A wide range of factors affect student success, many of which can be improved by taking steps to improve equity:

- Academic factors: Generally, students' level of preparedness for learning and, specifically, students' readiness for online learning affect their success.
- Pedagogical factors: Your course organization and design, the quality and quantity of interaction opportunities, and timely and effective feedback all contribute to success.
- Psychological factors: Students' feelings of social belonging and ability to address stereotype threat improve success, as do students' perceptions of the course's value relevance and the teacher's compassion.
- Social factors: Students' feelings of isolation or alienation in an online course have a negative impact, while joining a learning community has a positive impact.
- Technological factors: Access to and ability to use the technologies required for online course—or lack thereof—affect students' success.

The following research references demonstrated a) the need for an equity rubric criterion based on the existence of an equity issue and/or b) how meeting a specific equity rubric criterion has been proven to improve online student persistence and/or success. Whenever possible, the literature referenced addresses these issues for disproportionately impacted students.
Technology

  - **Positive impact of technology intervention** - Research shows “a general positive relationship between the use the learning technology and student engagement and learning outcomes.” Article also discusses “the possible impact on minority and part-time students as they are more likely to enroll in online courses.”

  - **Negative impact of inadequate technology access** – Study of K-12 students provides relevant data about rural students’ access to technology and Internet, impact on coursework and extracurricular activities.

  - **Positive impact of adequate technology access** – study of Australian higher ed students showed that students from low socio-economic groups were successful when they had access to technology and support.


  - Article links digital equity to pedagogical and structural inequity more broadly.

  - Opinion article shares three elements for everyone to experience successful online learning

Student Support

  - Cites research supporting the need for online student services
  o Student support strategies to increase online student retention

  o Drawing from research reports, this article provides 7 strategies to support students.


  o This study details 13 strategic interventions to monitor financial, academic, and engagement stop-out risk, encourage re-enrollment, and facilitate adult degree completion

  o Evidence that online support services impact student success rate – see p. 14
  o See WCET web of student support services – categories: academic, administrative, communications, student community, and student personal services

  o Online environment: Best practices in student support & well-being services for online learners –services should include a) Online-friendly academic supports (an orientation, access to Library services); b) Assistance with navigating technology; c) Health and well-being facilities; and d) Sense of belongingness, or community

Under-utilization of student support services can contribute to a low retention rate found in online courses – discusses the need to educate and encourage online faculty about using the wide variety of student support services that are available to community college students

  - Cites studies that show lack of student support resources negatively affects online student retention and success.

**Universal Design for Learning**

**UDL for all courses in general**


  - "Results from this analysis suggest that UDL is an effective teaching methodology for improving the learning process for all students. The impact on educational outcomes has not been demonstrated."

  - Describes how UDL supports multiple pathways for allowing students to show what they know (i.e., assessment). Provides UDL implementation suggestions ranging from simple to complex.

**UDL applied to online courses**

  - **Research identified UDL benefits to learners**: UDL "adjustments to teaching practice improve the learning experiences and retention rates of students with a disability and those from other underrepresented groups such as non-English-speaking-background students as well. Inclusive adjustments to the intellectual environment work to improve all students' experience of [the] university" (p. 24)

  - Article provides examples of UDL applications in online higher ed courses.

Research identified UDL benefits to learners


Diversity & Inclusion

https://sites.dartmouth.edu/edtech/2016/10/26/creating-inclusive-courses-with-universal-design/
  - Strategies for using Universal Design for Instruction


  - Provides examples of Universal Design for Instruction in online courses.

Images and Representation

Internet-Based Image Resources

  - Presence of bias in image search results
  — Presence of bias in stock photo libraries

**Textbooks & Educational Resources**

  — Presence of bias in textbooks; article discusses role of imagery in influencing students’ impressions of a discipline

  — Presence of bias in textbooks

  — Positive effect of addressing image and representation bias — Study asked students to customize digital textbooks. Students “consistently chose images that reflected their racial, gender, and linguistic identities.” Implication: “…culturally authentic racial cues would spawn deeper engagement for students.”

  — Positive effect of addressing image and representation bias - This study uses documented methods of stereotype threat-mitigation from the fields of science, math, and psychology and applies them to the political science classroom by using images of women serving in political office.

