Conceptualizing the Use of Technology to Foster Peace via Adventure Learning

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Abstract

In this paper we present and discuss the findings of a systematic literature review on the use of educational technology initiatives to foster peace outcomes, and we relate those findings to Adventure Learning. In the first section of the paper, we suggest that technology-infused peace initiatives rely predominantly on targeting antecedents to peace, such as collaboration, interaction, communication, and understanding of the "other", rather than peace itself, while at the same time employing varied pedagogies and technologies, with limited empirical support for sustainability of claimed positive outcomes beyond the end of an intervention. These findings align with numerous aspects of the Adventure Learning approach to education. In the second section of the paper therefore, we use Adventure Learning as a way to conceptualize the task of using technology to promote peace outcomes and propose important issues that need to be considered when designing peace-seeking Adventure Learning interventions.

Conceptualizing the Use of Technology to Foster Peace via Adventure Learning

In a world where communities are faced with the challenge of having to deal with increasing diversity or are preoccupied with resolving conflicts between different groups of people, it is essential that educational initiatives are directed towards promoting peace within a humanitarian approach to education. Nonetheless, while the instructional design field employs the services of technology to assist in the design, development, and delivery of educational materials, it appears that we have not yet fully engaged in the investigation of how to utilize technological innovations in a concerted effort to foster peace within educational interventions. This concern is currently presented as a philosophical question lacking a feasible solution. Despite its significance, the issue has been left relatively unexplored, even though proposals for the use of technology for peace have been put forward (Stolof, 1992). The discussion on how to use technology to promote peace revolves mainly around the debate of how the Internet can be used to make the world a better place (OECD, 2008).

In addition, a few steps have been taken towards using technology for peace and humanitarianism. For example, prior work has focused on the use of specific technologies which attempt to promote peace-related outcomes, such as Burak, Keylor, and Sweeney's *PeaceMaker* (2005) video game which engages learners in seeking to negotiate peace between Israelis and Palestinians. Alternatively, the focus may be on promoting empowerment: the One Laptop Per Child Project, for example, seeks to provide the hardware and software to enable "a means for learning, self-expression, and exploration to the nearly two billion children of the developing world with little or no access to education" (OLPC, 2009). Further, the use of technology can be directed at understanding conflict. For instance, "warblogs" and "peaceblogs" can be used to explore peace and conflict resolution via engaging students in the reading and synthesizing of the narratives of others (Oravec, 2004).

Despite these diverse initiatives it has been identified that there is little research on how to engage individuals in the seeking, fostering, and harnessing of peace and humanitarianism within educational settings. Accordingly, our specific interest in this paper lies in educational technology practices concerned with promoting a humanitarian benefit in general, and peace and peace-seeking in particular.

To explore the issues identified above, we first conducted a systematic literature review on how technology has been used in education to promote peace. Our investigation of the literature, led us to the realization that the way in which technology has been infused with pedagogy for peace-related outcomes parallels the Adventure Learning approach to education (Doering, 2006). This understanding provided the impetus to integrate the lessons we learned within the Adventure Learning approach to education, since this approach seemed to provide the means of conceptualizing the task of using technology to foster peace.

This paper is therefore divided in two sections. In the first section we outline the method used for investigating the existing literature, and present and discuss the results of this review. The second section of the paper focuses on exploring how Adventure Learning, along with the lessons drawn from the reviewed literature, can target antecedents to peace. We conclude the paper by proposing future lines of investigation and research.

Method

To explore how technology has been used within educational initiatives with respect to promoting peace and peace-related outcomes, we carried out a systematic literature review. The aims of this review were to explore relevant studies and present the results of educational technology initiatives relevant to promoting peace, and to identify themes that could relate our study to the ongoing dialogue undertaken in the literature.

 The literature review method involved a systematic examination of selected databases and internet sources using a variety of strategies, including keyword searches and

searches for subject headings. This allowed the identification of a number of studies that seemed preoccupied with using forms of technology to promote peace outcomes. Findings and conceptually similar patterns from all identified studies were collected and evaluated using the constant comparative method (Corbin & Strauss, 2008; Strauss & Corbin, 1998). Such comparisons were essential throughout the data analysis process since they allowed us to identify themes as these emerged from the data.

The first stage of the analysis involved the identification of primary references relevant to the particular research topic using the ERIC and Scopus databases. The selection criteria for the chosen papers included searching for papers on educational interventions used for peace between 1990 and up to and including 2009. Older papers were only used in case they provided additional and useful background theoretical information on the topic of interest.

