

## Videoconferencing as a Teaching Tool

Student's Name

Institution of Learning

### **Historical Background**

In 1994, Congress adopted the Improving America's Schools Act and a subsequent appropriation that envisaged \$45 million to improve the application of educational technology in American schools (Johnston & Barker, 2002, p.5). As the result of the following five years, this sum had been increased to \$765 million; therefore, in the light of increasing funding, Congress requested more convenient evidence that would justify such significant investments. Since then, researchers dedicated their efforts to find out and bring to life the numerous benefits of video conferencing as a technology having all prospects to become a fully-recognized teaching tool. As a result of these strivings, video teaching has become acknowledged at the highest levels. For instance, in North Carolina's Technology Competencies for Educators, which is an extremely specific set of standards, demonstrates that the telecommunications skills of teachers, including the use of effective distance learning, desktop video conferencing, and teleteaching technologies, are crucial for learning (Bielefeldt, 2002, p.123).

To speak specifically about the benefits of videoconferencing as a teaching tool, which were highlighted at the root of the scientific concerns focused on this subject matter, it is worth highlighting that they can be categorized according to their general and specific impacts. To begin with the general advantages, in 1998, Hearnshaw (p.52) conducted research in which he highlighted that videoconferencing is an effective tool for supporting distance learning by linking up students and tutors as well as for offering means of reassurance and social contact for students. Moreover, it can be used as a great benefit for schools wanting to increase the degree to which their students utilize technologies and the communication skills of their students, as well as to give their students worthwhile opportunities to present their own work and ideas to an

audience outside their immediate peers (Gage et al., 2002). Therefore, the fact that video teaching envisages various positive implications has gained a significant scholarly justification.

Specifically, these effects also were reviewed from the perspective of their direct relation to both students and teachers. For instance, video conferencing allows collaborating with schools where pupils belong to different cultures, which, in turn, leads to the establishment of the multicultural relationships and mutual understanding (Cifuentes & Murphy, 2000, p.69). Simultaneously, it appears as an effective tool that allows interacting with native speakers and as a result, improves a student's knowledge of languages (Kinging, 1998, p.502). Moreover, considering the direct input of video teaching, research has revealed that it contributes as an alternative outlet for expression by those normally hampered by poor literacy skills (Eales et al., 1999). Finally, it is worth mentioning the research dedicated to investigating videoconferencing from the perspective of students with special education needs. Among numerous benefits, it has been emphasized that it helps students overcome the feeling of isolation as well as develop essential social skills by interacting with peers who have similar needs (Thorpe, 1998, p. 395).

Along with the benefits for students, the research dedicated its efforts to reveal the impact of videoconferencing on teachers, who can use video conferencing to motivate their students, providing them with the positive role models. For instance, the research conducted by Cifuentes and Murphy demonstrated that academic aspirations are raised amongst those students communicating with more assured students (Cifuentes & Murphy, 2000, p.69). In addition, the above-mentioned research highlighted that videoconferencing allows increasing the audience of the course as well. Also, the other important point emphasized by the research is that video conferencing is a useful tool on the road to achieving a better relationship between students and

teachers, as students feel more comfortable when communicating by distance, which, in turn, results in more frank interactions (Sharpe et al., 2000, p.61).

Therefore, it is clear that in light of active governmental funding, the topic of the teaching benefits of video conferencing did not lack the attention of scholars, simultaneously glossing over the fact that it also can have negative impacts or some pitfalls. However, in 1996, Moore and Kearsley mentioned that the lack of mobility, face-to-face contact, and sound activation delays contribute to the appearance of a "transactional distance" that embodies both physical and psychological effects that must be overcome by the instructor and students (Moore & Kearsley, 1996, p.200). As a follow up, in 1999, Thomas Atkinson also raised the issue of possible limitations of video conferencing as a teaching tool, presenting in-depth research on this subject. Another study revealing the possible challenges of videoconferencing is the article presented by Gillies in 2008, which states that perceived issues of the videoconference in educational settings can be summarized as relating primarily to issues of flexibility and pedagogy. The category "flexibility" refers to the fundamental problem of videoconferencing that is based on the inflexible reliance on technology, while the pedagogical challenges may stem from the limited way in which the videoconferencing can be perceived (Gillies, 2008, p.109).

All in all, the above-mentioned works serve as the basis for the position arguing that interactive videoconferencing creates the environment that requires both students and teachers to adapt in a specific manner in order to avoid negative and unpredictable outcomes. Naturally, the topic of the adaptability to video conferencing technologies as a major variable defining its efficiency as the teaching tool has become the center of current research in this field.

