CLEARINGHOUSE
FOR MILITARY FAMILY READINESS

A Comparison of Outcomes in Online and In-Person Learning

Rapid Literature Review

Clearinghouse Technical Assistance Team

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Table of Contents

Executive Summary 3

Introduction 3

Online Learning and In-Person Learning Outcomes 4

Adult Online Learning Strategies 6

Evidence-Informed Considerations when Selecting between Online and In-Person Learning Formats 7

Summary 8

Additional Assistance 8

Suggested Citation 8

References 9

Executive Summary

This report was developed in response to a request for information that examines and compares the outcomes that result from online versus in-person learning for adult learners. The Technical Assistance team conducted a rapid review of relevant research literature between 2013 and 2023 on the topics of interest.

Over the last decade, online learning has become more popular and prevalent, and there has been a rapid increase in online learning usage over the last 7 years, especially since the COVID-19 pandemic and its related restrictions (Abedini et al., 2021). Therefore, the number of learners and institutions utilizing online learning continues to increase (Paul & Jefferson, 2019). With the transition from in-person to virtual learning, some researchers have shifted their focus to studying the educational outcomes of these two modes of learning. Much of this research has examined learners' satisfaction with their learning experiences, so researchers, now, are interested in measuring impact.

Some recent research studies suggest that, when in-person learning is compared to online learning, students' learning outcomes are similar (Caton, 2020; Fendler et al., 2018; Hoffman et al., 2020; Paul & Jefferson, 2019). On the other hand, there are studies that demonstrate that face-to-face learning reveals better results. For example, Bettinger and associates (2017) found that, when they analyzed the data of 230,000 students at Stanford University, face-to-face learners scholastically outperformed their online counterparts.

This rapid review provides the following:

- Definitions of key terms,
- Comparison of outcomes in online and in-person learning,
- Strategies for implementing adult online learning, and
- Recommendations for selecting between online and in-person learning formats.

Note, this rapid review provides a preliminary examination of the research and is not intended to serve as a comprehensive review of the literature. Rather, the review is intended to help stakeholders make data-driven decisions about next steps.

Introduction

To better understand the differences between online learning and in-person learning, the Technical Assistance (TA) team at the Clearinghouse for Military Family Readiness at Penn State (Clearinghouse) conducted a brief, rapid literature review. Research that examines this topic was identified by searching peer-reviewed journal articles and grey literature, and an emphasis was placed on research published between 2013 and 2023. Search queries included various combinations of the following terms: online, in-person, learning, impact, perception, classes, courses, adult learners, and college students.

Definition of Terms

Literature that examines the comparison of in-person learning and online learning is often divided into three components: in-person, online, and hybrid. In-person learning, or traditional learning, is education that takes place in a physical setting where learners and instructors are typically present at the same time. Online learning is education that is composed of instruction delivered via the internet and is primarily used to facilitate distance learning (Caton et al., 2020). Hybrid learning involves a combination of in-person and online learning. This means that some components of the course happen online and, physically, out of the classroom, and other parts of the class are delivered via traditional means. For the purposes of this report, online learning encompasses the terms hybrid, distance, e-learning, and virtual learning.

Online learning is made up of two types of content delivery: synchronous and asynchronous. This review will briefly mention the two types of online learning to help readers understand them for context. Synchronous online learning is learning that is delivered in real time, such as video conferencing (Caton et al., 2020), whereas asynchronous learning is predeveloped, such as lecture recordings that can be viewed anytime. Synchronous learning is a better mode of learning when coursework is better served with conversation or immediate feedback (Fabriz et al., 2021). Asynchronous learning is suited for learners who are self-paced or who may need schedule flexibility (Fabriz et al., 2021). For the purposes of this report, “students” or “learners” include adults ages 18 and older (i.e., college and older students).

The following section of this report examines research literature that compares learning outcomes in online and in-person formats.

Online Learning and In-Person Learning Outcomes

Online learning emerged in the 1980s; however, the online learning environment that is currently available is vastly different as technology has become increasingly more advanced and complex. Online learning offers instruction via video, can be interactive, and may provide adult learners flexibility regarding the time and location of their learning.

What is currently known is that preliminary research suggests online students may have similar education outcomes when compared to students in an in-person learning environment (Paul & Jefferson, 2019). Increasingly, students are choosing online modes of education to take advantage of the flexibilities and conveniences online learning can offer (Paul & Jefferson, 2019). Some of these advantages include lack of commute, flexibility of timing, and access to learning from any location with a computer or mobile device and an internet connection (Paul & Jefferson, 2019).

