

Tele-proximity: Tele-community of Inquiry Model. Facial Cues for Social, Cognitive, and Teacher Presence in Distance Education

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Article abstract

Distance education is expanding in all continents, and the use of video has dominated internet. Synchronous Video Communication (SVC) has not been an option thoroughly investigated and practitioners, who use and design synchronous learning scenarios, are in urgent need of guidance. Distant learners face many barriers, and as a result, they drop out more frequently than on-campus students. Educators seem to be equally affected by the “transactional distance” and the new digital literacies needed for facilitating online learning. This study explores the educators’ perspective on how SVC could offer alternative educational forms and possibilities for distance learning. Findings had indicated that the use of visual communication and human to human contact (prosopogonosia: seeing faces) could have a strong impact on learning and teaching, therefore, a theory called Tele-proximity was formulated. Tele-proximity is defined as online embodiment that explains how instructors and students are connected in synchronous networked environment via tele-operations. SVC creates a sense of place or a stage where online identities perform and highlights recent research on audio-visual signals in communication and team work (Pentland, 2012, 2008). The theory can be seen as an extension of the Community of Inquiry Model (Garrison, Anderson & Archer, 2000) and a theoretical framework according to which learning objectives could be designed. Transactional distance could be minimized and may be implemented to facilitate more synchronous, visual, and humane options in distance education.

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Tele-proximity: Tele-community of Inquiry Model. Facial Cues for Social, Cognitive, and Teacher Presence in Distance Education

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Abstract

Distance education is expanding in all continents, and the use of video has dominated internet. Synchronous Video Communication (SVC) has not been an option thoroughly investigated and practitioners, who use and design synchronous learning scenarios, are in urgent need of guidance. Distant learners face many barriers, and as a result, they drop out more frequently than on-campus students. Educators seem to be equally affected by the “transactional distance” and the new digital literacies needed for facilitating online learning. This study explores the educators’ perspective on how SVC could offer alternative educational forms and possibilities for distance learning. Findings had indicated that the use of visual communication and human to human contact (prosopogonosia: seeing faces) could have a strong impact on learning and teaching, therefore, a theory called Tele-proximity was formulated. Tele-proximity is defined as online embodiment that explains how instructors and students are connected in synchronous networked environment via tele-operations. SVC creates a sense of place or a stage where online identities perform and highlights recent research on audio-visual signals in communication and team work (Pentland, 2012, 2008). The theory can be seen as an extension of the Community of Inquiry Model (Garrison, Anderson & Archer, 2000) and a theoretical framework according to which learning objectives could be designed. Transactional distance could be minimized and may be implemented to facilitate more synchronous, visual, and humane options in distance education.

Keywords: synchronous video communication (SVC), tele-proximity, networked learning, community of inquiry model, honest signals, embodied cognition

Introduction

Video is everywhere. More and more web content in the years to come will be available in a video format. Even presentations and CVs are turned into video. The YouTube statistics (Statistics YouTube, 2015) have monitored a 40% increase since March 2014 in the number of people engaging with video either producing

it or viewing the content. The online magazine *Forbes Insights* puts emphasis on the fact that executives and business people prefer using the non-text format for various goals (Forbes, 2010). Visual thinking strategies, video storytelling, and Vlogs for reflection are on the rise. According to the National Commission on writing (2006, p.15), "Thinking on the screen" is as important as "thinking on paper" in the 21st century. The implementation of video technology as a reflection tool for students and teachers is not a new concept (Sherin & Van Es, 2005). Research reported several benefits on teachers' reflective ability regarding interpersonal relationships and classroom management after the implementation of video in their classroom (Bryan & Recesso, 2006; Calandra, Brantley-Dias, Lee & Fox, 2009). Generally speaking, synchronous video communication is integral part of all mobile devices, e-learning platforms, and social networks sites.

The importance of audio-visual cues in decision making and communication has been the focus of MIT lab for almost a decade. The so-called "Honest signals" (Pentland, 2012) need to be taken into consideration when distance courses are structured and the research work on social dynamics or social physics shed new light into how could educators build great teams online by using video-conference which research considers the next best form of communication after face-to-face (Pentland, 2012).

