naturally existing as a minority, as the terms racial minorities or ethnic minorities imply" (p. 1). Using the term "underrepresented minoritized" rather than "underrepresented minorities" allows researchers to address the challenges that these students may experience even if their race or ethnicity falls numerically in most of their specific region. Additionally, this minoritization of college students can exist in the United States as well as globally, as do the sources of research that are included in this paper.

We also use the term "first-generation students," who are typically described as those whose parents did not complete a postsecondary degree (Institutional Research, 2019) and will be considered as such for the purposes of this paper. The first-generation student population often overlaps with the URM student community given that they are demographically from "the most disadvantaged groups (and) are more likely to be female, older, black or Hispanic, have dependent children, and come from low-income communities" (Douglas, 2019, para. 11). Both populations can be considered at-risk for increased academic challenges and therefore not only merit being researched together but often appear in the literature simultaneously as well.

When citing specific research in the literature, we will use whichever term the authors use to reference the population of students studied by them.

Literature Review

First-generation students, who are also frequently underrepresented minoritized (URM) and low-income students (Calma, 2020; Douglas, 2019; PNPI, 2021), are highly motivated and often among those most committed to improving the world (Haney, 2020). However, they may experience unique or exacerbated challenges in post-secondary education. And while many of these students experience great anticipation upon beginning their education, they may encounter feelings of self-doubt as the stress and uncertainty set in (USC Dornsife, n.d.).

Statistical data reports first-generation students have lower grades in college compared to continuing generation students (DeRossett et al., 2021). The Postsecondary National Policy Institute (2021) stated that only 21% of low-income, first-generation college students will complete a degree within six years of initial enrollment, compared to 57% of their counterparts. In 2015, bachelor's degree completion rates for African American males were 17% and for Hispanic males 13% (Salvo et al., 2019). Even with increased effort to support URM students, such as financial aid, tutoring, advisement, and appropriate course offerings, many students still receive lower grades, have higher dropout rates, and are less likely to graduate than their non-URM peers (Moreno, 2021).

The challenge lies in understanding the reasons behind the disparities seen in the performance trends of these student populations. Often the long work hours (Killham et al., 2021), greater family obligations and responsibilities (Cochrane & Maposa, 2018), or lack of family support to succeed at the university (Brubacher & Silinda, 2021; Moreno, 2021) can affect the engagement and retention of these students. Additionally, students can experience guilt about potentially achieving a "better life" than their family members and may even feel the need to be "two different people," as they balance student demands with being an active community and family member (Moreno, 2021, p. 214). This guilt can manifest as cultural differences between family and student life (Covarrubias et al., 2020).

Given that these students experience challenges in their in-person studies, they may experience heightened challenges in the online environment. Research on the impact of online learning for first-generation and URM students has mixed results. Some researchers found that the online modality can positively impact these students. For example, the convenience of online education is widely accepted as an advantage over more traditional, in-person modalities of education (Howard et al., 2020; Joosten and Cusatis, 2020). Yeboah and Smith (2016) found that the flexibility of online courses positively influenced the academic success of URM students (Yeboah & Smith, 2016). Johnson et al. (2021) and Joosten and Cusatis (2020) reported that the reach of online education has been particularly useful for geographically remote students. And Fischer et al. (2020) found that low-income, first-generation, and low-performing students were not disadvantaged in online courses. Kawalilak et al. (2012) reported that Aboriginal adult learners were found to have strong motivation and high success rates in online learning. And Wladis et al. (2015) found that while Black and Hispanic students may perform more poorly in STEM courses, the online environment was not the culprit. Salvo et al. (2017) even proposed that online learning may even be a "color free" environment where students were more likely to be treated equally and therefore had a decreased chance of dealing with racial issues.

However, other researchers suggest that strong performance disparities do exist for first-generation and URM students in online learning. For example, Xu and Jaggars (2014) claimed

that academic performance differences between white and URM students were exacerbated in online courses. Shea and Bidjerano (2019) researched online course load related to successful completion rates and found that minority students were more likely to drop out if they had higher online loads, including those who had been previously strong academically. And Howard et al. (2020) claimed that perceptions of the advantages of online learning are offset by decreased outcomes for URM students. Survey research conducted at a predominantly Hispanic university revealed a preference for in-person instruction (Shapiro et al., 2020), and African American male students were found to be less likely to enroll in online classes (Salvo et al., 2017).

The rush to emergency remote learning induced by COVID-19 emphasized online learning disparities that were not solely confined to the pandemic. URM students experienced more challenges overall than non-Hispanic, white students (Means & Neisler, 2021) and had more concerns with childcare, housing, technological access, and internet bandwidth (Kimble-Hill et al., 2020; Williams, 2020). URM students also struggled with motivation and access to instructor feedback and peer collaboration (Means & Neisler, 2021) or negatively impacted programs of peer tutoring and learning communities (Kimble-Hill et al., 2020). As online learning expands, exerted efforts are required to ensure the needs and challenges of first-generation and URM students are addressed.

As online learning expands, exerted efforts are required to ensure that the needs and challenges of first-generation and URM students are addressed. By identifying the challenges of these students and viewing them through appropriate theoretical lenses, institutions can help provide the needed, informed support to ensure that programs are properly designed to support the students they seek to help.

Engagement

The challenges frequently seen in the first-generation and URM students, including attrition and decreased academic outcomes, support the need for student engagement, along with challenges to it, as a theory of choice from which to view the challenges of these students. Borup et al. (2020) defined academic engagement as the "energy exerted towards productive involvement with course learning activities" (p. 811). Student engagement is correlated with educational outcomes like performance and persistence (Halverson & Graham, 2019) and should therefore be an element of focus for the success of first-generation and URM students in online education. We note here that the focus of our paper is not to provide an extensive review of engagement theories but rather to show how principles of this theory can provide insight into the success of online for first-generation and URM students. Accordingly, our discussion here will focus only on select research on engagement, rather than addressing the broader field of engagement.