Paul and Jefferson’s (2019) study showed that there were no statistically significant differences in the performance of online learners when compared to their in-person counterparts; however, the flexibility and success of students online may have tradeoffs with other well-being factors. Students who participate in online learning may be missing some experiences that in-person learners receive and find valuable. Jaggars (2014)

performed a qualitative investigation into students' feelings about online learning and found that different themes emerged in the study. Students reported that they felt their engagement with their instructors was decreased in an online learning environment (Jaggars, 2014). These feelings of decreased student-teacher interaction led respondents to assume they did not learn the material as well as in-person students would have learned it (Jaggars, 2014). Jaggars (2014) found that students choose online learning for primarily two reasons: 1) flexibility/convenience and 2) control over the use of their time. Students also reported that they preferred to take online classes only when they were confident the course work had a lower level of difficulty (Jaggars, 2014). The lack of interaction with instructors may be the reason learners were reluctant to commit to taking more complex courses online.

In contrast, online learning may provide certain types of students their ideal learning environment. Learners who have been shown to thrive in an online learning setting often have specific traits that help them to be successful in this situation, such as high levels of organization, motivation, and diligence. In the Kauffman (2015) study, the author found that students who demonstrated success in online learning possessed higher levels of self-regulation and autonomy. In addition, this study indicated that students who had higher levels of emotional intelligence could handle the online environment better as these students may face technical issues and/or material that is presented in an unfamiliar format (Kauffman, 2015). Kaufman (2015) also found that one's preference for online versus in-person learning often had little impact on the success of the individual.

In another study, Brockman and colleagues (2020) sought to understand students' perceptions regarding in-person biology wet labs and their online counterparts' thoughts regarding online labs. Both groups received the same lecture material. However, the online group reported that they felt they encountered completely new material in their lab at a much larger rate than the in-person group (Brockman et al., 2020). Interestingly, the online group reported finding course content easier to access and more convenient than their counterparts (Brockman et al., 2020). These findings indicate that online learners may not be connecting the lecture material to the wet lab as well as in-person learners were.

Other studies have found that online learners demonstrate a lower level of performance and knowledge gain than their peers who attend traditional learning environments (Bettinger et al., 2017). In an analysis of over 230,000 students who attended Stanford University, online learners showed less academic success than their in-person peers (Bettinger et al., 2017). Bettinger and colleagues (2017) note that they did not investigate if this outcome was perceived to be a reasonable tradeoff for the online students. Perhaps the benefits of online learning (e.g., decreased travel costs, increased time for other activities/friends/family) outweighed the cost (i.e., reduced learning success) in the learner's perspective (Bettinger et al., 2017). In addition, Bettinger and colleagues (2017) found that learners from areas that lack access to brick-and-mortar learning feel that being able to access educational courses they may not have been able to access otherwise (i.e., online courses) is worth the possibility of not getting the course's full utility.

Adult Online Learning Strategies

Literature on face-to-face adult education is abundant. However, the available research on adult online learning is limited and does little to address the relationship between adults and online learning (Abedini et al., 2021). Some educators may be tempted to take what is known about in-person learning and apply those same strategies to the online learning space. However, different engagement techniques are needed to facilitate a digital synchronous curriculum than the methods that one would use for in-person training (Gross et al., 2023). For example, an in-person facilitator will be able to use visual cues to gauge audience engagement and adjust his or her implementation practices accordingly. These same visual cues are often not available to an online facilitator. Gillett-Swan (2017) warns that, due to differences between the modes of delivery, the same in-person teaching theories and methods may not be as effective and, possibly, may be ineffective in an online format.

Without much empirical guidance regarding best practices, a facilitator is limited and should, probably, carefully think through how a learning design that has not been studied in the online learning space may need to be adapted to be successfully applied. The following items list evidence-informed strategies that may increase the likelihood of creating positive outcomes for learners when using online learning content:

- **Minimize the impact of isolation**. Online learning, by nature, is an isolating experience. Facilitators can alleviate feelings of being alone by providing learners with opportunities to interact and collaborate with other learners (Gillett-Swan, 2017). Some examples of this include moderated chat discussions or small group discussions and assignments that could occur in breakout rooms during an online class.
- **Use small and specific-learning modules**. Adult learners in vocational settings have been shown to be more receptive and engaged with content that is presented in short modules and that offers specific knowledge or skills (Im, 2021).
- **Be available to interact with learners.** Feedback and addressing questions are an important part of adult learning (Arghode et al., 2017; Hewett et al., 2018; Kauffman, 2015; Lister, 2014). Instructors could be available to guide learners through group discussions in real time and should include written or verbal feedback on assessments or assignments.
- **Use multimedia formats for lessons.** Multimedia may include videos, infographics, or images that could be presented and visible to learners to help them understand the information that is being taught. Multimedia has been shown to increase engagement and interaction in online learners (Kuo, 2016).
- **Offer an orientation for learners.** For longer trainings or courses, provide an orientation for the participants (Lister, 2014). Orientations will give facilitators a chance to clearly communicate to learners what the objectives and expectations are for the training or course.
- **Incorporate opportunities for self-directed learning**. Adult learners come with adult stressors (e.g., family, impact of aging, financial stressors) that may not impact younger learners (Abedini et al., 2021), so providing and allowing learners