Distance education is expanding rapidly in many fields globally and more and more people choose "anytime anywhere" courses (Power & Morven- Gould, 2011). In the same train of thought, the MIT final report 2016 claims that online learning is as a catalysts for reforms in higher education. Synchronous Video Communication (SVC) has not been an option thoroughly investigated (Hrastinski, Keller, & Carlsson, 2010) despite the fact that it is widely spread in medicine, businesses, and politics. Hrastinski, Keller, and Carlsson (2010), heightens the need for more research attention to synchronous e-learning because practitioners, who use and design synchronous learning scenarios, are in urgent need of guidance (Hrastinski et al., 2010) and they do not use them as effectively or extensively to facilitate the teaching process (Bower, Kennedy, Dalgano, Lee, Kenney, & de Barba, 2012; Smyth, Andrews, Bordujenko, & Caladine, 2011). In the same line of thought, Tomadaki, Quick, & Scott (2008) indicate that greater integration of videoconferencing with open learning environments and other social media tools needs to be studied to make better sense to learners (Gillies (2008) deems that transferring face-to-face approaches to the videoconferencing suite is inadequate. Furthermore, the literature in the field of video enhanced synchronicity is to a large degree, uncharted and unorganized (Bower et al., 2012).

This paper, taking into account the gaps in the field of synchronous video enhanced communication, formulated a theory called Tele-proximity. The study shed light on the educational experiences of professors who teach online using synchronous video communication and compared it with current research literature.

Methodology

The research took place in the field of networked learning interdisciplinary courses for undergraduates and postgraduates, from a potentially international perspective, since the interviewees came from four

continents and ten countries (the UK, the USA, Australia, Canada, France, Greece, Cyprus, South Korea, South Africa, and Spain). On average, the participants had 8.2-year experience in teaching distant courses and used synchronous teaching approaches for 5.6 years. The experience in terms of years, was the basis upon which the theoretical sampling was chosen, because the least experienced faculty, when using educational technology, perceive the obstacles as greater than the most experience ones (Byrne & McCoy, 2012).

The research ontology is philosophically in the spectrum of relativism and epistemologically speaking, the study is labelled in interpretivist paradigm. The methodology is Informed Grounded Theory (Dunne, 2011; Thornberg, 2012) and data was collected by semi-structured interviews. Community of Inquiry model (Garrison et al., 2000) gave some guidelines as to how to develop themes into interview questions.

Eighteen well experienced instructors had participated. The data was categorized based on the rationale of open, axial, and selective coding. The final stage was to present the core category, teaching approaches, and the contextual factors that influence SVC praxis. At the end, critically reflecting on the memos of the research, the literature form interdisciplinary research such as cognitive psychology and social physics, the criteria of Informed Grounded Theory, and the research outcomes, the researcher built the theory of Tele-proximity.

Literature Review on Community of Inquiry Model

The need to create presence from a distance that is spatial, social, and cognitive is the theory of the Community of Inquiry (CoI). The CoI framework was created to explore, mainly, asynchronous computer-mediated communication (CMC) in higher education (Xin, 2012). It is aligned with social constructivism and based on John Dewey's (1938) theory of Practical Inquiry. It has been 13 years since Randy Garrison, Terry Anderson, and Walter Archer (2000) first introduced the Community of Inquiry (CoI) model and the framework has "been adopted and adapted by hundreds of scholars working throughout the world" (Garrison, Anderson, & Archer, 2010a, p.5), and cited in more than 1300 scholarly papers. The journal *Internet and Higher Education* which released a special issue: *The Community of Inquiry Framework: Ten Years Later* (Swan & Ice, 2010), in the first article written by the three original authors who reflect and reevaluate the development of CoI (Garrison et al., 2010a), is followed by seven additional articles that further criticize different aspects of the theoretical model (Xin, 2012). Research, both conceptual and empirical, made an effort to either expand or specify different aspect of the Community of Inquiry. Findings altered (Garrison, 2007; Garrison & Arbaugh, 2007) perspectives of the model (Arbaugh & Hwang, 2006; Garrison & Cleveland-Innes, 2005; Shea, Fredericksen, Pickett, & Pelz, 2005; Shea, Sau Li, & Pickett, 2006).

The CoI model not only highlights the role of transactional interactions among learners—but also the role between the trainer and the learners— and how that role can create connections in the online stage. Teacher, social, and cognitive presences are key factors in the components regarding distance education in the theoretical framework of Community of Inquiry (Jézégou, 2012). The model describes behaviors and

processes in order to cultivate teaching, social, and cognitive presences that facilitate teaching and learning.