### **Theory Relevant to Research Questions/Hypotheses**

The research relies on two learning theories: Behaviorism and the Social Cultural Learning Theory. To begin with Behaviorism, it is the theory that focuses its attention on the field of human behavior that is defined by the stimulus-response associations established in the learner's mind (Skinner, 1957). In such a context, behaviorists consider that prior conditioning and psychological drives existing at the moment of an action are those factors that determine the behavior of the individual (Parkay & Hass, 2000). Moreover, behaviorists consider that only the behaviors that can be observed are worth studying; therefore, the actions but not inner or mental processes are the relevant objects of study (Faryadi, 2007, p.2). This theory finds its multi-dimensional application in the field of videoconferencing as a teaching tool. For instance, using the example provided by Paderanga (2013, p.114), during videoconferencing, the student is provided with the opportunity to speak in front of the camera if he or she answers a situational question correctly. In this case, the question is a stimulus, the student's answer is the response, and the opportunity to speak in front of camera is the reinforcer. Analogically, while assessing the benefits and disadvantages of videoconferencing, the behaviorist perspective requires taking into account only those aspects that can be proven with available scientific methods.

Simultaneously, the behaviorist perspective also proposes the specific method of eliciting better classroom performance, which is called Behavior Modification, which refers to "learning with a particular intent, namely change" (Ullmann & Krasner, 1965; p. 1). This approach envisages six essential components, which are the specification of the desired outcome, development of a positive environment, identification and use of appropriate reinforcers, reinforcement of behavior patterns, reduction in the frequency of rewards, and evaluation and assessment of the effectiveness of the approach (Parkay & Hass, 2000). Using this method while

implementing videoconferencing seems especially justified while assessing its pros and cons as well as the cause-and-effect relationship.

The second theoretical framework that informs the research is the Social Cultural Learning Theory, which focuses its attention on the links between the social world and cognitive development from the perspective defined by Lev Vygotsky (1998). The theory considers not only the impacts of the interpersonal relationship between teacher and students, but also a broader socio-cultural influence on learning and the learning environment (Lantoff, 2008). In this context, the concept of culture has a significantly broad meaning, covering socially-accepted behaviors, beliefs, and generally, interactions as the products of human development (Shabani, 2016, p.5). Simultaneously, Vygotsky (as cited in Veer, 1996) considers that culture itself influences human mental functioning and behavior; therefore, humans not only create their culture, but also are impacted by it, being the products of culture as well.

One of the most significant insights found out as the result of Vygotsky's work states that social interaction is the basis of learning and development, and learning itself appears as a process of internalization in which skills and knowledge are transformed from the social into the cognitive plane (Walqui, 2006, p.10). Putting this idea into the context of videoconferencing as a teaching tool, it is worth mentioning that it highlights the benefits of student-centered teaching, whereby the student can efficiently progress within their potential towards a learning outcome (as cited in Alpay, n.d.). What is the role of the teacher in this case is that he or she should appear as a role model, demonstrating the behavior needed to be employed by the students through the internationalization of the information and using it to guide their own behavior. Performing this role could be done utilizing the model of professional development consisting of

seven types, which are training, observation/assessment, mentoring, inquiry/action, individually-guided activities, and involvement in a development process and study groups (Guskey, 2000).

As a result, the above-mentioned theories present two different perspectives on learning and therefore, enrich the research with relevant ideas regarding the effects of videoconferencing as a teaching tool. From one side, the behaviorist perspective provides a vision to make it clear how to use videoconferencing to achieve its benefits. Simultaneously, from the other side, the Social Cultural Learning Theory provides insights into how teachers should behave in order to avoid the unpredictable outcomes mentioned by Moore, Kearsley, Atkinson, and other authors that dedicated their works to reveal the negative effects and possible pitfalls of videoconferencing.

### **Current Empirical Literature Relevant to Research Questions/Hypotheses**

The analysis of the current empirical literature has revealed three major anchors underlying this field of study as well as highlighted the existing pitfalls and gaps. The first one refers to the continuing findings emphasizing the positive impact of videoconferencing on the outcome of teaching and learning. For instance, the study presented in 2014 by Lydie Paderanga strives to investigate the educational workability of using classroom video conferencing as an instructional approach in teaching peace education, as well as compare the effect of video conferencing and the traditional approach of teaching peace education (p.113). The results of the study demonstrate that video conferencing can increase the efficiency and effectiveness of teaching peace education as well as provide students with the opportunity to relate with their peers from distant schools, and develop social and communication skills resulting in a higher self-esteem—which, in turn, would have been not possible in a regular classroom (Paderanga,

2014, p. 119). Simultaneously, this research indicates the influence of such technologies as video conferencing on the roles of teachers. In this context, it is shown that their role shifted from information dispenser to curriculum planner, facilitator, guide, mentor, knowledge navigator, consultant, and even co-learner with the students (Paderanga, 2014, p. 119). These results highlight that the teachers should reconsider their role to train accordingly and adapt new skills to their pedagogy.