Although some have referred to engagement as the "educational bottom line" or "holy grail of learning," many students still do not engage in their education and therefore experience high rates of attrition and decreased academic outcomes (Halverson & Graham, 2019, p. 146). To help understand student outcomes, engagement is commonly categorized in the three areas of affective, behavioral, and cognitive (ABC) engagement (Ben-Eliyahu et al., 2018; Fredricks et al., 2004; Reschly & Christenson, 2012). The Academic Communities of Engagement (ACE) framework (Borup et al., 2020) identifies specific examples and indicators of these three ABC dimensions in which students engage in an online course (see Table 1).

Table 1
Dimensions of Engagement with Definitions and Examples of Indicators

Dimension	Definition	Example Indicators
Affective	*The emotional energy associated with involvement in course learning activities.*	• Boredom vs. Enjoyment • Anxiety/Frustration vs Confidence • Sadness vs. Happiness • Situational and Personal Interest
Behavioral	*The physical behaviors (energy) associated with the completing course learning activity requirements.*	• Attendance/Participation • Completing/Submitting Work • Following course procedures • Time on Task
Cognitive	*The mental energy exerted towards productive involvement with course learning activities.*	• Attention • Absorption/Concentration • Learning Presence • Cognitive/Metacognitive Strategy Use

Note. This table was created in development of the ACE framework to provide definitions and examples of each of the three dimensions of engagement. From Borup et al., 2020, p.11.

Facilitators of Engagement

Facilitators of engagement are conditions that influence a student's ability to engage with course content, and therefore achieve academic performance (Borup et al., 2020). These facilitators are organized into the categories of (a) learner characteristics, (b) personal environment, and (c) course environment. *Learner characteristics* may include a student's interest in a subject or intrinsic motivation to master a concept that influences that student's engagement. A student's *personal environment* may include a student's family or access to technology and the resulting influences on the student's engagement. And lastly, a learner's course environment comprises that which is largely influenced by the educators, including the design of the course and instructor-student interaction.

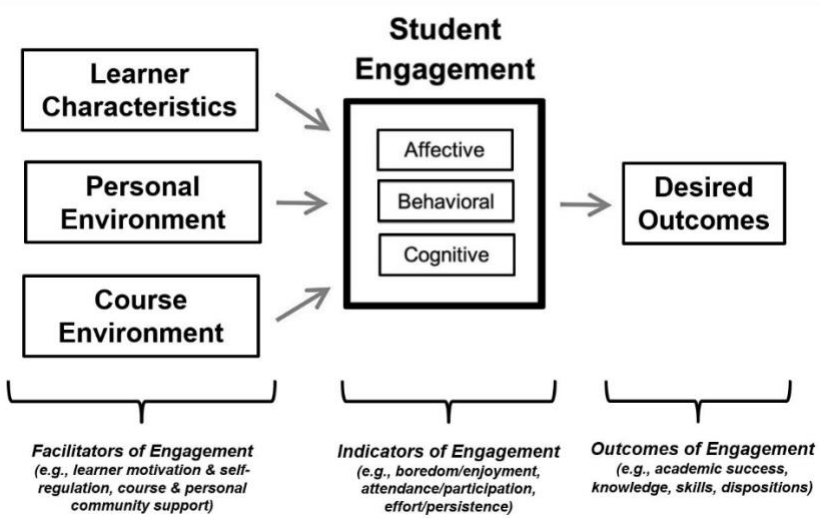
Indicators of Engagement

The affective, behavioral, and cognitive domains of engagement can be referred to as *indicators* of engagement (Borup et al., 2020) or ways of understanding how students demonstrate their engagement. Halverson and Graham (2019) presented crucial components for success that accompany each area of engagement. For example, cognitive engagement includes elements of persistence, effort, and focused time; positive emotional engagement is required to learn relatedness and interconnectedness, while negative emotional engagement, like frustration and boredom, impact learning with technology; and behavioral engagement includes the behaviors that are essential to complete learning activities.

Outcomes of Engagement

Ultimately, the *outcomes* of student engagement, such as academic achievement, are the purpose of focusing on engagement. These outcomes generally include academic performance such as grades, course completion, and student satisfaction (Borup et al., 2020). Borup et al. (2020) designed the model of Student Engagement, which portrays the *facilitators*, *indicators*, and *desired outcomes* of student engagement (see Figure 1).

Figure 1
Model of Student Engagement



Note. General model of student engagement distinguishing facilitators, indicators, and outcomes. Adapted from Halverson and Graham 2019, p. 147 (Borup et al., 2020, p. 811).

Engagement in Online Learning

Given the prolific employment of online learning for undergraduate students, the environment merits deep consideration with respect to engagement. If the online learning modality is to be an accessible and convenient option to support the needs of first-generation and URM students, we need to understand the challenges or barriers to academic engagement experienced by these students. This is especially true given that the online learning environment can be perceived as less engaging or be viewed as requiring a trade-off between engagement and flexibility (Garrison, 2009; Gill et al., 2015). Understanding the student facilitators of engagement may help the efforts of educators and practitioners to better support and improve the outcomes of engagement. Specifically, by applying the Student Engagement model (Borup et al., 2020) to the identified first-generation and URM student challenges, the impacted areas of facilitators and outcomes of engagement can be revealed and therefore addressed.

Methodology

Our research purpose was to identify the challenges of first-generation and URM students in online learning and then assess the impact of these challenges on student engagement, as viewed through the Student Engagement model of Borup et al. (2020). As authors who do not identify as first-generation or URM, we turned to peer-reviewed research to identify these challenges and used the theoretical framework of student engagement to analyze the data.