The CoI framework focuses on social learning as a process of community building “with an emphasis on the processes of instructional conversations that are likely to lead to epistemic engagement” (Shea & Bidjerano, 2009, p.545). Epistemic engagement can be defined as dialogue that negotiates meaning and constructs knowledge (Larroeamendy-Jerns & Leinhardt, 2006). To top it all, Jézégou (2010) claimed that it heuristically provokes research on educational technology.

Critique of the CoI Model

The critique of CoI model has identified some gaps that could be creatively filled. The primary weakness of CoI model relates to the hypothesis that presence promotes learning and enhance performances. Rourke and Kanuka’s (2009) review of the empirical research over the last decade deems that this hypothesis has not been verified yet. In response to this argument, Garrison (2011) said that CoI has mistakenly got caught in a higher order philosophical and methodological argument. After all, constructivism epistemology puts emphasis on the process of knowledge construction and supports the multiple views of reality as the nature of knowledge rather than clarifying as objectivism what is right and wrong.

In a review of the CoI literature, Rourke and Kanuka (2009) raise concerns about the lack of focus on deep and meaningful learning, suggesting that many issues examined are peripheral to the CoI framework, such as student satisfaction. They note that most studies report that cognitive presence remains at the lower levels of cognition. In a subsequent response, Akyol, Vaughan, and Garrison (2011) claim that the CoI framework underlines the process of learning and not the outcomes, per se. They explain that the lack of cognitive achievement identified in some studies reflects a weakness in the educational experience, such as a lack of teaching presence, rather than a failure of the CoI framework itself.

In a more recent review of the framework, Jézégou (2010) responds to the critique of Rourke and Kanuk(2009) and she adds that refinement of the indicators used in the three coding schemes is necessary in order to avoid overlap in their use in studies that consider all three presences in parallel. She admits though that Garrison and Anderson (2003) do not make the theoretical model very clear in order to enhance construct validity.

Xin (2012) argues that “CoI underestimates the complex nature of communication which combines instruction, knowledge construction, and social interaction in a single utterance” (para.1). She deems as confusing the relation of cause and effect in the CoI framework and the leadership roles of teaching presence intertwined with the social and cognitive functions. It argues that social presence goes beyond a mere aspect or component of online discussion; it is the backdrop of everything that goes on. “All online utterances are inherently social despite their apparent intention. The relatively unstructured nature of intellectual engagement is contrasted with the four-stage cognitive development assumed by the CoI framework” (Xin, 2012, para. 1).

Another gap that was ignored in the learning process is the role emotions play. A revised version of CoI includes an emotional presence (Miyazoe & Anderson, 2015) and the research of Cleveland-Innes and Campbell (2012) made an effort to address this by adding emotional presence as a separate function in the CoI graph.

Other gaps in the CoI model served as a powerful guide for the SVC study. The popular Community of Inquiry framework (CoI) is used a lot for text-based asynchronous online discussion (Garrison, Anderson, & Archer, 2000; Xin, 2012). This model evolved over the years to include verbal interactions, synchronous and asynchronous tools of communication without the body language being perceived (Jézégou, 2012). In a nutshell, the explanatory function of a CoI approach is based on the educational purpose, processes, and context that create a learning community. As it is defined so far, there is no reference to the synchronous video-mediated context and the educational purposes it could serve. Finally, CoI focus is on problem based pedagogy based on the indicators for cognitive presence, while SVC can be associated with diverse educational objectives and teaching approaches.

This review of the CoI framework was written to identify the aspects needing further development and some of them were investigated in the tele-proximity theory explained below.

Findings

For what educational purposes (learning objectives) do instructors use synchronous teaching approaches?

The research participants have pointed out that SVC could not only be used to negotiate or construct meaning (as emphasized by the CoI model) but it could be more widely used. They can communicate synchronously to bridge transactional distance as a form of immediacy and intimacy: to resolve conflicts, support, and mentor students. SVC may facilitate learning by explaining difficult subjects, participating in problem-based activities, assigning roles as in role-playing, teaching practical skills and procedures, managing synchronous online dialogue, and giving personalized feedback.

