ELK ASIA PACIFIC JOURNAL OF LEADERSHIP AND INNOVATION MANAGEMENT
ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

www.elkjournals.com

HOLOPORTATION: AN INNOVATION THAT WILL DISRUPT AND TRANSFORM ORGANIZATION DEVELOPMENT AND MANAGEMENT CONSULTING

ANTON SHUFUTINSKY
DHSc, PhD(c), MSPH
Executive Director and President
(Changineering Global,
Cheltenham, PA, USA
antonshufu@icloud.com

ABSTRACT

In 1965, Gordon Moore predicted that technological power would double annually for at least ten years. This statement became known as Moore's law, and it has expanded long beyond his prediction [1]. *Technology continues to develop and emerge on almost a daily basis, and these emerging technologies affect and disrupt all sectors of life, including corporations, non-profit companies, universities and colleges, government agencies, and numerous other organization types. The purpose of this article is to discuss a disruptive technological innovation in communications that is currently available and has not only the potential but the likelihood to change the way that both organizations and organizational development and management consultants will perform their work in the near future. This innovation, called holoportation, will change the way organizational interactions, including meetings, lectures, training, and other aspects of organizational life are conducted. A qualitative, experiential narrative study was performed using an autoethnographic analysis approach to assess the current state of the uses and potential uses of these communications technologies and the manner in which current and future work practices are being and will be disrupted, positively and negatively, with the advancement and increased availability of this mixed reality technology.*

Keywords: Holoportation, Management Consulting, Organization Development, Technology

1 INTRODUCTION

Like so many other children, I sat in amazement with my mouth agape as I watched the films of the original Star Wars trilogy. Sure, there was a great deal to enjoy as a child, including space craft that shot lasers, alien snow planets with gigantic walkers, lightsaber fights between good and evil sides of the force, and of course the revelation of the hero's and villain's long-lost familial relationship. But one of the most exciting and intriguing science-fiction displays in the film, to me, was the holographic appearance of Emperor Palpatine emerging before Darth Vader with the capability to speak and observe

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

from a far-away location, across the galaxy [2]. Approximately forty years later, I find myself with similar capability. Okay, certainly I cannot transport my image across the galaxy and emerge before a Sith or Jedi [2], but with current innovation, emerging business technologies gives me and many others the ability to technically teleport our images and interact with others, three dimensionally and in real-time, in almost complete telepresence. This is possible through the disruptive technology called holoportation.

Technology has been credited with significantly changing the world, bringing people, communities, and businesses closer together, and furthering democracy throughout the globe [3]. These technological advancements continue to change the business world through the way organizations analyze and transfer information and data, and coordinate and collaborate globally. Business continues to evolve, currently with the advancements that have led to Industry 4.0, the next step in the industrial revolution, in which the capabilities of computer programming and automation technology continue to advance to the point of system integration and complex interconnectedness with artificial intelligence, robotics, and human-systems. Industry 4.0 is coming, and in many ways has arguably already arrived. The manner in which technology affects *Lean Business* changes almost daily, and the changes and capabilities of these emerging technologies are inevitably going to affect the human workforce. One of the most rapidly developing technologies that affects the workforce and the way that business is done across industry is the ability to effectively communicate across multiple organizational locations. These developments and advancements of technology have changed the way many fields of practice and organizations complete their missions, including engineering, health science, education, manufacturing, and practically every type of business. These developments are not absent on organizational development (OD), change management, and management consulting, where practitioners are not only affected, positively or negatively, by the use of the technology in their individual practices, but also in the assessment of and intervention in organizations in a world of constant technology-driven change. Technology, and therefore industry, is expected to continue to advance on a steadily increasing timeline, and the intersection of emerging

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

technology and organizational management is changing the dynamics, purpose, and reach of OD, change, and management consulting (MC) throughout the world [4].

This novel communications technology, holoportation, employs virtual reality and augmented reality (VR/AR) combined to produce a dynamic distance communication method that allows much improved face-to-face (f2f), real-time communication at-a-distance experience. This manuscript explores this emerging technology and the potential positive, negative, and complex effects it is destined to have on organizations and to the practices of OD and MC practitioners.

2 METHODS AND PROCEDUES

2.1 Research Gap

Although we continue to see and experience technological changes regularly, including advancements in geographical positioning, cellular telephone services, on-the-go data availability, data integration, computing speed, and business communications, the bulk of the research that focuses on the effects of communications technologies on people and work has to do with the use of smart phone technologies and how they affect people psychologically, socially, and behaviorally. There is little available literature on the effect of combined virtual and augmented reality devices for two-way communication, termed holoportation, in business-related interactions, or the manner in which these technological advancements affect organizational development (OD) or management consulting (MC).

2.2 Purpose of the Body of Work

The purpose of this study was to assess the current state of knowledge and use regarding two-dimensional (2-D) and three-dimensional (3-D) communications technologies in corporate practice, and to inform MC and OD practitioners of the differences and dynamics between these technologies, their prevalence, and how these technological advancements are affecting and will continue to affect the way in which different communications practices are performed and how they are changing the way businesses work, potentially affecting consulting practice.

2.3 Study Methodology

The methodology of the study was qualitative in nature. The qualitative study was performed from a descriptive-narrative perspective, using autoethnographic analysis of experiential narratives from

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

corporate, government, and consultation settings, as well as a deep-dive thematic literature review.

Over the period of two years, the researcher was ethnographically embedded in three different corporations. Additionally, the researcher was an ethnographic participant as a management and OD consultant, while simultaneously undergoing management-related education in an academic environment and actively participating in four MC or OD professional associations.

The study focused on assessing and understanding communications technologies used in these settings, as well as the current understanding the knowledge and use of holoportation in the holoportation technology. Furthermore, the literature review evaluated the relevance of holoportation technology to common and routine organizational operations and practices, including management, meetings, learning and development, among others. Furthermore, autoethnographically-based qualitative introspection was necessary to understand the way in which this rapidly emerging advanced communication technology can disrupt and affect management and organizational consulting practices, including potential uses, advantages and benefits, and potential disadvantages and drawbacks.

3 RESULTA AND DISCUSSION

3.1 Results

From an autoethnographic narrative perspective, none of the three Fortune 100 corporations examined experientially had any departments currently using or exploring the use of holoportation technology. All three organizations were using 2-D communications technology platforms that provided partial telepresence. Two of the three corporations were using WebEx and GoToMeeting. One of the three organizations was also using Zoom and Skype for conference calls. One corporation was not using third-party videoconferencing technologies as a result of cyber security demands and policies. Instead, an internal video teleconferencing technology was used, requiring a hybrid of virtual f2f and in-person f2f interaction.

The academic setting also did not use holoportation or any of the third-party 2-D platforms, but did use an in-house 2-D video teleconferencing technology for in-class lecture segments, also requiring a combination of virtual and in-person f2f interaction. The academic site also used a

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

BlackBoard videoconference technology that was embedded as a part of the packaged academic suite for faculty-student communications at-a-distance.