To begin this scoping review, we crafted searches of the literature using keywords to find research articles. We did not include elements of the Student Engagement model in the search, such as “engagement,” “cognitive,” “behavioral,” or “affective influences,” to not skew the results of the literature search, or data, toward the selected framework to be used for analysis. Engagement search terms, along with others like “challenge” or “problem,” biased the search by

improperly eliminating the number of articles found. Therefore, these additional search terms were not used and were instead reserved for the designated analysis of the literature.

ERIC is the premier database for Education and was therefore the database of choice for the search. The Center for First-Generation Student Success was used as an additional database. This database is a collection of research and scholarship that "informs understanding of the student experience, institutional approaches to programming, and identification of supports and barriers for first-generation students" (Center for First-Generation Student Success, n.d.).

For the search in ERIC, we used key terms to represent the three different categories of the research question: (1) first-generation and URM students, (2) online learning, and (3) undergraduate learning. To conduct the actual search, we used the thesaurus feature in ERIC to identify all terms that may be associated with those categories. They were strategically grouped and included the following:

Table 2

Search Terms for First-generation and URM Students in Online Learning Literature Review

Subject	Keywords
First-generation and URM Students	"First Generation College Students" OR "African Americans" OR "African American Students" OR OR "African American Education" OR "Black Studies" OR "Blacks" OR "Ethnic Groups" OR "Minority Groups" OR "Race" OR "Minority Group Students" OR "Ethnicity" OR "Multiracial Persons" OR "Racial Attitudes" OR "Racial Bias" OR "Racial Differences" OR "Racial Discrimination" OR "Racial Distribution" OR "Racial Factors" OR "Racial Identification" OR "Racial Integration" OR "Racial Relations" OR "Latin Americans" OR "Cubans" OR "Haitians" OR "Maya (People)" OR "Mexicans" OR "Puerto Ricans" OR "Hispanic Americans" OR "Latin American Culture" OR "Latin American Literature" OR "Asian Americans" OR "Asians" OR "Asian American Students" OR "Chinese Americans" OR "Filipino Americans" OR "Japanese Americans" OR "Korean Americans" OR "Hmong People" OR "Indochinese" OR "Laotians" OR "Pacific Americans" OR "Vietnamese People" OR "Indigenous Populations" OR "Alaska Natives" OR "American Indians" OR "Eskimos" OR "Pacific Islanders" OR "Indigenous Knowledge"
AND Undergraduate	"Undergraduate Students" OR "College Students" OR "College Freshmen" OR "Higher Education" OR "Undergraduate Study"
AND Online Learning	"Electronic Learning" OR "Blended Learning" OR "Computer Assisted Instruction" OR "Computer Mediated Communication" OR "Distance Education" OR "Electronic Classrooms" OR "Flipped Classroom" OR "Multimedia Instruction" OR "Online Courses" OR "Telecourses" OR "Virtual Classrooms" OR "Virtual Schools" OR "Virtual Universities" OR "Web Based Instruction"

For the search in the Center for First-Generation Student Success, we made strategic selections from the site's three search categories. Our choices included the following:

1. *Content type*: "scholarly articles" (options included: "all, books, reports, scholarly articles")
2. *Category*: selected "all" (options included: "all; academic & Co-curricular Experiences; Access and Persistence; COVID-19; Data; Assessment; & Evaluation; Extracurricular & Social Integration; Identify & Intersectionality; Non-cognitive Factors; Professional Development; Student Outcomes & Completion; Student Support Programs & Services; Newsletter")
3. *Topic*: selected "all" (options included: "all; Affordability & Aid; Belonging & Motivation; Career & Post-completion; Classroom & Faculty Experiences; Defining First-gen; In-person Events; Institution-specific approaches; Institutional Type & Selectivity; Matriculation & Transition; Mentoring; Online or On Demand Events; Preparedness; Student Characteristics)

Literature sorting strategies

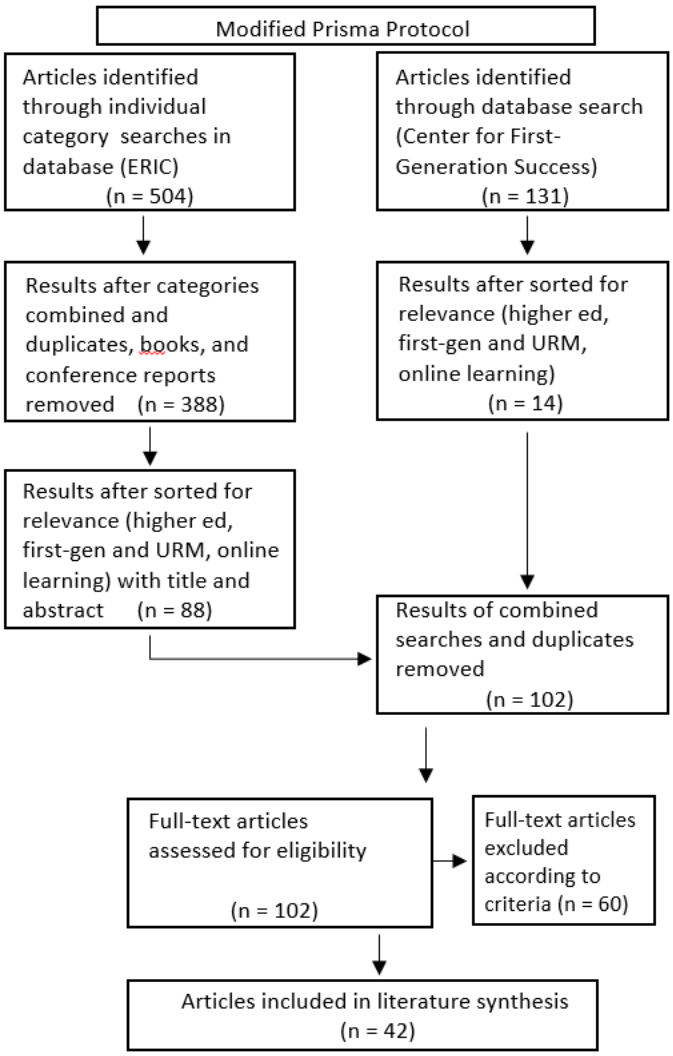
The following inclusion criteria were used:

1. Must be in English.
2. Must be peer-reviewed (to screen for higher quality studies).
3. Must be published in the last 10 years, 2011–2021 (to focus the review on recent, relevant research).
4. Must be focused on first-generation or URM or otherwise identified as potentially at-risk students (to support the focus of the research.
5. Must be situated in higher education (to support the focus of the research purpose).
6. Must include some discussion or measurement of challenges, specifically articles needed to report some empirical data (to support the focus of the research).