Occasionally, respondents orchestrated content revision and personal or group reflection where participants were focusing on how, why, and what they have learnt. Under certain circumstances, they even archive the video sessions for recycling good praxis. These possibilities for using SVC are potentially significant for addressing the problem of overcoming the high student dropout rates in distance learning courses that are indicated in the research literature (Baxter, 2012; Power & Morven- Gould, 2011). Informants explained that they could resolve issues, through online discussions with their students, support, and mentor them in a different way than by e-mails or telephone calls, adding a personal touch to the communication for those who needed it. In the cases where complex subject matter is taught, such as in statistics, students may need to ask more questions to reach a learning outcome. For practical skills, such as medical procedures, video is used for learning and reflecting on the process and asking questions along the way.

Another example is language learning where communication and role playing could give real-life experiences to students talking with native speakers. Finally, it can be articulated that applying synchronously vlogs is an example of a modern view of the Socratic approach that stimulates synchronous reflectivity in order to know better oneself and what or how the student has learnt.

The Theory of Tele-proximity

The core category (Figure 1.1) of the selective coding process (Informed Grounded Theory) is identified by the researcher based on respondents' perception as Tele-proximity, the need for human to human (embodied) interaction through tele-operations to promote learning objectives, improve communication, and bridge transactional distance in online courses. The term was inspired by the Networked Learning (NL) philosophy (Steeple & Jones, 2002) that stresses the importance of human-to-human connection in the online context and the transactional distance theory (TDT). Transactional distance theory (TDT) refers to the closeness of the connections between participants in an online NL environment, and the degree to which this enables them or hampers their ability to construct knowledge and facilitate understanding (Moore, 1980).

The study describes real-time, video enhanced, human-to-human connections in distance education which are perceived by most informants as a new genre of social interaction (Themelis, 2013, 2014). Instructors/interviewees in this study underlined the emotional, social, and cognitive need to minimize transactional distance with the use of SVC and students in Baxter's (2012) research felt the same. Informed by Pentland (2012) research, videoconferencing is the next best thing in communication in the business sector. Knowing visually who the educators talk to and with seems to qualitatively change the content of communication, and as such, the communication reinforces the flow of connections.

The emotional needs of students are also evident in the research of Cleveland-Innes and Campbell (2012): "Emotional presence is the outward expression of emotion, affect, and feeling by individuals and among individuals in a community of inquiry, as they relate to and interact with the learning technology, course content, students, and the instructor" (para. 1). However, in the Tele-proximity model, emotions are integral part of social, cognitive, and teacher presence and are not a separate category. The reason for this is because the framework of interpretation is based on the research of Dr. Pentland at the MIT: Social Dynamics Lab (honest signals and great teams) which put great emphasis of the process of mimicry (mirroring behaviors), voice, and audiovisual cues in every aspect of communication and the decision-making process. In addition, research demonstrates that "emotion is, indeed, relevant to every dimension of language—from phonology to lexicon, grammar and discourse—emotional expression is finely tuned to language-specific structures" (Saw et al., 2008, p.441). Therefore, presences are complex and defined under different light from the research of Cleveland-Innes and Campbell (2012).

Tele-Teacher Presence (TTP) could be defined in the study as expression of an embodied identity (audio-visual presence) that mirrors or imitates thinking process, behaviors, emotions, and aesthetics for the purpose of realizing personally meaningful learning outcomes and a sense of "place" for online students

and educators as well. The original definition of teacher presence focuses on instructional management, building understanding, and direct instruction (Garrison et al., 2000). The new element added to the original definition was the projection of aesthetics, mimicry of thinking, behavior, and emotions that could be transmitted easier in synchronous video-enhanced environments and define educator identity, professional salience, and audio-visual presence “on-stage.”

On the stage of Tele-proximity, *Tele-Cognitive Presence (TCP)* is defined as the extent to which learners and educators are able to make their thinking and feelings visible, construct and confirm meaning, learn skills, and play roles through sustained sensory rich reflection (offline embodiment) and discourse (online embodiment) “on-stage.” The new understanding of cognitive presence includes educators in the definition because they are integral part of the learning process. Emotions, practical skills or online roles, discourse, and reflection are presented on the “stage” of Tele-proximity. This could be explained in terms of embodied cognition theory (Iacoboni, 2009; Lakoff, 2008). McNerney (2011) explain:

Cognitive science calls this entire philosophical worldview into serious question on empirical grounds... [the mind] arises from the nature of our brains, bodies, and bodily experiences. This is not just the innocuous and obvious claim that we need a body to reason; rather, it is the striking claim that the very structure of reason itself comes from the details of our embodiment. Thus, to understand reason we must understand the details of our visual system, our motor system, and the general mechanism of neural binding (McNerney, 2011, para.2).