  — Negative effect of image and representation bias — “Black students are less likely to find that image-based PowerPoints enhanced learning because of the lack of positive Black role models and culture in PowerPoint slides

Positive effect of addressing bias - High school students – females showed higher science comprehension after viewing counter-stereotypic images (female scientists) and males showed higher science comprehension after viewing stereotypic images (male scientists).

  - Presence of bias, suggestions for balance – in online science education resources, men and women are portrayed in stereotypic ways

  - Presence of bias in medical textbook images

  - Presence of bias in English as a Foreign Language textbooks

  - Presence of bias in anatomy textbooks

**Stereotype threat**
  - Negative effect of stereotype threat on academic performance

**Human Bias**
  - Presence of bias in how teachers reply to online learners in discussion forums

  - Review of literature about cultural bias in testing, with “meaningful implications for educators of any subject”

Positive effect of stereotype threat intervention


Presence of bias in student interactions: "being identifiable had a significant impact on how students accessed and rated content created by their peers; … when identifiable, cultural differences became more prominent, leading some students to avoid content created by classmates of certain nationalities; … when students interacted with their real identities, there were significant and negative gender effects which were absent when students were anonymous"

Content Meaning


Provides strategies for helping students make personal connections to course topics.


Positive effect of content meaning intervention – “students participating in a class Facebook group reported more interest in and perceived more value in course content"


Article identifies and describes characteristics of culturally responsive teaching.


Strategies for making lessons more culturally responsive.


Positive effect of content meaning interventions – article shares intervention strategies and their usefulness in students’ interest development
  o **Positive effect of content meaning intervention** – students with low interest in subject matter reported greater interaction and engagement with a free, online textbook (Open Educational Resources) than with traditional textbook.

  o **Review of literature** on cultural bias in testing. Addresses (a) significantly different results for definable subgroups from apparently similar ability levels and (b) issues with the fair and equitable interpretation and use of test results.
  o Includes “suggestions for improved fairness consisting of addressing group differences, offering diverse ways to perform, discouraging misuse, and accommodating for differences.”

  o Brief article with **strategy to help students connect with course content**

  o **Review of literature** related to learning motivation stemming from personal meaning.

  o **Strategies for choosing course content that increases inclusion**

  o Article with **strategies to help students make real-world connections** to course topics

  o Description of intervention
Connection and Belonging

**Personal Connections With & Among Students**

  - **Positive effect of fostering student-student connections** – Study “the use of VoiceThread technology within group assignments significantly influences students’ ability to learn, their feeling of a community, and their ability to communicate.”

  - Brief article provides 5 strategies for teachers to connect with online students

  - Brief article provides 10 strategies for teachers to connect with online students

**Social Belonging (in both the course and the discipline)**

  - Provides ideas for fostering belonging in online courses

  - **Positive effect of social belonging interventions** for international students. Not limited to online courses.

- Cohn-Vargus, B. & Gogolewski, K. (2020, June 2). How to teach online so all students feel like they belong. *Greater Good*. Retrieved from [https://greatergood.berkeley.edu/article/item/how_to_teach_online_so_all_students_feel_like_they_belong](https://greatergood.berkeley.edu/article/item/how_to_teach_online_so_all_students_feel_like_they_belong)
  - Provides ideas for fostering belonging in online courses

  - **Positive effect of social belonging interventions**

Provides ideas for fostering belonging in online courses

- Khan, S.R. (2020). Fostering Students’ Sense of Belonging in Online Asynchronous Courses Through Social Media. *Culminating Projects in Information Media, 27.* Retrieved from [https://repository.stcloudstate.edu/im_etds/27](https://repository.stcloudstate.edu/im_etds/27)
  - Positive effect of social belonging interventions – The use of social media to foster a sense of belonging in asynchronous courses increased student motivation, retention and academic results.

  - Positive effect of addressing social identity threat – improved persistence and completion rates among learners in developing countries, eliminating global achievement gap

  - Positive effect of sense of belonging – appears to modulate stress in online course environments

  - Review of research literature related to fostering a sense of belonging through multicontext theory – “an approach to designing learning experiences and environments that take into account varied ways of thinking and knowing”

  - Describes belonging; shows connections between belonging and student success; provides tips for fostering belonging

  - Positive perception of belonging - "students and academics highly value efforts to create a sense of belonging across the students undertaking an online course" (p. 78)


- Confirms importance of belonging in STEM classes. Belonging is "a distinct attribute related to engagement and is not simply reducible to feelings of self-efficacy" (p. 751).