This literature review followed a modified PRISMA protocol (see Figure 2) for a total of 42 articles included in the literature review (see Appendix A). As noted in this protocol, articles were identified using the above inclusion criteria based on titles and abstracts, with duplicates, books, and conference reports excluded. A second review of the full-text articles using the above inclusion criteria resulted in 42 manuscripts to include in the analysis. The research articles were reviewed and coded by one author with consistent feedback from multiple peer researchers throughout the process.

Figure 2

Modified PRISMA Protocol



The authors used emergent coding to identify the themes of student challenges found in the literature search. Specifically, one author copied findings and summaries of each research article into a document. The author then identified and coded themes that emerged from the findings and summaries, such as student grades, access to technology, or motivation. These themes were then further condensed into the 15 categories used for analysis. An associate professor from an outside department served as an independent reviewer. This professor repeated the coding process and achieved the same results. Additionally, the co-author of this article checked 20% of the coding by reviewing the complete original articles for themes and achieved the same results as the original coder. The analysis and placement of the 15 categories into the Student Engagement model (Borup et al., 2020) were reviewed and confirmed by Dr. Charles Graham, coauthor of the Borup et al. (2020) paper. The list of categories of student challenges, along with the authors and frequency of citation, is in Appendix A.

Analysis of the Literature

Within the Academic Communities of Engagement framework, Borup et. al. (2020) identified three ways in which a student engages in an online or blended course: affectively,

behaviorally, and cognitively. They proposed that the student's ability to engage with the course increases with the communities created by both the course itself, or those associated with the program, and with the personal community of the student, made up of the relationships typically formed before the student interacts with the course.

We first reviewed the manuscripts and identified the challenges reported in online learning. We then analyzed the literature using the model of Student Engagement from Borup et al. (2020). Specifically, we categorized the identified challenges or barriers of first-generation and URM students in online learning as either challenges to *facilitators* or challenges to *outcomes* of engagement. We further categorized the challenges to *facilitators* of engagement into the three subcategories of *Learner Characteristics*, *Personal Environment,* and *Course Environment.* Additionally, from these categorizations, we provided preliminary recommendations for student support. To limit any factors associated with emergency remote learning, we first analyzed manuscripts published prior to the Covid-19 shutdowns to gain insight from true online learning and then reviewed any manuscripts that mention emergency remote online learning (where we noted above that ERL underscored difficulties that already existed).

Limitations

This literature review has some limitations. Searching only two databases could be a limiting factor in retrieving manuscripts on this topic.

Results

The identified challenges or barriers to success in online learning of first-generation and underrepresented minoritized (URM) students fall into fifteen themes or categories: (a) course design, (b) digital divide, (c) family obligations, (d) economic barriers, (e) language/linguistics, (f) instructor/peer interaction, (g), family support, (h) motivation, (i) sense of belonging, (j) racism, (k) learner readiness, (l) mental health, (m) culture, (n) attitude, and (o) course load. Some categories included varied results about whether a given topic is a challenge. We included these mixed results for consideration. And while some research, including Wladis et al. (2015) found no significant difference for first-generation or URM students in outcomes in the online setting, multiple studies in this literature review consistently found significant performance gaps for URM students as measured by student grades (Gregory, 2016; McCarty, 2013; Xu & Jaggars, 2014) and course completion (Howard et al., 2020; Nguyen, et al., 2020).

Course Design

The potential impact on the success of URM students by course design, or specific instructional characteristics, emerged from the literature in various forms, including positive (Joosten & Cusatis, 2019) and low-impact results (Gillis & Krull, 2020). However, findings also included learning preferences of design that negatively impacted retention for Black/African American students (Armstrong et al., 2021; Salvo et al., 2019), limited flexibility that proved to be a barrier to indigenous student needs (Cochrane & Maposa, 2018), and online math courses that did not equally serve Native American/Alaskan Native/Pacific Islander, Hispanic, and Black/African American students and who in turn did not perform as well in the course. (Guerrero et al., 2020). Even high achieving African American, male STEM students found that the nature of their online math course was pedagogically ineffective (Jett, 2021). Palacios and Wood (2016) found that the asynchronous, multi-media modality was effective for Black men but warned that in general, careful consideration be used when promoting online learning to

Asian, Black, Latino, and white men at community colleges because of their overall preference for face-to-face modalities.

Chávez et al. (2012) shared perspectives that emerged from interviews with diverse online students. A Hispan(ic) student reported that while their goal of education was to prepare to serve their people, that concept seemed foreign to their professors whose subjects discussed in class were "completely disconnected from the world" (p. 13). A Taos Pueblo student, noting that professors lectured on theory and never gave examples, asked, "How am I supposed to serve my people with only this abstract, rote memorization instead of learning?" (p. 28).

Digital Divide

As previously stated, the "digital divide" traditionally refers to the unequal knowledge and access of students to sufficient internet and devices. Ellison (2019) recommended the term "digital inequities" to avoid the more binary, deficit thinking of the digital divide associated with students of color. The literature identified multiple challenges in this area, including disparities highlighted by the COVID-19 pandemic.