Lakoff and Johnson (1999, 2003) and Bergen (2012) assert that people may understand language by simulating in their minds what it would be like to experience the things that language describes. Embodiment seems to be consistent with Pentland’s (2008, 2010) work on honest signaling which considers communication as embedded in biology. “If we’re spending time together, and I’m happy and bubbly, you’ll be more happy and bubbly. There are biological functions that transfer the signals. If I’m happy, it almost literally rubs off on you” (Pentland, 2008, para.4).

Similarly, Iacoboni’s (2009) study, *Mirroring People: The Science of Empathy and How We Connect With Others*, claims that there are “smart cells” in brain that allow people to understand others. From imitation to morality, from political affiliations to consumer choices, mirror neurons are relevant to myriad aspects of social cognition. Amazingly, mirror neurons become also active when individuals are completely still, and they are watching those same actions performed by other people. By watching the actions of others, personal experiences are reflected as a mirror to the brain through a process of simulation. These cells help to understand the mental states of other people, all the gestures made when people speak and when they see (and hear) other people gesturing and speaking. Those gestures seem so intrinsically tied to language.

“Cognition is embodied when it is deeply dependent upon features of the physical body of an agent, that is, when aspects of the agent’s body beyond the brain play a significant causal or physically constitutive role in cognitive processing” (Wilson & Foglia, 2011, para.1). George Lakoff (2012, p.773,) explains the central concepts of embodied cognition in terms of the *Neural Theory of Thought and Language* (NTTL). Central to NTTL are the following ideas:

- (a) We think with our brains, that is, thought is physical and is carried out by functional neural circuitry.
- (b) What makes thought meaningful are the ways those neural circuits are connected to the body and characterize embodied experience.
- (c) So-called abstract ideas are embodied in this way as well, as is language.

Experimental results in embodied cognition are seen not only as confirming NTTL but also explained via NTTL, mostly via the neural theory of conceptual metaphor. As Lakoff and Johnson (2003) points out, metaphors are more than mere language and literary devices, they are conceptual in nature and represented physically in the brain. Thus, tele-cognitive presence is a qualitatively different online experience and offline memory.

Tele-Social Presence (TSP) is defined as the ability of participants to create their identity in a sensory rich “stage,” communicate purposefully in a trusting environment and develop inter-personal relationships by ways of projecting their individual experiences, ideas, and feelings. The new elements of social presence in comparison with the Community of Inquiry Model (Garrison et al., 2000), is that social interactions