All four professional associations utilized 2-D videoconference communications platforms. Two of the three used Zoom as the program of choice for official meetings. Both also used Zoom for professional education webinars in addition to multi-site planning, staff, and strategy meetings. The other two organizations used GoToMeeting for professional education webinar offerings. However, only one of the two used GoToMeeting for intra-organizational communication. The organization did not appear to commonly use other platforms for their communications services. The second of the two organization did not communicate or hold stakeholder or staff meetings using any of the available leading electronic communications platforms, instead opting for telephone calls and teleconferences, with no visual telepresent experience.

Of all of the corporate, academic, and professional associations, none of the organizations had any experience or had performed any exploration on the use of holoportation. Furthermore, upon discussion regarding holoportation technology, none of the human resources, faculty, or management consulting professionals were familiar with the technology before the researcher introduced it to them.

During the literature review, numerous articles were identified that discussed the current state of communications technologies, the use of mixed reality technology for organizational and personal purposes, and holoportation specifically. For a deeper autoethnographic perspective of the type of work that OD and MC consultants perform, the researcher conducted an analysis of the current state and status of holoportation technology in industry, and how holoportation technology will likely affect the manner in which businesses perform their operations and how Organizational and management consultants' work will be changed by these technological advancements. Assessments and autoethnographic narrative perspectives showed a considerable potential effect on routine organizational meetings, working at alternate locations, education and training, professional development and performance management communication, talent acquisition, executive and management coaching, and workplace and organizational conflict

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

analysis and resolution. Further analysis describes ethical trepidations, cyber-security and technological failure concerns, possible cultural disadvantages, and concerns regarding changes and effects on work-life balance. Additionally, a feature and capability comparison of 2-D communications technologies and 3-D holoportation was performed, weighing system capabilities, access, and functions. These results can be reviewed in **(Ref Table 1)**

3.2 DISCUSSION

3.2.1 Advancement of Distance Communications Technologies

Many interactive media technologies have emerged and have already changed the way that business is done, mainly because of communication capabilities that these technological advancements offer to organizational leaders and employees. These technologies have and continue to drastically affect the way in which people and organizations communicate, both socially and from a business perspective. Some of the social benefits, for example, have included video teleconferencing of deployed military members with their families, as well as others travellers separated from loved ones. In corporate or other organizational practice, businesses are able to hold face-to-face (f2f) meetings, with team members that are separated by thousands of miles [3]. This is because high speed internet connections, cloud computing, and the invention of certain types of distance communication platforms, such as Skype, Zoom, GoToMeeting, and WebEx, among others, have made it considerably easier for organizations to be able to do more from a distance [5]. These communications platforms have changed the way that people are able to interact for personal and organizational reasons. However, like so many other technological marvels in current times, communications technologies continue to advance rapidly and are significantly changing communications dynamics and capabilities.

3.2.2 Weaknesses of Current Business Communications Technologies

Companies have been using advancing communications technology to communicate from a distance for years, including the above-mentioned platforms. Although they have been effective for many, most of these video conferencing technologies are not new and have been around for close to a decade. They have

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

become a staple in corporations and government agencies, especially in large organizations that have globally distributed operations [6]. Although these technologies have changed the dynamics of business practices and pushed them towards rapid and convenient global communication, they have some limitations and many already identify this 2-D technology as outdated [6].

One clear limitation to the current technologies used is their lack of dynamism due to their 2-D nature. Two-dimensionality is a significant limitation because it allows those involved in business, or education and training meetings using these distance-based technologies to mask their true emotions, attention, or surroundings. This is because the visual area using these technologies is usually limited by the capabilities of the cameras embedded in the computer hardware, and people cannot see enough of the actions, surroundings, or non-verbal communication or cues. It is not difficult to be critical of these technological flaws and their disadvantages when compared to physical, in-person f2f meetings. As the researcher, I have personally checked E-mails, worked on projects, and focused on other priorities during web meetings, and I have witnessed other people behaving in this manner in most group meetings that use these technologies. Thus, the interaction is not truly dynamic and is less personal than the traditional, physical f2f meetings organizations have been historically accustomed to. Holoportation is the disruptive technology that will address the limitations of these current technologies [6].

3.2.3 Defining Holoportation

In the past couple of decades, the video game industry was disrupted with the invention and release of interactive experiences through systems such as the Nintendo Wii™, Microsoft XBOX Kinect™, and the Sony Playstation®, among others—systems affording gamers the ability to physically interact with the games, controlling the characters through wearable controllers, and even playing synchronously against other users located in different parts of the world [6]. This has been made possible through the development of VR/AR technology.

Virtual reality and augmented reality technologies are being used and tested across varying industries, including the health sciences, behavioral sciences, design & architecture, tourism, and education,

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

among others [6, 7, 8, 9, 10, 11, 12, 13]. The advancement of these VR/AR devices, also called mixed reality [12], has improved the way communications occur. Because mixed reality platforms involve the use of computer hardware, software, capture, head-mounted displays, sensors, and tracking devices for effective collection and dissemination of the aggregated output [12], it is possible for users to insert virtual content into real world content, allowing both to run and be experienced simultaneously and synchronously, while enhancing the user's perception of reality [6, 9]. These are the reasons why this technology is used successfully for inter-group participation, such as the multi-user military battlefield or waterfront security training exercises that I have personally witnessed, allowing live training without the logistical complications and costs associated with traditional in-person exercises, such as travel, equipment transport, and potential injury. These emerging technologies have made this training possible through interactive simulation, at least reducing the periodicity of physical, in-residence requirements.

Among these emerging technologies, one of the most promising applications is the advancement of telepresence. Telepresence is the ability to appear present at remote locations, and experience an interaction as though physically present. When combined, VR/AR is pushing the technological abilities closer and closer to complete telepresence. This nearly telepresent technology is called holoportation [6, 14].

This new technological phenomenon, holoportation, takes distance communication and mixed reality to another level from just gaming, combining the technologies to produce a modality that offers a dynamic, three-dimensional (3-D) holographic presence [6]. This technological phenom is considered to be an end-to-end system of real-time spatial and temporal reconstructions, digitally breaking and rebuilding space, surroundings, and people, and transmitting those data to remote users, therefore permitting real-time 3-D, visual, auditory, and emotional interaction between users in remote settings [6, 15].

Although the technological framework is not simple, this is not a system that is complex beyond comprehension, and users can operate the system and employ it for various uses. For better understanding, holoportation employs a series of specially outfitted cameras that are strategically place

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

in the participant's space to capture the person and the surroundings three-dimensionally. The cameras capture the images, and software fuses the captured data together to create a temporally consistent model. These cameras are also outfitted with HoloLens™, or tracking technologies that allows them to take the 3-D models and composite these models into the real world in real-time [6]. Upon reconstruction, the software textures the data and the complete data is compressed before it is transmitted to the other side, where the other participant, also wearing a HoloLens™ device, receives the transmission, and is able to see the remote user live, including his or her surrounding space. This creates an environment in which the users have the experience of being co-present [6, 15].