Rural, indigenous students identified barriers of insufficient access to online educational programs, quality internet, and personal computers (Kawalilak et al., 2012; Willems, 2012). Similarly, Banerjee (2020) reported that first-generation, low-income, and non-white students faced overall decreased technological access. Moore et al. (2018) shared that limited access to devices and the internet for students from underserved backgrounds proved to be a barrier to homework completion.

During the COVID-19 pandemic, surveys of students at a Hispanic university (Shapiro et al., 2020), low-income and first-generation students (Williams, 2020), Latino/a/x/Hispanic students (Fariña et al., 2021), and marginalized students of color, lower socioeconomic, and rural backgrounds (Kimble-Hill et al., 2020), showed exacerbated digital challenges of limited access to devices and sufficient internet, which impeded digital learning success. Fariña et al. (2021) noted that students had been coping with "pre-pandemic resourceful adaptations" (p. 245), such as using university computers, but shelter-in-place orders impacted their access to these devices and subsequent ability to complete remote learning requirements. Barber et al. (2021) reported that the pandemic also caused a disproportionate decrease in access to undergraduate research experiences for URM students.

Family Obligations

Through student surveys, multiple researchers confirmed that URM and first-generation students experience greater family obligations and responsibilities (Cochrane & Maposa, 2018; Vielma & Brey, 2021), especially during the COVID-19 pandemic (Barber et al., 2021; Fariña et al., 2021; Killham et al., 2022; Kimble-Hill et al., 2020; Shapiro et al., 2020; Zalaznick, 2020). These family obligations manifested in various ways, including expectations to help siblings with their own online coursework (Barber et al., 2021) and serving as caregivers for young or elderly family members (Fariña et al., 2021; Zalaznick, 2020).

Chávez et al. (2012) captured the loyalty and duty that some students feel toward their families while conducting interviews with 50 Native, Hispano, and Mestizo American students. One Hispan(ic) student said, "I was taught that I have a responsibility to my family and to my people. Even now while I am in college, I must send whatever money I can home to help support my family" (p. 13).

Economic Barriers

Many authors addressed topics within the theme of economic barriers, which encompasses concerns about housing, food, finance, and jobs. While some conditions, such as homelessness (Fariña et al., 2021), had existed before the pandemic, multiple student surveys conducted during the pandemic highlighted the disproportionate impact and increased awareness of the situation.

Through student surveys, Barber et al. (2021) identified greater insecurities in finance and food for URM and first-generation students. Williams (2020) found that low-income and first-generation students experienced greater challenges in housing, food, and jobs. Other researchers identified that URM (Kimble-Hill et al., 2020) and Latino/a/x/Hispanic (Fariña et al., 2021) students struggled to find adequate and safe places to study because of housing situations. And first-generation Latina students (Killham et al., 2021), URM students (Vielma and Brey, 2021), and students at a Hispanic university (Shapiro et al., 2020) all had disproportionate employment obligations or challenges. From a different perspective, Walton et al. (2020) identified that financial support and affordable housing were strong factors related to the persistence of indigenous students in remote learning.

Language/Linguistics

Researchers found that at times differences in language and linguistics can pose a challenge for minority students in online courses (Yeboah & Smith, 2016). Kimble-Hill et al. (2020) identified possible language barriers for Hispanic and Native Hawaiian students in their preference for verbal explanations over online lab courses. And Williams (2020) similarly found student challenges in online learning due to language barriers, summarized with a student offering perspective: “Spanish is my first language, and sometimes the rapid nature of digital learning keeps me from fully understanding” (Williams, 2020, p. 26).

Kawalilak et al. (2012) asserted that providing the technological access of online learning is insufficient and that the linguistic traditions of Aboriginal students needed to be addressed to accommodate their unique learning needs, including linguistic strengths and obstacles. This may be true of many URM online learners.

Instructor/Peer Interaction

Joosten and Cusatis (2020) identified that compared to their counterparts, minority students have a higher preference for socialization. However, this could place URM students at a disadvantage in online learning (Joosten & Cusatis, 2020). Using input from collegiate students of African descent, Eugene and Clark (2012) identified various concerns over lack of social context in the online environment, lack of collaboration, and feeling isolated from other students in online learning and identified social aspects of online learning as a moderate barrier to success.

Chávez et al. (2012) shared the feelings of a Mestizo college student who found that they could “be alone and in touch at the same time” (p. 2). However, lack of instructor and peer interaction proved to be barriers to success for many, including online indigenous students researched by Cochrane and Maposa (2018). African American male students (Salvo et al., 2019) noted the lack of professor interaction and timely feedback challenging, as did marginalized students (Williams, 2020). Similarly, students at a Hispanic university found that the online setting created difficulties in obtaining professor help with academic concerns (Shapiro, et al., 2020).

Interviews conducted by Kawalilak et al. (2012) revealed varying Aboriginal student opinions regarding interaction in the online environment. One student shared, "I liked the convenience…I felt safe…no one laughed if I didn't understand" (p. 13). However, different student perspectives revealed challenges instead. A student offered, "I didn't complete a module once, nobody noticed. If the teacher was here, she would notice." Another student shared, "I think I know the instructor, but they don't know me. They can't see me" (p. 13).

Family Support

Family support has been determined to be a contributing element for first-generation and URM student success (Gloria & Castellanos, 2012; Walton et al., 2020). Lack of this support appeared multiple times in the literature as a barrier for many students (Stone et al., 2016; Yeboah & Smith, 2016). With this, students in online learning may need even more family support but first-generation and URM students are at greater risk of not having it (Brubacher & Silinda, 2021). This decreased support can be manifest as an actual lack of parental knowledge of how to navigate the university environment (Killham et al., 2021; Stone et al., 2016), or it can appear as negative distraction (Stone et al., 2016).