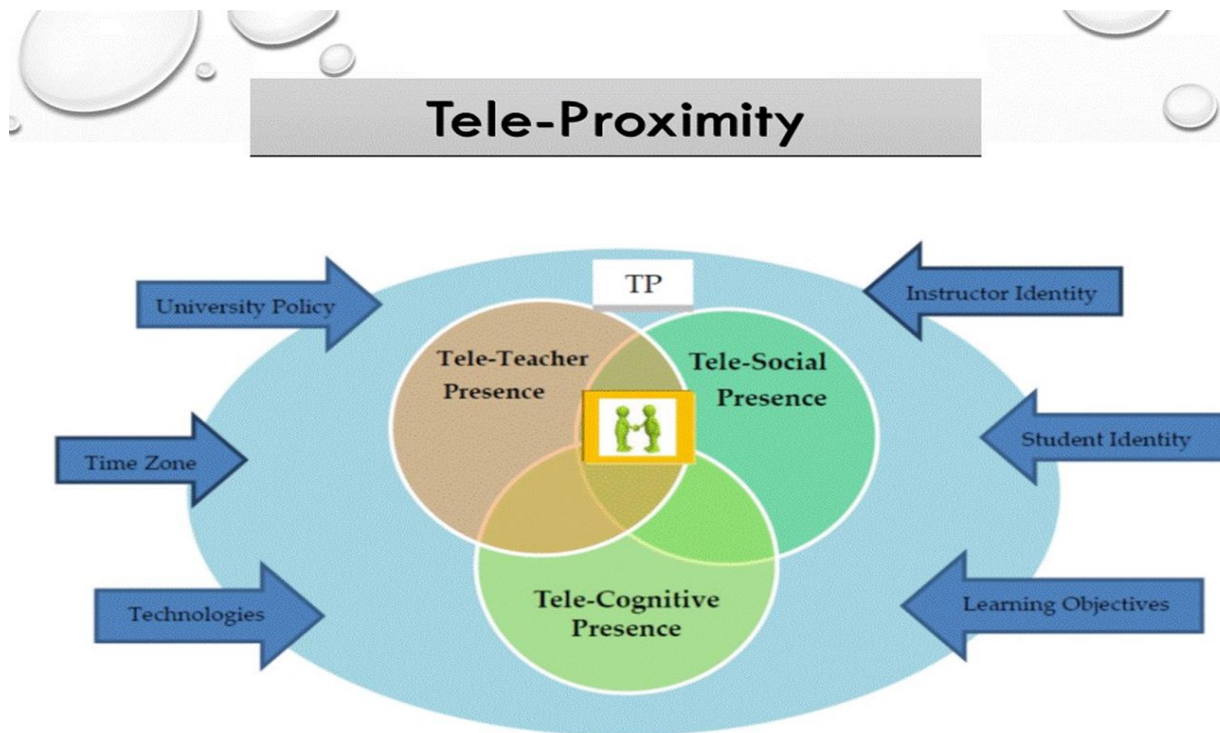


Figure 1.1. Tele-proximity model: The blue section is the stage (SVC context) on which online presences perform while interacting one another in order to build a sense of “place.” The arrows represent different affecting factors that could create the ecosystem of tele-proximity stage. The point where the three dimensions intersect is the educational experience of human-to-human connection that tele-operations provide.

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The embodied perspective maintains that knowledge during online synchronous meetings is generated by complex and dynamic human communication. Learning can be seen as both online embodiment (making real time judgments) and offline embodiment/offline reflections (recalling of embodied memories). As a concept, Tele-proximity explains how synchronous video enhanced presence (online-embodiment) promotes human-to-human connections and immediacy.

Tele-proximity defines the proximity (i.e., nearness/immediacy) is brought to a group of people via telecommunication systems, computer networks, and so on (Kreijns, Kirschner, & Jochems, 2002, p.14). Proximity (Festinger, Schachter, & Back, 1950) enhances the quality of social relationships. The choice of speech during SVC can vary on personal proximity, including tele-proximity of the addressee to the speaker (Ferriday, Hodgson, & Jones, 2006). If there is more trust in the addressee, the speaker is likely to adopt a more friendly/less formal speech genre. Form of SVC communication has

embodied entities. The point where the three dimensions intersect is the educational experience of human to human connection that tele-operations provide.

Synchronous video enhanced dialogue seems to affect the identity of instructors and learners because it could facilitate involvement/discussion in online environment. Educators maintained that the value of SVC is dialogue and audiovisual cues. Bower (2011) draws on the work of other researchers and maintains that discursive interaction adjusts the direction of the online session while providing the opportunity for all life-long learners to engage in knowledge construction. Audio visual communication could give the opportunity for more timely and clear exchange of messages than asynchronous communication. Voice and vision, according to the data collected, give a touch of liveliness to the construction of the online teaching persona. Audiovisual cues influence perception and emotional contagion. Walther's (1992) social information processing theory suggest that educators could build their identity in mediated environments. Sometimes users may not be consciously aware of technological distortions such as the amount of delay may not be noticeable at a "conscious level" (Powers et al., 2011, p.1652). Unconsciously though, technological implications or lack of digital skills could influence negative perception about the teaching identity (Power & Morven- Gould, 2011). Audio visual cues affect emotional contagion and help build good teams if there is

salience of the instructors and the shared academic expectation between learners and teachers (Baxter, 2012).

Using the power of videos, educators and students may also create professional online identities. If educators and instructional designers use synchronous teaching approaches effectively, the transactional gap between students and instructors may be reduced and the dropout rate may decline based on what both students and experienced educators need.

Policy makers, taking findings into consideration, may use strategies to train, support, and provide organizational incentives to persuade core faculty to dedicate more time to learn how to use technology for networked learning.

Suggestions for Further Research

This research took place in an interdisciplinary and international context, involving educators who are considered to be early adopters of SVC. Due to the rise in online enrollment over the past decade (Allen & Seaman, 20

Despite the fact that technology can be very chaotic when it does not work properly, it could offer creative and cost effective alternatives when the people involved dedicate the amount of time and effort needed. The portrait of oneself, content, and social interactions on the screen are powerful images that could have an impact on the social, cognitive, or teacher presence which cannot be ignored. It is of prime importance to use effectively all the tools available for synchronous video communication in order to facilitate life-long learning and enhance

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