Thus, holoportation is a mixed reality digital technology that practically allows people to teleport from one space to another, in real-time. With both sides wearing HoloLens™ heads up displays, they are able to see each other in 3-D, in real-time, and communicate in co-presence, even including the ability to maneuver through the space of the other side [15]. This technology offers people that are at a distance the ability to communicate with the experience of being present in the same space, in real-time, offering numerous advantages and only a few drawbacks—mainly due to current state of development (Table 1). Thus, this technology can connect leaders, clients, OD and management consultants, and other stakeholders, putting them in the same room and time even when they are in adjacent rooms, adjacent buildings, adjacent streets, adjacent cities, or thousands of miles apart [6].

3.2.4 General Benefits of Holoportation Technology

There are numerous benefits of holoportation technology in business, and for business management and OD consultants. These benefits begin with the advantages over the current and traditionally used digital communication methods that provide at best a 2-D experience. These benefits can be revisited in Table 1. However, the operational benefits of this technology as it applies to organizations has numerous positives, and a few disadvantages, and as such, this technology also affects the consultants that provide consultation services to organizations, first because they have to consult to groups that use this technology,

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

and second because the technology can benefit the consultants in their professional practices.

3.2.4.1 The Benefits of Telepresence

Telepresence provides the ability to interact with remotely located participants in a more meaningful way than was previously possible. Of all of the technologies to date, holoportation has made the greatest headway towards accomplishing complete telepresence - including mimicry of f2f interaction [15]. Recent studies have shown that individuals who communicate using holoportation technology experience feelings of spatial and social co-presence, which is often lost on solely 2-D platforms. This Co-presence makes interaction feel more seamless and authentic [6]. This authenticity is partially a result of experiencing interactions as though they are occurring in the same physical space, and the perception that they—the participants—are collectively modifying their mutual reality [15]. In other words, the shared spatial frame of reference of this real-time, mixed reality technology provides a more-complete and natural feel of interaction than video-conferencing [6, 15].

Holoportation provides real-time presence with 3-D capability, in which interaction can include not just a flat representation, but a reconstruction of the physical setting, including the room, the furniture in the room, and the entire human body, thereby allowing the conveyance of non-verbal communication, such as hand gestures, body posturing, facial expressions, and emotional responses [6, 15]. Furthermore, holoportation can be combined with other technologies that are used for gait-analysis, gesture analysis, and facial recognition, including analysis of facial sentiment [6].

3.2.4.2 The Ability to Display More

There are numerous ways in which organizational meetings and presentations have shown to have more productive, memorable, and effective outcomes. One of them is with the use of graphic facilitation, including visual practice and visual OD. Graphic facilitation has been shown to increase engagement and to boost collaborative bandwidth [6]. Graphic facilitation has proven to be an effective tool to facilitate f2f meetings in person. However, though found effective, graphic facilitation through remote platforms certainly leaves considerable room for improvement, much ado to the lack of ability to display large graphic areas or to display them simultaneously with the

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

presenter on the screen [6]. This is because the graphics in these presentations are often expressed through large graphic representations of what the group, or the facilitator, is attempting to accomplish. So, although videoconferencing technologies have been used to display some graphic facilitation through the use of PowerPoint slides and photographs via these 2-D platforms [4], the platforms are not best suited to these kind of virtual meetings because of limitations such as screen size. It simply does not make it possible to capture all of the meeting participants or to view or capture all of their communications with one another. Therefore, graphic facilitation has had much better bandwidth in f2f meetings as opposed to virtual meetings. That is until now. Holoportation's dynamic and multidirectional 3-D visual can potentially provide the 360-degree view of the graphics as well as the graphic facilitator and the other participants in their various settings [6]. Thus, the telepresent capability afforded by holoportation can make the visual, graphic facilitation nearly as effective as in-person, f2f physical presentations.

3.2.4.3 Cross-Generational Accommodations

One of the major challenges often discussed in the literature, relating to our technological age, involves the intersection of technology and communication, as well as generational differences in knowledge and use of technology [6]. Some social scientists and business leaders argue that the rapid emergence of technology is the Achilles heel of the millennial and post-millennial generations—the generations that predictions expect will occupy nearly 70% of all jobs in the next decades. Whether the technology will stifle organizations in the future, including the workforce, is yet to be seen. However, there is a perceived argument being made that the younger generations' uses of advanced technology to communicate, at the expense of developing f2f communication skills [6, 8], is a problem and thus there is a perceived urgency for the new tech generation to take any necessary means to improve their soft skills related to business, because performance is often contingent on an ability to communicate effectively and articulate ideas [6, 8]. These soft skill-based interactions are arguably best accomplished through in-person communication [16]. Similarly, organizational and interpersonal conflict is not usually resolved through the use of

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

some of the means of distance communication now commonly being used by all generations, including text messages, chats, and e-mails [17, 18, 19] and may instead often become exacerbated by these communication modalities as a result of misunderstanding of symbols, capitalization, emoticons, and use of language [20, 21, 22, 23]. This can especially become an issue during international or intercultural business communication. However, in-person, f2f communication cannot always be easily achieved in these international and inter-cultural scenarios, particularly in the leaner, ever-changing, and more agile industrial environment of the modern era. Thus, communication and interaction through holoportation technology may provide a solution as the next best thing to live, in-person interaction. Holoportation's dynamic, three-dimensional, verbal and non-verbal interaction capabilities allow real-time f2f human interactions between individuals, regardless of geographic locations [6]. So, while holoportation is high-tech and particularly well-suited for the remote workforce of today's growing millennial and post-millennial workforce, including millennials, Generation Z, and iGen, it may begin to help reverse the communication deficit problems that have been exacerbated by existing communication technologies and methods [6, 24, 25].

3.2.4.4 Recording, Replay, and Review of Meeting Interactions

Finally, another distinguishing attribute of this technology, and an advantage over f2f meetings, is the ability to have the events automatically recorded from multiple directions. Holoportation includes the functional capability of 3-D replay and review, which can be used for scenario observation, meeting observation, training, re-training, and post-event analysis [6]. Although holoportation is probably mostly advantageous in the ability to provide real-time 3-D telepresence, also beneficial is the ability to record the interactions in their co-present state with the capability of re-watching the interaction from any direction and in different sizes, providing a different perspective while simultaneously providing the capability for the participants to practically walk into a living memory [6, 15].

3.2.5 Ways that Holoportation Benefits Organizations and Organizational Consultants

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

To begin with, technology continues to advance at alarming rates, regardless of whether or not OD practitioners, industrial-organizational psychologists, and other management consultants accept it and employ it or not. Organizations, at least large corporate organizations, will try to stay abreast of technological advances that will make their work more-lean and efficient. Thus, no matter whether the consultants have accepted it, they will eventually end up consulting on the benefits, issues, concerns, or problems originating with the organizational employment of technology. Thus, as businesses and government agencies deploy holoportation, consultants will have to deal with the organizational dynamics that go with it. Therefore, management and OD consultants should be prepared to understand, work with, and potentially benefit from this disruptive communications technology that is beginning to take industry by storm.

