Systematic Literature Review on Webcams

Xavier Garcia, Julian Raton, Evan Safi, and Jaesung Hur
Department: Educational Psychology and Learning Systems

Introduction

Online classes allow students to learn from any location, reducing the need to commute to a physical location. One part of online learning that is gaining extra attention is the use of webcams among students and instructors in virtual classrooms. Several studies have indicated that many instructors tend to encourage their students to use their webcams to promote a close and collaborative environment. However, some students and even instructors have expressed concerns about webcam usage, including worries about showing their private spaces, difficulty interpreting non-verbal gestures due to lags, and the anxiety of being seen, which led to fatigue and physical discomfort for those students and instructors.

The goal of this study is to investigate the perceptions of students and instructors toward webcams and the strategies that are used to teach in those environments.

We aim to answer the following questions:

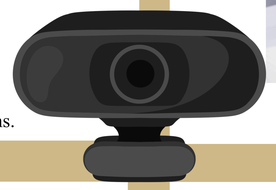
- What are the publication trends (e.g., years of publication, research methods, study contexts, and participants' demographic information) of research on webcam-integrated online learning?
- What pedagogical practices (e.g., webcam-related class policy and technology features) have been used in webcam-integrated online learning?
- What benefits and challenges have been discussed in webcam-integrated online learning?

By addressing these questions, we can develop ways to improve webcam environments and the process of online learning.

Methods

This study was a systematic literature review.

- We used three databases, including ERIC (ProQuest), Education Source, and APA PsycInfo/APA PsycNet, to find articles relevant to webcam usage in an educational environment.
- To filter out the articles, we used terms that were related to video cam online learning platforms, including, but not limited to, “Webcam, Camera, Zoom, Adobe Connect, Microsoft Teams, Distance, and Learning. We also used Boolean operators, such as (webcam OR camera OR "web conferencing" OR "video conferencing" OR Zoom OR "Microsoft Teams" OR "Google Meet" OR "Adobe Connect") AND AB (online OR distant OR remote OR synchronous OR virtual)
- Every article that we selected was peer-reviewed and empirical. We then screened the articles using an inclusion criterion (studies must involve research related to student and instructor webcam usage in an educational context). And based on the abstracts of those articles, we included all the relevant articles. We then fully read those articles to ensure that they answered our research questions, and if they had relevant information, we would summarize the articles and jot down the key findings in a codebook.
- While our study is still in progress, we plan on discussing the themes across each article, as well as any possible limitations associated with each article, and analyzing the way each article answers our research questions based on our notes in the codebook.
- The codebook consisted of the following sections
  - The title, year, and author of each article.
  - Whether the article was empirical.
  - The theory(if any) used in each article.
  - The research questions and designs of each article.
  - The perceived benefits and challenges associated with webcam usage.
  - Instructional strategies, participants, class rules, and webcam features.
  - Additional findings and notes describing other factors that affect student and instructor views toward webcams.



Preliminary Findings

Benefits of Webcam Usage

- One of the key benefits students and instructors found with the use of webcams, according to many studies, is the ability to see each other’s faces and facial expressions.
- Students also built long-term relationships over the camera. Lukon and colleagues (2024) reported results from students who interacted with elderly individuals in an online environment and ended age-related stereotypes, becoming lifelong friends with those individuals (Lukon et al., 2024).
- Instructors felt more connected to their students over camera, and they believed cameras increased social presence and allowed them to determine if students were engaged or needed help on a topic (Brown & Crocetto, 2025).
- Video conferencing platforms also allowed instructors to share their screens and split students into breakout rooms for tightly knit discussions (Martin et al., 2012)

Perceived Drawbacks of Webcam Usage

- Many students expressed anxiety about webcam usage. Students were nervous about showcasing their private environments. Researcher Massner found that students who spent a lot of time on webcam platforms experienced mental fatigue (Massner, 2022).
- The fact that students were hesitant about using their cameras was concerning to instructors, as they often felt like they were speaking to themselves while lecturing.

Discussions

- Based on the preliminary findings, we have seen that videoconferencing environments have the potential to conduct classes effectively. These platforms are very convenient and eliminate the need for in-person traveling.
- Although some studies reported increased interactions among students and instructors when they had their webcams on, there were many negative reports of using webcams. Students were primarily the group who were skeptical about webcams due to privacy concerns, distractions, and feelings of embarrassment and anxiety.
- Our project is still ongoing, and we anticipate coding more articles that describe and explain the feelings instructors and students have towards webcams.
- Taking the current findings into account, it can be inferred that in order to improve online learning, there needs to be a way to make webcams less overwhelming for students and instructors, with the goal of making students more willing to use webcams and engage in class discussions.

+

Key References

Lokon, E., Mehrotra, V., Murali, S., & Oakman, R. (2025). Using art and technology to reduce loneliness and bridge the age divide: a qualitative study. *Journal of Intergenerational Relationships, 23*(2), 125-141.

Massner, C. K. (2022). Who's Zooming Who: A Case Study of Videoconferencing's Effects on Faculty and Students. *International Journal of Technology in Education and Science, 6*(4), 602-619.

Van Brown, B., & Crocetto, J. (2025). COVID-19 and the online gaze: transferring trauma informed practices online. *Discover Education, 4*(1), 190.

Martin, F., Parker, M. A., & Deale, D. F. (2012). Examining interactivity in synchronous virtual classrooms. *International Review of Research in Open and Distributed Learning, 13*(3), 227-261.

Acknowledgements

We’d like to give a special thank you to our research mentor Jaesung Hur for giving us the opportunity to take part in this important project.