to access curriculums and other materials at any time are important strategies to consider. The flexibility of online learning can allow adult students to learn at a place and time that are convenient to their lives (Arghode et al., 2017).

Evidence-Informed Considerations when Selecting between Online and In-Person Learning Formats

Administrators and educators consider many elements when choosing a mode of education. For example, they may examine their learning environment, their students' interests and abilities, the methods for interaction, and the teacher's style. Research that compares the effectiveness of online and in-person learning is limited and unclear. Some research suggests that both online and in-person education may result in similar learning outcomes. Some research has suggested that, when comparing in-person and online learning, there may be little difference in the positive or negative impacts on students (Caton, 2020; Fendler et al., 2018; Hoffman et al., 2020; Paul & Jefferson, 2019). However, other research that examines adults using online learning for college and graduate work is scarce (Abedini, et al., 2021), so further study in this realm is needed to fully understand adult-learning outcomes when they use online learning versus when in-person formats are used.

Choosing between an online learning format and an in-person format is equally important. Here are some considerations one may wish to think about as he or she chooses a specific learning format.

- **Consider the teaching style that is best for the facilitator when choosing an online or in-person format**. Many teachers use a presentation style of teaching when using an online format, which can include interactive lecture, directed discussion, problem-based learning, and project-based learning.
- **Consider the interpersonal characteristics of the learner when determining what learning format would be most appropriate.** Learners with higher levels of self-regulation (e.g., study skills, motivation, rehearsing and memorizing information) tend to have more success in online learning environments when compared to individuals with lower levels of self-regulation (Kaufman, 2015).
- **Building relationships with learners may have an important impact on the learners' outcomes.** Learners, in online environments, tend to feel less connected to their instructors and classmates than learners in an in-person settings do (Nubani & Lee, 2022). Therefore, online learning environments need to intentionally foster social connectedness between learners and their instructor and other classmates (Canton & Lee, 2022). The use of break-out rooms, chat, screen shares, and polling may be helpful in creating inclusion and rapport.
- **Consider your learners' familiarity with the technology used in the learning mode when deciding if online learning is a good choice.** Research has shown that a learners' ability to understand and use technology most likely will impact their success with online learning (Nubani & Lee, 2022). For instance, if you are

using new to the market software that your learners may not have experience with, offer trainings or link to outside trainings to increase familiarity.

- **Be prepared to spend more time discussing the details of certain topics when conducting online learning.** There is evidence to suggest that learners may have deeper discussions on topics when in an online environment. Online instructors should anticipate more nuanced and/or complex discussions and questions (Caton et al., 2021).

Summary

Online learning has been a growing field for many years. Research on this topic indicates that students who participate in an online learning environment may have similar outcomes as their counterparts who use in-person learning. The two styles of delivery also have their individual pros and cons for learners and instructors to consider. Administrators and instructors may want to reflect on the type of content and the audience when choosing between and developing curriculum for the two styles. Further study is recommended to understand how adult learners respond to online learning formats when compared to in-person modes of learning.

Although studies in adult online learning is currently sparse, research efforts are growing rapidly. In their literature review, Abedini and colleagues (2021) note that since 2015 there has been a dramatic increase in the number of studies published on the topic. Some of these were not included in this study as they were based on learner satisfaction, which was outside of the scope of this report. Because the research in adult online learning is expanding at a rapid pace, this review should be updated in the future to capture new findings and best practices.

Additional Assistance

The TA specialists at the Clearinghouse provide support to professionals as they examine and make informed decisions about which programs fit specific situations and are worth the investment. Whether connecting one with the resources and tools to conduct a needs assessment in a specific community, suggesting the best evidence-based program or practice for a certain situation, or developing an evaluation plan, the TA team of experts is a call or email away.

Please visit the Clearinghouse's website at www.militaryfamilies.psu.edu or call 1-877-382-9185 to speak with a TA specialist.

Suggested Citation

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