3.2.5.1 Corporate Meetings

Although many do not enjoy organizational meetings, they are a way of life in corporations and other organizations. It is through meetings that a great deal of collaboration is accomplished. Historically, meetings with people from corporate sites across the country or across the globe were impossible, or at best were performed via teleconferencing. In recent years, technology advancements have made videoconferencing possible, and people can join meetings simultaneously from anywhere in the world using 2-D platforms such as GoToMeeting or WebEx, among others. Today, emerging technologies have made it even more possible for people to participate fully and actively in organizational meetings. Holoportation's ability to be live, three-dimensionally, with a 360-degree view, and f2f full-body interaction allows a closer, more personal meeting in which individuals in the meeting can all participate as though they are in the same room, with the ability to see a display, exhibit, or presentation live, almost as though they were completely present. This potentially increases participation of necessary or indispensable personnel, increases likelihood of timeliness, improves the ability to interact with all participants, and enables the participants to see and react to non-verbal cues, all while saving money and time required for commuting and travel. The same manner by which holoportation benefits organizations, it is beneficial to management consultants and organizational

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

development professionals. First, management and OD onsultants spend a great deal of time and resources traveling in order to provide their services to their clients. This includes sales meetings, pre-work, leadership meetings and interviews, organizational observations, staff interviews, meetings with results and conclusions, planning meetings for interventions, education and training, implementation consultation, and are often followed by periodic post-assessment visits. For global organizations, this sometimes means visits to multiple sites either for discussion with leaders at headquarter locations, of for meetings, interviews, and observations at multiple sites within the same organization. Holoportation can cut down on the travel and the in-person physical meetings by providing f2f 3-D interactions in real-time. Consultants can perform pre-work meetings, some leader interviews, and even action research-based staff interviews through the use of holoportation. Additionally, questions, short update meetings, and follow-up meetings could be held using the technology, saving considerable time and financial resources for both the consultant and the organizations employing the consultant. Furthermore, consultants can participate in or observe strategy planning meetings with leaders and managers, if requested, and this can be done through telepresence.

3.2.5.2 Alternate Work Locations

For time and money savings, and for improvement in work-life balance, in addition to environmental concerns, many organizations have figured work-from-home schedules. This often saves companies expenses on energy costs and other necessities, such as transit program costs in highly trafficked cities. Furthermore, it often provides flexibility and comfort to employees, and convenience. These programs are believed to have profound effects on employee morale, and have shown to be effective, particularly when part of the week is spent on the worksite, and part of the week at alternate locations [26, 27]. Holoportation technology can potentially make work in alternate locations more feasible and effective, particularly when employees have the capability of being telepresent at meetings, lectures, presentations, training, or other requirement. The ability to be present three dimensionally, in real-time, can make the work experience more personal, can potentially increase leader

and manager trust for their employees, and make their work more effective or productive, including more successful meetings that what is currently available through teleconferencing and videoconferencing.

From the perspective of OD and management consultants, this means that consultants need to understand how to assess, observe, evaluate, interview, or measure productivity from a distance. The same manner in which holoportation can be used to communicate with leaders, stakeholders, and customers and the individuals working in alternate locations, so can it be used as a communication tool between the OD or management consultant and the person in the alternate work location. Furthermore, holoportation makes, consistent with the discussion regarding meetings, OD and consulting work at-a-distance more possible and effective, particularly when consulting to companies in which alternate work locations has been accepted and implemented as part of the workplace culture.

3.2.5.3 Conflict Analysis and Resolution

Different experts have slightly varying definitions for conflict, but it is often defined as the human interaction between individuals who perceive incompatibility and the resulting interference with individual or group desires, goals, comforts, or communication preferences [28].

Smith & Berg (1987) describe conflict as a paradox, because conflict can be both harmful and helpful to group dynamics. Without conflict, there can be no progress [29] because conflict allows individuals to address important issues, release built up tensions, and to produce novel or creative ideas. Katz & Miller (2013) posit that effective management of conflict is one of the key factors to stronger teams and organizations, as long as leaders and other individuals actually lean into that discomfort of conflict [30].

Workplace or professional conflicts present challenges that can affect numerous work-related elements, including career development, office cohesiveness, morale, productivity, and professional collaboration [31]. Thus, it is critical that leaders are able to understand conflict, apply resolution strategies, and deliver communication between the conflict stakeholders [32].

Professionals that learn how to identify and resolve conflict effectively are perceived as

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

(a) better leaders, (b) more skilled individuals, and (c) able to effectively complete an organizational mission [33, 34, 35]. Using holoportation technology potentially improves the logistics of conflict analysis and resolution in numerous ways. First, the technology provides a platform for the mediator and the stakeholders to be present simultaneously even if the conflict is miles, cities, or continents apart. Furthermore, the ability for the negotiator, mediator, or OD professional to be in the same room with the parties to the conflict, but for the conflicting parties to be telepresently there but not physically in the same room allows an otherwise hostile interaction to take place without the threat or chance of an incident of physical violence [6]. Third, holoportation, as before-mentioned, affords the 3-D multi-angular recording that can later be observed from different angles, or shrunk and replayed in miniature form on the negotiator's desk, even in front of the involved parties, for review and reflection. Additionally, if need be, such recording can be used in evaluations or even in court [6].

The technology could, therefore, be useful during conflict negotiation and resolution initiatives between individuals, between different departments, between corporate entities and contractors, or even during labor union negotiations.

3.2.5.4 Year-End and Other Organizational Employee Counselling

Year-end employee evaluations are generally done in person, in a f2f meetings between people managers and their employees. Leaders cannot always be present on the same site as many of their employees, especially in global companies. As a result, organizations have often appointed unnecessary additional managers or they have leaders and managers commuting or traveling for year-end meetings and employee evaluation. Holoportation makes it possible for mid-year or year-end evaluations to be performed f2f, even if the leader or manager is not on the employee's site. A f2f meeting can be held, in real-time, and the three-dimensionality of the technology can also assist in ensuring that non-verbal, social, and emotional cues can be read and understood upon the evaluations. From the perspective of OD consulting, not much changes because the OD consultant may still need to ensure that the leaders and managers effectively communicate during employee evaluations and assessments.

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

The difference here is making sure that the consultants are aware and knowledgeable about the slight differences in communication interpretation when the review is performed electronically instead of physically.

3.2.5.5 Talent Acquisition

Human resources professionals and department leaders spend a considerable amount of time finding, recruiting, and interviewing potential candidates to fill specific jobs in organizations. Many hours can be spent on hiring individuals for jobs, and a lot of resources go into setting up interviews for potential employees. Many organizations have switched to telephonic interviews only, or to screen all candidates and only personally interview the top two or three candidates. Unfortunately, there are many non-verbal cues and a great deal of information that can be seen in person but remain hidden in 2-D platforms. Holoportation affords the technological superiority of performing f2f interviews in which the interviewers can either conduct individual one-on-one interview sessions or hold interview panels in which all interviewers and the candidate can theoretically be in the same room. Furthermore, the interviewers can more-or-less witness non-verbal cues such as hand gestures and attire, and review the session, if necessary, via the recording function.