Also, Alice Tom in her work “Videoconferencing as a disruptive innovation: An empirical case study of English language learning in China” provides the analysis of empirical data to assess the potentially disruptive innovation of using videoconferencing platforms for classroom teaching as well as evaluates the pedagogical innovations selected to teach a culturally- and age-appropriate English language learning course for young learners (2015, p.2). The findings of the study demonstrated prevalingly successful results. Specifically, those learners who were exposed to an English language learning class using a videoconferencing platform showed statistically significant learning gains compared to students who received traditional instruction (Tom, 2015, p.2).

Concurrently, some studies define the variables related to students’ motivation as important factors influencing the successful outcomes of videoconferencing. For instance, the study presented by Malinovski and colleagues in 2015 investigated adult students’ subjective perceptions while utilizing distance education systems based on a videoconferencing platform Quality of Experience (p.1). The analysis showed that adult students’ QoE is directly impacted by the appropriateness of teacher-student interaction and ease of participation as well as was predicted by students’ motivation to attend similar training (Malinovski, 2015, p.1). Therefore,



this study considers the students' cognitive readiness to experience videoconferencing as important factors influencing the outcome of teaching.

The review of the current literature revealed that often teachers demonstrate an “unwelcome” attitude towards videoconferencing. In a study presented in 2016, Drexhage and colleagues strove to investigate how trainee teachers evaluate working with videoconferencing technologies and therefore, to figure out to what extent video conferences present a real opportunity to link theory and practice in teacher training (p.83). As a result of the study conducted, the trainee teachers recognized the advantages of video conferencing, highlighting the exchange between all parties, the lesson observations in real surroundings, and the opportunity to implement one's own teaching ideas (Drexhage et al., 2016, p.83). Nevertheless, the study also revealed the need for enhancements, such as those related to technical aspects. The experiment also shows that trainee teachers often have greater regard for authentic classroom activities (Drexhage et al., 2016, p.84). Also, in a study presented by Connell and colleagues in 2013, the authors provide the analysis of the reflections of the teacher-participants and facilitators, which revealed that teachers prefer face-to-face meetings (p.267). In addition, the study demonstrated that teachers perceive videoconferencing as an effective tool when distance and time are practical barriers to face-to-face meetings (Connell et al., 2012, p.267).

While analyzing the current empirical literature, it is worth discussing the existing contradictions that need to be addressed in further research. The study performed by Khanfar and colleagues was aimed at revealing and exploring the factors that impact student performance in a pharmacy management courses delivered by interactive video conferencing (2008, p.1). On the basis of obtained findings, the authors point out that the presence of an instructor in the classroom has a mixed effect on student performance; therefore, videoconferencing technologies

should be utilized. Also, taking into account that there were three different instructors teaching the course, it is assumed that the teaching style could be the reason for the mixed effect for the teacher's presence. As a result, the article concludes that administrators should assign the teachers with teaching styles that match such an instructional environment created by videoconferencing teaching technologies (Khanfar et al., 2008, p.10).

On the other side, in 2008, Gillies conducted the research aimed at improving the quality of video teaching through the investigation of the students' perspectives on the importance of teaching approaches and active student engagement as well as how these aspects can be better addressed within the videoconference format. As a result of Gillies' empirical study, it has been confirmed the majority of the challenges discussed in the literature, such as those relating to benefits of access, immediacy, social presence, and social bonding; technological limitations; the risks of student disengagement; the need for staff training; and reduced flexibility (Gillies, 2008, p.114). Simultaneously, the authors propose new perspectives on the topic, which refers to four main aspects: interaction, tutor contact, physical space, and teacher education (Gillies, 2008, p.114). For instance, in terms of physical environment, students felt that it needs to be conducive to learning and studying, while in the context of tutor contact, students seemed to place a higher value on tutor contact during the videoconference, than on issues of pedagogy (Gillies, 2008, p.114). When combining these results with those obtained by Khanfar and colleagues, it is clear that the assessments of the importance of pedagogy and teaching style are diametrically opposed, which appears as a significant issue existing in the current literature.

### **The Limitations of the Current Empirical Literature**

The review of the current empirical literature has highlighted the issues needed to be addressed in further research. For instance, considering the weaknesses of the Khanfar's and colleagues' article, it is worth highlighting the relatively small size of the sample, which can influence the overall objectivity. The same judgment can refer to the work of Alice Tom. Therefore, the future research should include more courses and increase the sample size.

Also, some of the findings can be argued because of the incomplete research methodology. For instance, Drexhage's and colleagues' study does not reveal the background of the trainee teachers in relation to their skills and awareness of technologies; therefore, the finding demonstrating trainee teachers' greater regard for authentic classroom activities may be somehow biased. The same judgment also finds its place when analyzing the study of Connell and colleagues.

Overall, the further research should focus its attention on the existing contradictions that need to be addressed, such as those represented in Khanfar's and colleagues and Gillies' articles. The opposing views on the same subject significantly undermine the possibility to reach a scholarly consensus on the subject-matter; therefore, this implication should be of utmost importance while designing the future work.

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