Stone et al. (2016) looked at the experience of 87 first-generation students in an open-entry, online undergraduate course. They found a range of student experiences with respect to family support. Some students shared challenging comments from family members that accused them of striving for a "higher class than others" (p. 156) or that school was a "waste of time" and resources and not needed for success (p. 158). However, approximately half received unconditionally positive comments, including extremely proud parents who are "impressed with (their student's) determination" and tell "everyone" what their student is doing (p. 159).

Motivation

First-generation students are highly motivated and often among those most committed to improving the world (Haney, 2020; Stone et al., 2016). In a study of indigenous leaners, Kawalilak et al. (2012) found that motivation, specifically a strong desire to obtain post-secondary education, was a key factor for student success. However, in effort to identify barriers to e-learning for students of African descent in STEM disciplines, Eugene and Clark (2012) identified motivation as a weak to moderate barrier. Similarly, Armstrong et al. (2021) noted that motivation was associated with student retention to a degree and that Black and other students had lower rates of completion than white students.

Challenges with motivation were especially highlighted during the COVID-19 pandemic. Through student surveys at a largely Hispanic university, Shapiro et al. (2020) identified motivation to be among the primary nonacademic challenges, and DeRossett et al. (2021) identified that academic motivation was impacted by demographic variables. Gillis and Krull (2020) found that non-white, female, and first-generation students particularly struggled with feelings of decreased motivation. Through a different student survey, Cox et al. (2021) reported that Black/African students reported lower motivation for online learning as compared to Asian/Pacific Islander and white/Caucasian students.

Sense of Belonging

Student sense of belonging emerged in the literature, as related to impact on the shift to remote pandemic learning. Cox et al. (2021) used a survey of items with Likert ratings to report a

statistically lower sense of belonging for both Black/African and white/Caucasian students as compared to Asian/Pacific islander students, and similarly, DeRossett et al. (2021) identified a correlation between demographic variables and academic belonging. While sense of belonging was not found as a challenge for first-generation and URM students in regular online learning in this literature search, it may still impact these students.

Racism

While Salvo et al. (2017) proposed the idea that remote learning could be a *color free* environment where students were treated equally and had a decreased chance of dealing with racial issues, Fariña et al. (2021) found evidence of challenges for African American, Asian and Asian American, and Latino/Hispanic students in online learning, especially during the COVID-19 pandemic. Through a lens of critical race theory, they argued these students faced a "double pandemic" (p. 241) of racist attacks, decreased access, and stress, all of which impacted their efforts to maintain satisfactory academic progress in remote courses.

Learner Readiness

Researchers have identified various learner attributes and characteristics, such as time management, self-directedness and regulation, self-efficacy, and digital efficacy as factors that impact student performance in online learning (Kawalilak et al., 2012; Martin et al., 2020; Walton et al., 2020). However, some research indicates that URM students may give lower ratings to their own competencies in these areas (Kuo & Belland, 2019; Martin et al., 2020; Joosten & Cusatis, 2020; Yeboah & Smith, 2016), thus identifying a potential area of concern for their performance.

Digital efficacy is distinct from digital access (Cotton et al., 2014) and as a form of learner readiness can potentially further divide URM students from their counterparts. Kuo and Belland (2019) summarized that even with increased access to technology for underrepresented minorities, disparities in skill have not proportionately decreased. However, Salvo et al. (2019) found that previous information technology training contributed to successful online course completion for African American male students in online courses.

Mental Health

Through student surveys in online introductory courses, Gillis and Krull (2020) studied student perceptions of the transition to remote learning required by the COVID-19 pandemic. They found that most students experienced many challenges, including increased anxiety, but non-white, female, first-generation students were disproportionately affected. De La Cruz et al. (2021) also reported that first-generation college students reported considerable hurdles of mental health issues during the pandemic. Greater anxiety and other mental health conditions may be an issue for these students during non-pandemic conditions.

Culture

While the online learning environment provides increased access to education, elements of culture can cause challenges for students of various backgrounds. Chen and Bennett (2012) found that students from China had problems "acculturating to their online courses" due in part to "a clash between their heritage and host educational cultures" (p. 690). This was attributed to the constructivist approach of the online courses (Chen & Bennett, 2012; Warring, 2013) where Chinese students had cultural concerns in sharing differing opinions from faculty and fellow

students (Warring, 2013). Chen and Bennett (2012) suggested that these findings may not be unique to Chinese students and that care should be taken with the increased globalization of education.

From an additional perspective, Kawalilak et al. (2012) studied barriers of Indigenous students in online learning and found that Aboriginal cultural sensitivity was paramount to success. Walton et al. (2020) specified the need for more Indigenous faculty and culture on campus for student success. Chávez et al. (2012) found that culturally, Native, Hispan(ic), and Mestizo American students preferred that faculty provide connections between course content and their everyday lives and communities.

Attitude

Multiple authors researched the importance of underrepresented minoritized (URM) student attitude. Willems (2020) offered those factors, such as access to education and student attitude, had an impact on the success of indigenous online learners. Johnson et al. (2021) found that the positive attitude of students at the University of the South Pacific contributed to the largely successful transition to remote learning during the COVID-19 pandemic.

Other researchers found that imposter syndrome was an unfortunate challenge frequently experienced by first-generation and URM students (Calma, 2020; Kimble-Hill et al., 2020). A student shared, "It's the notion that you are not a part of a community, that you are an outsider, and it often manifests in the college environment" (Calma, 2020, para. 10). Another student expressed uncertainty about their own abilities saying, "I have thought on occasions that I wasn't smart enough for study at a university level" (Stone et al., 2016, p. 162).

Course Load

Using data of more than 45,000 students from 30 community colleges, Shea and Bidjerano (2019) conducted a research study focused on completion rates of minority students compared with nonminority students. They found that with each unit of completed online study, the likelihood of degree completion increased, except for minority students. Even academically stronger minority students were found to be more likely to drop out than nonminority students when they had higher online loads.