3.2.5.6 Education and Training

Education and training is changing, and there is no question about this. Universities, even the high end, expensive, and internationally ranked brick-and-mortar institutions, have realized that college, graduate, and technical educations is not the same and will probably never be. They have realized that a good percentage of their income does or will come from distance- and internet-based learning, whether it includes their degree programs, certificate programs, or executive education programs. Whether military, law enforcement, or just busy working adults, the numbers of non-tradition students participating in online learning for programs ranging from technical education to professional or doctoral degrees continues to increase. Most universities now offer online courses of some sort, or online degree programs, and the offerings are growing. Some of these programs are offered through blended or hybrid programs, requiring some onsite residency requirements, and others are offered completely online. Although people's learning styles differ, there are

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

some criticisms from students that state that they would prefer some direct interaction and synchronous work. Some programs exist that provide synchronous classes, or chatroom office hours. These instances are where holoportation could make a big difference, saving time and money by providing real-time synchronous instruction or lecture, and even hosting online holographic residency options for students, and making brick-and-mortar-like interactions, through telepresence, to students who could not otherwise be present to participate in such programs, such as those deployed overseas or working or living in far off places.

This potential model for providing education is not exclusive to academic education. Organizations often currently provide training and professional development to their employees or customers. Manny complain that corporate online training is ineffective, and that people find ways to cheat just to get it done so that they can get back to work. Much of this type of behavior can be attributed to boring and irrelevant training, as well as to the fact that there is generally no interaction, no 2-way conversation, no f2f presence, and no one watching or taking attendance. Holoportation provides the possibility of interactive, f2f real-time telepresent education and training experience, and it can be provided by an expert globally, to all corporate sites, without the necessity for either the employees or the trainer to travel. Furthermore, the entire training interaction can be recorded and watched later as a hologram.

It does not end there. Professionals across industry attend workshops, professional courses, and conferences for continuing education units (CEU) on a regular basis. From the corporate perspective, professional development is critical to ensure that employees stay abreast of changes in the industry, and in ensuring that they are able to retain their talent by providing talent development in these ways. However, the costs of the conferences and the associated travel and per diem can be exorbitant, and thus, it is not uncommon that only a few employees can attend, even if the entire staff requires professional development. However, holoportation offers professional associations the potential to provide workshop, conference lecture, and exhibit attendance through real-time telepresence. Although it is not a 100 percent one-for-one replacement for the physical attendance experience, this

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

provides the opportunity for an increased number of individuals to attend professional conferences and classes, at a lower cost, with decreased number of days or hours missed, and no or limited cost of travel and per diem.

Management consultants, knowledge management professionals, and OD practitioners can find this to be an interesting topic of consultation, weighing the costs and benefits of completing corporate, professional, and subsidized academic education using these emerging telepresence technologies. Furthermore, consultants can potentially benefit by offering their training and education, per the evaluation and intervention necessities, through the same technological model.

3.2.5.7 Leader and Manager Coaching

Many leaders, regardless of executive or middle level. Participate in leadership coaching provided by external consultants. The periodicity, length, and types of coaching services provided vary depending on what the consultant style is as well as what the leaders require. Using holoportation, leadership coaches can perform periodic or routine coaching sessions in a more personal, f2f interaction than through telephone or a 2-D platform, and save considerable travel or commute time and money when compared to physical f2f interactions. Although this does not mean that physical f2f meetings are never necessary or beneficial, a combination of physical and telepresent coaching meetings can be beneficial to resource expenditure, as well as for unplanned, urgent, or casual interactions.

3.2.6 Potential for Combination of Multiple Emerging Technologies

One of the potential future benefits of holoportation is the likely ability that it can be combined with other advanced technologies for even more capability. This includes existing tech such as facial recognition technology and sentiment analysis [6]. Facial recognition with the capability of sentiment analysis provides the ability for software to capture and analyze facial expressions during conflict negotiation, employment interviews, accident or incident investigations, or mediation interactions. Studying facial expressions is a tool that has been used by investigators, interrogators, and psychologists for generations in order to understand or to get a clue regarding intentions, desires, and willingness of participants to participate or resolve the

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

conflict, for example [36, 37, 38]. This type of software driven technology can provide some assistance with this, and when combined with holoportation, may be able to provide this support at a distance [6].

3.2.7 Disadvantages and Concerns Surrounding Holoportation Technology

Although the advantages of this emerging technology are plentiful, and that is the focus of this manuscript, the introduction of such technology does not come without some disadvantages and cultural and ethical concerns.

3.2.7.1 Ethical and Cultural Issues Surrounding Holoportation Technology

As with many other technologies, there exist ethical concerns around the implementation and use of holoportation technology as a alternative to traditional f2f interaction. Historically, humans have communicated by means of distance throughout history, including the use of mail, radio communication, telephone, electronic mail, and videoconferencing. However, the majority of these modalities of communication did not represent a move away from traditional f2f human interaction. Holoportation, on the other hand, extends the possibility of alternate work locations and, as before-mentioned, reduces the necessary amount of travel. While this may sound attractive from an economic and ease of communication perspective, there is a concern that the humanity that comes with physical f2f human interaction may be lost or diminished, particularly because there is an incomplete sensory connection [6].

The concerns do not end there. Another ethical concern has to do with employment. Emerging technologies are sometimes known to have a long-term effect on employment, particularly with the automation industry increasing and the arrival of industry 4.0 [6, 39, 40]. With the potential decrease in business-related air and rail travel that could come out of holoportation, there will potentially be a reduction in travel-related employment. This potential decrease in travel has the potential to directly and indirectly affect numerous industries, including transportation and those industries that support travel, such as hotels, restaurants, concessions, airport security, clothing, and entertainment, in addition to the energy industry. Although it can be argued that decreased travel equals environmental

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

sustainability, this decreased revenue over time can also potentially generate a loss of economic sustainability [6], because a decrease in demand would likely result in a global decrease in employment, potentially affecting the livelihoods of many people on a global scale. Furthermore, over extended periods of time, skills would be lost or limited that would be difficult or time-consuming to recover if ever a disaster were to render technology unusable [6].

Additional ethical concerns and questions surround the topic of technology access and education. There is no doubt that there is a benefit to increasing and improving organizational use of advanced or emerging technologies. These technological applications and solutions can make work and life easier in many ways for many people. However, the world is a disparate place and billions of people around the world do not have equal levels of access to technology or training on the use of these technologies. This is not a trivial issue from the global perspective, where expensive installation and operational needs and technical skill requirements can put certain groups or populations at great disadvantages, at least in the near term, when compared to their counterparts in other parts of the world [6]. Although technology availability and increased bandwidth are being seen worldwide, this is not seen at the same speed and certainly not on a universal level. Therefore, any expectation that developing nations will have identical access to emerging technology and related capacity is a concern and an economic and cultural disparity. Although the technology appears to work in the U.S., particularly with high-speed and high bandwidth capabilities, it is not difficult to imagine that all nations and communities may not experience such access, and that any loss of connectivity while using holoportation could potentially increase corporate issues, and potentially create or increase conflict [6].

On top of access and bandwidth, security and privacy pose a definite threat as technologies such as holoportation become increasingly common. Although these technologies are very beneficial and useful, there is a great deal of unease in the public today about the ability for agencies and other entities to track, record, and look into our personal preferences. Corporations and internet providers often benefit financially from providing personal information to partner organizations. Law enforcement, and to some degree social media businesses, have proven capable of tracking and

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

listening in to telephone conversations, or looking at telephone records. Hackers are able to steal data and identities that may create serious legal and financial problems for many individuals worldwide, and viruses can take down an entire company for periods of weeks to months. There are privacy concerns with the recording of holoportation interactions. Although the technology offers the superior function of recording, and the ability to see the interaction from all directions, not all people are amenable to being recorded either in employment interviews, conflict negotiation, or in their work. Additionally, the ability of cyber criminals, hackers, or other nefarious entities to steal and use people's data, including their images, in unintended ways is a security and privacy concern.

Furthermore, as we become a more globalized world, cultural contingencies continue to factor into organizational effectiveness. Despite increased global connectivity and access to technology, there is a need for people and organizations to embrace intercultural and cross-cultural understanding [6]. In today's global business environment, cultural dynamics and dimensions still play a role in interactions of individuals and teams, and we can certainly see that Hofstede's (1984; 1984) model of cultural dimensions still applies, even in 3-D real-time telepresence. Therefore, the cultural differences still exist, even digitally, notably the factors of power-distance uncertainty avoidance, individualism, masculinity, long-term orientation, and indulgence versus restraint [41, 42]. There is a possibility that the use of technology, and the distance that exists as a result, could conceivably aggravate misunderstanding of cultural differences. This is partly because of the use of the technology itself, and partially as a result of the lost or diminished experience with the nuances associated with other nations and cultures that are experienced by organizational members, and by consultants, during travel [6]. This may lead to an increase in exhibiting culturally insensitive behaviors during meetings, and it is this reality that speaks to the need for these technologies to be used in a deliberate and focused manner [6].

3.2.7.2 Some Additional Disadvantages of Holoportation Technology

A common limitation among novel communication technologies is their reliance on reliable connectivity, significant bandwidth, and other internet-related

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

functionality, and the technology sometimes requires time for these concerns to catch up to the technological capabilities of the new products. This is so with holoportation, which requires considerable bandwidth and continuous connectivity, both of which are not necessarily readily available across the globe. As such, the use of this technology can still be problematic for some companies, as Internet outages and limited bandwidth can result in latency, and practically cancel out the real-time, capability and benefits of this technology [6]. Additionally, holoportation requires a considerable amount of equipment in addition to computer and internet access, including cameras. HoloLenses, and other tools. Likewise, the installation, implementation, and use of these devices may require considerable instruction or training, both for the installers and the users, which may be problematic when compared to the plug-and-play type of ability with the current 2-D systems [6, 14]. Although there are strong advantages of holoportation compared to its 2-D competitors, the innovative technology still has considerable disadvantages when compared to f2f intervention, particularly with regard to its the limited scope of engagement of all of our senses. Although holoportation goes well beyond the 2-D platforms in this respect, it still generally only affects visual and auditory senses, and does not include touch, smell, and taste [6]. Though it takes the visual and interactive aspects of distance communication to a deeper level, especially with regard to the five qualities of natural communication – co-location, synchronization, facial expressions, body language, and speech – holoportation cannot equal the organic f2f communication, thus limiting the ability to recreate the emotions and environment of physical interaction [6, 9].

3.2.8 Other Considerations Regarding Holoportation

3.2.8.1 Design Thinking

Organizational design is critical to the way an organization functions, and for that reason, OD practitioners and other management consultants are often hired to aid in the design or re-design of organizations, including structure, systems, vision, strategies, team development, and other elements of design. This is a key factor in systems thinking, which looks at the interrelatedness of many forces as parts of a common process [43]. An organization is made up of numerous inter-related

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

elements or factors that contribute to the whole of that organization and the manner in which it functions. There are numerous organizations design strategies that are commonly used in the assessment and design consulting for organizations, including the STAR model, Jamieson's Strategic Organizational Design (SOD), the Integrated Strategic Change Model (ISC), and the Nuclear Organization Framework (NOF), among others [44, 45, 46, 47].

None of the models particularly describe technology as an individual element of organizational design, although there has been a call for technology as a part of organizational design theory and practice [48]. Nevertheless, a few of the design models particularly address sociotechnical systems and technology as part of the systems element in the organizational design framework [44, 46]. As technology continues to advance and emerge at such a rapid pace, so must organizational development and management consultants. Therefore, it is critical that technologies, such as holoportation, are considered in the systems element of organizational design, because technological tools, such as holoportation, have the capability of directly affecting not just the way that systems work, but the interrelated factors of culture, structure, leadership, strategy, teamwork, and human factors, and to directly and indirectly affect mission, vision, and environment.

3.2.8.2 Cross-Functional Integration

One of the most important factors in teams and organizations is the ability for people, teams, groups, divisions, and departments to collaborate [49]. Collaboration often yields solutions to problems as well as innovation, and innovation often spawns new innovation. In organizations, and particularly in global organizations, different divisions are often separated by buildings, cities, or oceans. This makes collaboration and cross-functional integration difficult, and may potentially stifle productivity and progress that can be achieved through integrating different job functions and cross-referencing ideas, processes, and methods. Improved communication can improve cross-functional collaboration and integration, and advanced communications technologies, such as holoportation, are potential windfalls, providing the opportunity for cross-organizational and cross-functional collaboration and integration through 3-D, full-size, real-time communication, conversation, display, and

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

exhibit. Furthermore, it allows management consultants the opportunity to work with multiple teams and functions simultaneously to help drive improvement and productivity.

4 SUMMARY AND CONCLUSION

4.1 Critical Summary

As technology advances, so does the manner in which business operations are performed. Organizations often have many stakeholders as well as corporation-to-corporation or agency-to-agency partnerships or reliant relationships. Thus, when technological advances affect industry, the participants in the industry must be able to adapt in order to remain competitive in the market. Some of the ways that organizations have sought to maintain the competitive edge is through the consult of third-party experts, such as organizational development, organizational behavior, or management consulting practitioners. At the constant rate of industrial change due to rapidly emerging technology, this necessity for organizational adaptability is becoming equally as important to the OD and MC professionals that consult to those organizations.

Among the fastest growing technology categories that affects most organizations across industry is communication-related technology, and recent advances in these technologies are those that provide a significant capacity of telepresence. Telepresence provides the ability to interact with remotely located participants in a more meaningful way than was previously possible, and the technology that makes this more possible than ever before is holoportation, a 3-D technology combining VR/AR with high speed internet capability and cloud computing, resulting in near mimicry of traditional f2f meetings [15]. This study examined the current literature and a long-term autoethnographic narrative regarding the corporate, academic, non-profit, and agency use of communications technologies and identified that this novel emerging technology has not reached the level of mass use in organizations. However, the evaluation of the potential benefits, advantages, and disadvantages leads to the assessment that this technology is on the brink of disrupting the way that organizations communicate.

Holoportation provides real-time presence with 3-D capability, in which interaction can include not just a flat representation, but a reconstruction of entire physical settings,

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

including the room and furniture and the entire human body, thereby allowing the conveyance of non-verbal communications such as hand gestures, body posturing, and emotional responses [6, 15].