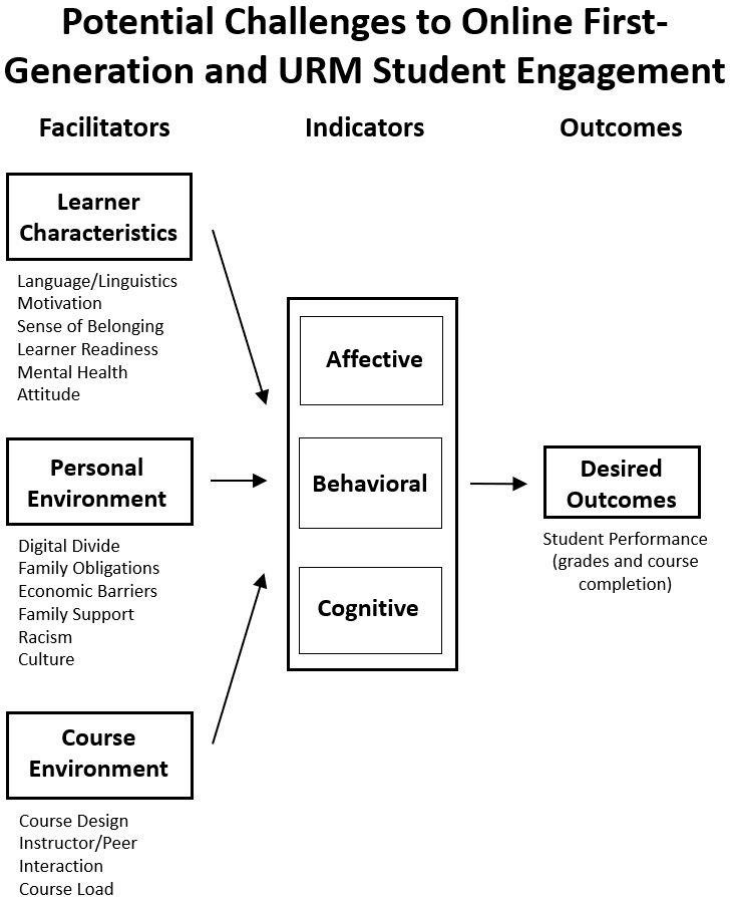
Discussion

This literature review identified the challenges of first-generation and underrepresented minoritized (URM) undergraduate students in online learning as they appear in published, peer-reviewed research. The intent of this effort was to categorize these findings into the model of Student Engagement, created by Borup et al. (2020) in effort to determine which areas of student engagement receive impact by these challenges, acknowledging that students likely face several challenges simultaneously and experience a compounding effect.

The literature search identified reports of challenged *Desired Outcomes* of engagement, as measured by student performance in grades and course completion, along with challenged *Facilitators* of engagement, which include all fifteen of the identified areas of student challenges. These fifteen themes of first-generation and URM student challenges fall into the three subcategories of *Facilitators* identified as *Learner Characteristics, Personal Environment,* and *Course Environment*. Figure 3 reports the identified challenges within the Student Engagement framework (Borup et al., 2020).

Figure 3

First-generation and URM Student Challenges in Online Learning



The findings of this literature review fall under the category of *Facilitators* of engagement, aside from reported research on challenged student performance categorized under *Desired Outcomes*. However, for these students, these categories are more often barriers rather than facilitators of engagement. Academic Communities of Engagement (Borup et al., 2020) asserts that like the Zone of Proximal Development (Vygotsky, 1978), students can engage more fully in their online environment, potentially impacting *Desired Outcomes*, when activities are scaffolded by the supportive communities around them. By recognizing where students need support, institutions can appropriately focus their efforts. The placement of student challenges within the Student Engagement framework are important because they reveal or confirm what areas of support are needed.

Interventions or support can be offered within the areas of Learner Characteristics, Personal Environment, and Course Environment. Specific to the findings of this literature review, we developed and offer multiple recommendations for interventions that address the student challenges and student requests found in each category. Institutions can generate ideas for their own needs by reviewing the challenges and recommendations in Table 3.

Table 3

Facilitators of Engagement with Student Challenges and Recommendations

Facilitators of Engagement	Challenges	Recommendations
Proposed Learner Characteristics Interventions	Language/Linguistics	• Offer language proficiency support • Provide definitions of common terms of the educational environment • Avoid undefined jargon
	Motivation	• Provide mentorship programs • Provide vision and purpose to education and course content • Provide acknowledgement of milestones
	Sense of Belonging	• Provide mentorship programs • Provide information for student clubs • Enhance learner-learner and learner-teacher course design
	Learner Readiness	• Advocate for first-year preparation courses • Provide digital literacy support, such as tutorials or mini courses, to support digital navigation
	Mental Health	• Provide links to campus mental health resources • Provide necessity and consistent distribution of assignments and assessments throughout the course
	Attitude	• Offer frequent, sincere encouragement to students • Teach the concept of imposter syndrome and how to overcome it
Proposed Personal Environment Interventions	Digital Divide	• Inform students of campus resources • Be flexible and understanding of student needs • Provide videos to explain digital navigation
	Family obligations	• Inform students of campus resources • Be flexible and understanding of student needs
	Economic barriers	• Inform students of campus resources • Be flexible and understanding of student needs
	Family support	• Encourage student communication with family about accomplishments or needs as appropriate • Provide information about institution events and contribution
	Racism	• Inform students of campus resources • Adjust course content for sensitivity and inclusivity • Highlight institutional policies of intolerance for racist comments, posts, gestures, and references • Report and encourage student reporting of racism
	Culture	• Review and adjust course content for sensitivity and inclusion • Provide real-world examples and application of course content • Invite discussion of culture and tradition
Proposed Course Environment Interventions	Course Design	• Be flexible • Provide quick feedback • Use relevant examples • Chunk content appropriately

Instructor/Peer Interaction	• Enhance learner-learner and learner-teacher elements of the course • Increase instructor involvement in responses
Course Load	• Provide advisement for appropriate student online course loads

We recommend that each institution use the identified categories of first-generation and URM student challenges within the Student Engagement framework (Borup et al., 2020) and simple recommendations provided to assess the needs of the students they are serving. This can serve to bring awareness of the student needs and increase institution ability to create or continue needed support and interventions to provide the greatest impact for student success.