The study identifies that the now-traditional 2-D platforms currently being used by many organizations do provide some level of partial telepresence, but with considerable limitations compared to the 3-D alternative that has just recently entered the market. Although recent research shows that individuals who communicate using holoportation technology experience feelings of increased spatial and social co-presence when compared to the 2-D competitors, making their interactions feel more seamless and authentic [6], and rendering 2-D technologies as reportedly obsolete, there are current limitations and the technology is not on the fast track for replacing current 2-D systems. This is because there are disadvantages and complexities involved with the new technologies, including access, cost, availability, competition, limited available research, and ethical and cultural concerns. Furthermore, as the implementation of holoportation takes shape worldwide, it will undoubtedly make a significant improvement in telepresence and capability for improved education and training and distance-based conflict negotiations, amongst other events. Nevertheless, it is my assessment, as the researcher, that while the current complexity and quantity of required equipment to performed holoportation-based telepresent interactions may be worthwhile for education and training and lengthy critical board meetings, this technological requirement may be overkill for routine staff meetings, small participant numbers, or shorter less-critical meetings. Organizations should adopt the advanced technology as it emerges on scene globally, but should not be hasty in discontinuing the use of the 2-D platforms.

Nonetheless, this autoethnography-based assessment describes some of the common major organizational and consulting activities and practices that will be affected by this technological advancement, such as corporate meetings, corporate training, alternate work locations, organizational learning events, talent management and performance counselling, collaborative work sessions, and executive coaching. These changes in the way organizations do work will directly affect the work that must be done by management consultants, not only in the way that they must be able to use

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

these technologies for more effective or efficient services, but also for the purpose of understanding the processes, practices, systems, structures, cultures, and strategies of organizations that they are providing services to.

In short, although there are still concerns and challenges with holoportation technology, and 2-D platforms should not be altogether abandoned or discontinued any time soon, the capabilities of holoportation appear to be advanced and beneficial and it is not difficult to see how this communications technology will disrupt and transform the way organization development and management consulting professionals will have to practice their craft.

4.2 CONCLUSION

Thus, we are approaching the era in which we no longer have to sit back and dream of a time in which we can start our workdays off at home, or attend a meeting in Chicago, London, Seattle, Mumbai, Tel Aviv, Paducah, or Vladivostok without the necessity to fly and stay several nights in hotel rooms. We no longer have to dream of the day that we can, like our favorite Star Wars and Star Trek characters, attend meeting with boards or councils and be able to see their environments, their reactions, and their responses, while they see ours, physically, without the physicality. Holoportation makes that possible today and, if combined with other technologies where applicable, shows tremendous promise as the future tech that will transform organizations, and the global practice of organizational development and management consulting [6].

It is not a far gone prediction that the near future brings with it an organizational environment in which VR/AR reality devices are embedded in eyewear and interactive, smart clothing equipped with microsensors, transmitters, microphones, and cameras, enabling direct workplace and process observation and interaction while consulting from thousands of miles away, affording consultants the ability to perform action research and management consultation synchronously and to provide real-time OD intervention from a distance.

Future research should consider a comparative analysis of meeting and interaction effectiveness using 3-D holoportation technology against multiple 2-D platforms. Furthermore, comparative analysis should extend to an appraisal of holoportation to f2f communication in different organizational settings and

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

interactions, potentially keying in on phenomenological experiences of users of these communications technologies for organizational purposes.

5 REFERENCES

[1] Brynjolfsson, E. & McAfee, A. (2014). *The Second Machine Age: Work, Progress, and*

Prosperity in a Time of Brilliant Technologies. W. W. Norton & Co: New York, NY.

[2] Bouzereau, L. (Ed.). (1997). *Star Wars: The Annotated Screenplays: Star Wars--a New Hope,*

The Empire Strikes Back, Return of the Jedi. Lucas Books.

[3] Block, P. (2014). Technology, Culture, and Stewardship. *Organization Development Journal,*

32(4), 9-13.

[4] Fursman, R. & Fursman, I. (2014). Winning the Peace in Ukraine by Combining OD Practice

with Technology. *Organization Development Journal, 32*(4), 53-62.

[5] Cady, S. H., Shoup, Z. D., & Hennig, T. (2015). From Smoke Signals to the Cloud: A Review

and Analysis of Distance Media for Control, Coordination, and Collaboration. *Organization Development Journal, 33*(1), 41.

[6] Shufutinsky, A., Sibel, J., Murray-Hayden, P., Shufutinsky, D., & Cox, R. (2018). Holorportation: The Disruptive Technology that Will Change the Practice of Conflict Analysis and Resolution. *OD PRACTITIONER, 50*(3), 56-63.

[7] Abdelfatah, H. (2016). Cyber Learning from Reality through Virtuality to Holoportation:

Status-Quo and a Proposed Model for Closing the Gap in Africa. *ASRO Journal of Education*, *1*(2), 28-38.

[8] Gibson, L. A. & Sodeman, W. A. (2014). Millenials and Technology: Addressing the

Communication Gap in Education and Practice. *Organization Development Journal, 32*(4), 63-75.

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

[9] Chicchi-Giglioli, I. A., Pallavicini, F., Pedroli, E., Serino, S., & Riva, G. (2015). Augmented reality: a brand new challenge for the assessment and treatment of psychological disorders. *Computational and mathematical methods in medicine*, *2015*.

[10] Jenny, S. (2017). Enhancing tourism with augmented and virtual reality. HAMK: Visamaki, Finland.

[11] Khor, W. S., Baker, B., Amin, K., Chan, A., Patel, K., & Wong, J. (2016). Augmented and virtual reality in surgery—the digital surgical environment: applications, limitations and legal pitfalls. *Annals of translational medicine*, *4*(23).

[12] Kim, Y., Kim, H., & Kim, Y. O. (2017). Virtual reality and augmented reality in plastic surgery: A review. *Archives of plastic surgery*, *44*(3), 179-187.

[13] Moro, C., Štromberga, Z., Raikos, A., & Stirling, A. (2017). The effectiveness of virtual and augmented reality in health sciences and medical anatomy. *Anatomical Sciences Education*.

[14] Orlosky, J., Kiyokawa, K., & Takemura, H. (2017). Virtual and augmented reality on the 5G highway. *Journal of Information Processing*, *25*, 133-141.

[15] Orts-Escolano, S., Rhemann, C., Fanello, S., Chang, W., Kowdle, A., Degtyarev, Y. & Tankovich, V., et al. (2016, October). Holoportation: Virtual 3d teleportation in real-time. In *Proceedings of the 29th Annual Symposium on User Interface Software and Technology* (pp. 741-754). ACM.

[16] Drolet, A. L., & Morris, M. W. (2000). Rapport in conflict resolution: Accounting for how face-to-face contact fosters mutual cooperation in mixed-motive conflicts. *Journal of Experimental Social Psychology*, *36*(1), 26-50.

[17] Hershatter, A., & Epstein, M. (2010). Millennials and the world of work: An organization

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

and management perspective. *Journal of Business and Psychology*, *25*(2), 211-223.

[18] Lenhart, A., Purcell, K., Smith, A., & Zickuhr, K. (2010). Social Media & Mobile Internet

Use among Teens and Young Adults. Millennials. *Pew internet & American life project*.

[19] Meister, J. C., & Willyerd, K. (2010). Mentoring millennials. *Harvard business review*,

88(5), 68-72.

[20] Byron, K. (2008). Carrying too heavy a load? The communication and miscommunication

of emotion by email. *Academy of Management Review*, *33*(2).