Suggestions for Future Research

We also identify the need to further research first-generation and URM student needs within these now categorized findings. These research efforts can be channeled towards analyzing the efficacy of existing interventions or identifying gaps. Researchers may consider whether institutional efforts are harnessing the strengths of these students and/or supporting these students in the needed areas of the Student Engagement model (Borup et al., 2020), including *learner characteristics*, *personal environment*, and *course environment*. Research may include the student perspective and the institutional perspective of these efforts.

Conclusion

Online learning has increased in availability and popularity and now functions as a viable option for many students in higher education, especially given the needed convenience and flexibility it provides for student schedules. Along with opportunity, however, online learning can bring unique problems for first-generation and underrepresented minority undergraduate students who may experience greater challenges in online learning than their counterparts.

Research shows that though highly motivated (Haney, 2020; Stone et al., 2016), first-generation and URM students are more likely to suffer mental health problems, food and housing insecurity, financial and other difficulties that can impact online learning (Moore et al., 2018; Soria et al., 2020) The COVID-19 pandemic also highlighted the disparities that disproportionately affected URM and first-generation students in remote learning. And while many challenges of these students in online learning have already been known, we uniquely sought to identify and categorize the challenges of these students within the model of Student Engagement by Borup et al. (2020) to offer better student support.

We identified student challenges to *Desired Outcomes* of engagement, as measured by student performance in grades and course completion, along with fifteen themes of barriers to *Facilitators* of engagement. We identified and categorized the following fifteen themes with the intent to develop proposed interventions for improved success in learning among first-generation and URM students:

- *Learner Characteristics*—language/linguistics, motivation, sense of belonging, learner readiness, mental health, and attitude
- *Personal Environment*—digital divide, family obligations, economic barriers, family support, racism, and culture

- *Course Environnent*—course design, instructor/peer interaction, course load

The placement of student challenges within the Student Engagement framework reveals or confirms needed areas of student support. We recommend that each institution use the identified categories of first-generation and URM student challenges and the pertinent recommendations such as those we provided to generate awareness and ideas to support student success for those they are serving.

Declarations

The authors have no conflicts of interest to declare.

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Appendix A

Summary of Research by Category, Positive Effect, Challenging Effect, and Manuscripts Included in the Literature Review

Category	Positive Effect	Challenging effect
Course Design	• Joosten & Cusatis, 2019	• Armstrong et al., 2021 • Chávez et al. 2012 • Cochrane & Maposa, 2018 • Gillis & Krull, 2020 • Guerrero et al., 2020; Jett, 2021 • Palacios &Wood, 2016 • Salvo et al., 2019
Digital Divide		• Banerjee, 2020 • Barber et al., 2021 • Fariña et al., 2021 • Kawalilak et al., 2012 • Kimble-Hill et al., 2020 • Moore et al., 2018 • Shapiro et al., 2020 • Willems, 2012
Family Obligations		• Barber et al., 2021 • Chávez et al., 2012 • Cochrane & Maposa, 2018 • Fariña et al., 2021 • Killham et al., 2021 • Kimble-Hill et al., 2020 • Shapiro et al., 2020 • Vilma & Brey, 2021 • Zalaznick, 2020
Economic Barriers		• Barber et al., 2021 • Fariña et al., 2021 • Killham et al., 2021 • Shapiro et al., 2020 • Vilma & Brey, 2021 • Walton et al., 2020 • Williams, 2020
Language/Linguistics		• Kawalilak et al., 2012 • Kimble-Hill et al., 2020 • Williams, 2020 • Yeboah & Smith, 2016

Instructor/Peer Interaction	• Chávez et al., 2012 • Kawalilak et al., 2012	• Chávez et al., 2012 • Cochran & Maposa, 2018 • Eugene & Clark, 2012 • Joosten & Cusatis, 2020 • Kawalilak et al., 2012 • Salvo et al., 2019 • Shapiro, et al., 2020 • Williams, 2020
Family Support	• Gloria & Castellanos, 2012 • Killham et al., 2021 • Walton et al., 2020	• Brubacher & Silinda, 2021 • Killham et al., 2021 • Stone et al., 2016 • Yeboah & Smith, 2016
Motivation	• Kawalilak et al., 2012	• Armstrong et al., 2021 • Cox et al., 2021 • De Rossett et al., 2021 • Eugene & Clark, 2012 • Gillis & Krull, 2020 • Shapiro et al., 2020
Sense of Belonging		• Cox et al., 2021 • De Rossett et al., 2021
Racism	• Salvo et al. (2017)	• Fariña et al., 2021
Learner Readiness	• Kawalilak et al., 2012; Martin et al., 2020; Salvo et al., 2019; Walton et al., 2020	• Kuo & Belland, 2019 • Martin et al., 2020 • Johnson et al., 2021 • Joosten & Cusatis, 2020 • Yeboah & Smith, 2016
Mental Health		• Gillis & Krull, 2020 • De La Cruz et al., 2021
Culture	• Chávez et al., 2012	• Chen & Bennett, 2012 • Kawalilak et al., 2012 • Walton et al., 2020 • Warring, 2013
Attitude	• Johnson et al., 2021 • Willems, 2020	• Calma, 2020 • Kimble-Hill, 2020 • Stone et al., 2016
Course Load		• Shea & Bidjerano, 2019 • Yeboah & Smith, 2016
Student Performance	• Wladis et al., 2015	• Gregory, 2016 • Howard et al., 2020 • McCarty, 2013 • Nguyen, et al., 2020 • Xu & Jaggars, 2014