[21] Byron, K., & Baldridge, D. C. (2005). Toward a Model of Nonverbal Cues and Emotion in

Email. *Academy of Management Proceedings* 2005(1), B1-B6.

[22] Byron, K., & Baldridge, D. C. (2007). E-mail recipients' impressions of senders' likability:

The interactive effect of nonverbal cues and recipients' personality. *The Journal of Business Communication (1973)*, *44*(2), 137-160.

[23] Luor, T. T., Wu, L. L., Lu, H. P., & Tao, Y. H. (2010). The effect of emoticons in simplex

and complex task-oriented communication: An empirical study of instant messaging. *Computers in Human Behavior*, *26*(5), 889-895.

[24] Twenge, J. M. (2014). *Generation Me: Why Today's Young Americans Are More Confident,*

Assertive, Entitled—and More Miserable Than Ever Before (Revised and Updated). Atria: New York, NY.

[25] Twenge, J. M. (2017). *iGen: Why Today's Super-Connected Kids Are Growing Up Less*

Rebellious, More Tolerant, Less Happy and Completely Unprepared for Adulthood. Atria: New York, NY.

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

[26] Harrick, E. J., Vanek, G. R., & Michlitsch, J. F. (1986). Alternate work schedules, productivity, leave usage, and employee attitudes: A field study. *Public Personnel Management*, *15*(2), 159-169.

[27] Hayman, J. R. (2009). Flexible work arrangements: Exploring the linkages between perceived usability of flexible work schedules and work/life balance. *Community, work & family*, *12*(3), 327-338.

[28] Folger, J. P., Poole, M. S., & Stutman, R. K. (2016). *Working Through Conflict: Strategies for Relationships,Groups, and Organizations (7th Ed.).* Routledge: New York, NY.

[29] Smith, K. K. & Berg, D. N. (1987). Paradoxes of Group Life: Understanding Conflict, Paralysis, and Movement in Group Dynamics. Jossey Bass: San Francisco, CA.

[30] Katz. J. & Miller, F. (2013). *Opening Doors to Teamwork & Collaboration: The Four Keys that Changed Everything.* BK Publishers: San Francisco, CA.

[31] Ramsay, M.A.E. (2001). Conflict in the health care workplace. *BUMC Proceeding*, *14*, 138-139.

[32] Porter-O'Grady, T. (2004). Constructing a conflict resolution program for health care. Health Care Management Review, 29(4), 278-283.

[33] Hendel, T., Fish, M., & Galon, V. (2005). Leadership style and choice of strategy in conflict management among Israeli nurse managers in general hospitals. *Journal of nursing management*, *13*(2), 137-146.

[34] Strutton, D., & Knouse, S. B. (1997). Resolving conflict through managing relationships in health care institutions. *The Health care supervisor*, *16*(1), 15-28.

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

[35] Wilmot, W.W. & Hocker, J.L. (2011). *Interpersonal Conflict* (8th ed.). New York, NY: McGraw Hill.

[36] Morris, M. W., & Keltner, D. (2000). How emotions work: The social functions of emotional expression in negotiations. *Research in organizational behavior*, *22*, 1-50.

[37] Rozin, P., & Cohen, A. B. (2003). High frequency of facial expressions corresponding to confusion, concentration, and worry in an analysis of naturally occurring facial expressions of Americans. *Emotion*, *3*(1), 68.

[38] Van Kleef, G. A., & Côté, S. (2007). Expressing anger in conflict: When it helps and when it hurts. *Journal of Applied Psychology*, *92*(6), 1557.

[39] Jesuthasan, R. & Boudreau, J. W. (2018). *Reinventing Jobs: A 4-Step Approach for Applying Automation to Work.* Harvard Business Review, Boston, MA.

[40] Shashidullah, S. M. (2018). The Rise of the Digital Society, Generation Z, and Management Challenges in the 21st Century: A Review Essay. *Annals of Social Sciences and Management Studies*, *1*(1), 001-004.

[41] Hofstede, G. (1984). Cultural dimensions in management and planning. *Asia Pacific journal of management*, *1*(2), 81-99.

[42] Hofstede, G., & Bond, M. H. (1984). Hofstede's culture dimensions: An independent validation using Rokeach's value survey. *Journal of cross-cultural psychology*, *15*(4), 417-433.

[43] Senge, P.M., Kleiner, A., Roberts, C., Ross, R. B., & Smith, B. J. (1994). *The Fifth Discipline Fieldbook: Strategies and Tools for Building A Learning Organization.* Doubleday: New York, NY.

[44] Jamieson, D. W. (2017). *Strategic organization design – Overview.* Lecture Presentation,

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

Cabrini University Organizational Development Program. Radnor, PA.

[45] Kates, A. & Galbraith, J., R. (2007). *Designing Your Organization: Using the Star Model to Solve 5 Critical Design Challenges.* Jossey-Bass: San Francisco, CA.

[46] Shufutinsky, A. (2018). Tribalism and Clone Theory in New Leaders and the Resulting Degradation of Organizational Culture. *Psychology and Behavioral Science International Journal, 10.*

[47] Worley, C. G., Hitchin, D. E., & Ross, W. L. (1996). *Integrated Strategic Change: How OD Builds Competitive Advantage.* Addison-Wesley: Reading, MA.

[48] Winby, S. & Mohrman, S. A. (2018). Digital Sociotechnical System Design. *Journal of Applied Behavioral Science, 54*(4), 399-423.

[49] Phillips, N., Lawrence, T. B., & Hardy, C. (2000). Inter-organizational collaboration and the dynamics of institutional fields. *Journal of management studies, 37*(1).

LIST OF TABLES

Table 1. Comparison of Capabilities and Concerns: Holoportation vs 2-D Platforms (Shufutinsky et al., 2018)

Feature/Capability/Concerns	PC-Video Communication Platforms	Holoportation
Real-Time Interaction	X	X
f2f Interaction	X	X
3-D Interaction		X
Spatial and Social Co-Presence		X
5 Qualities of Natural Communication		
1. Synchronization	X	X

ISSN 2394-0417 (Online); EAPJLIM/issn. 2394-0417/2015; Volume 5 Issue 1 (2019)

2. Speech/Auditory Communication	X	X
3. Facial Expression	X	X
4. Body Language		X
5. Co-location		X
Full Body Visual		X
Multi-Directional Visuals		X
Full Room / Area Visual		X
Shared Spatial Frame of Reference		X
Potential for Full Graphic Facilitation		X
Record, Replay, Review Capabilities		
1. Can Record Interaction	X	X
2. Can Replay and Review Interaction	X	X
3. Can Review from 360 Degree Perspective		X
4. Can Review in Full-Size	X	X
5. Can Miniaturize and Manipulate		X
Full View and Observation of Others' Behaviors		X
Current Generalizable Affordability	X	
Current Availability	X	X
Current Broad Availability and Selection	X	
Currently Simple Implementation	X	
Little to No Training Required	X	
Information Security Concerns	X	X
Requires Reliable Internet Connectivity	X	X
Requires Significant Bandwidth Increase		X
Considerable Equipment Beyond Computer		X