The keywords used for the identification of articles were: "peace," "peace education," "technology AND peace," and "technology AND peace education." These queries yielded twenty two articles out of which nine were identified as relevant to our work. We then proceeded to search for technology-induced initiatives targeting peace by using the keyword "technology" respectively with "social justice," "conflict resolution," "social networking," "empowerment," "intercultural understanding," "reducing stereotypes," and finally "reducing prejudice." Merging the results resulted in twenty four additional relevant articles.

The second stage of the literature review constituted the identification of secondary references that had emerged through studying the articles selected at the first stage of the review process. In this stage additional retrieval mechanisms were used, such as the Google and Google Scholar search engines. This process allowed access to papers we could not retrieve through ERIC and Scopus. This process yielded four additional articles.

Out of the 37 papers that formed the basis of this study, 15 were theoretical papers; 17 studies involved the description of technology infused intervention strategies to promote peace and peace-seeking; and 5 studies presented empirical evaluations of technology-infused intervention strategies aimed at promoting peace outcomes. Once the two researchers agreed that further literature searches were failing to yield additional results, each researcher independently analyzed each paper noting emerging patterns. The authors then met nine times to discuss their individual findings. At each meeting, the data were re-evaluated in order to confirm and disconfirm evidence for the patterns. This process continued until consensus was reached between the authors.

<div align="center">Technology and Peace: Literature Review Findings</div>

The main themes that have emerged through the literature search were: antecedents to peace, technologies used to promote peace antecedents, pedagogies and educational practices used to promote peace antecedents, learner engagement in peace-seeking initiatives, and the need for more empirical studies evaluating the sustainability of peace-related outcomes. Within these broad themes various sub-themes were identified and these will be discussed under the respective headings.

Antecedents to peace

Our initial attempts at identifying educational interventions aimed at producing peace-related outcomes through the use of technology were intended to link such interventions to the promotion of "peace". However, definitions of "peace" abound. Nastase (1983) for example, argues that "peace" should not be defined as solely the absence of war. Instead "peace" should be given a positive connotation by being perceived as the gradual process involved in resolving conflict without force and through cooperation. Harris (2004) notes that "peace" acquires different meanings within different cultures; within the context of our work,

"intercultural peace" can be used to denote peace interventions aimed at promoting interfaith dialogue, multicultural communication and understanding, and respect for diversity.

Due to the challenge presented when trying to define "peace," as well as the diversity in the scope and purposes within technology-infused practices that aim to promote peace, we decided to explore how the use of technology in education can target "antecedents to peace" vis-à-vis "peace" itself. Antecedents to peace are defined as those factors which appear to act as prerequisites to promoting peace, and as such are the founding blocks of peace. Specifically, the review of the literature led to the identification of these antecedents as being those of collaboration, interaction and communication, understanding of 'others,' and promotion of peace though varied forms of education and learning. Targeting antecedents to peace rather than the broad notion of peace is not new - similar work has been carried out at Stanford University (Peace Innovation Persuasive Technology Lab 2009).

What differentiates our work is the fact that we investigate educational approaches to peace-related outcomes supported and extended by technology, as opposed to exploring technological affordances for peace. While technology may be used to target antecedents to peace, it is important to recognize the value of pedagogy in guiding learners towards said outcomes, such as, for example, when technology is used as a means to promote inclusive educational practices (Walker & Logan, 2009) or social justice (Grant & Villalobos, 2008).

The literature review revealed that peace-seeking initiatives are predominantly based on building collaborative relationships between participants (Correia, 2008; Doering, 2006, 2007; Ferdig et al., 2007; Goldsworthy et al., 2007; Kudryavtsev et al., 2007; Merryfield, 2003; Papastergiou, 2009; Paulus et al., 2006; Roberts et al., 2004; Ryberg & Christiansen, 2008; Vrasidas et al., 2007; Vratulis & Dobson, 2008), often through interventions grounded on the promotion of communication and interaction amongst participants (Drexler et al., 2008; Ferdig et al., 2007; Kudryavtsev et al., 2007; Laterza et al., 2007; UNDV, 2008;

Vrasidas et al., 2007; Yablov & Katz, 2001). Building relationships based on *collaboration, interaction and communication* are therefore perceived to enhance the possibility of achieving peace.

For peace-seeking initiatives to be effective it is also necessary that they promote an *understanding of "others,"* especially when used for conflict resolution purposes. To understand "others" it is considered as a necessary first step to gain an *awareness* of diversity (Buchanan et al., 2008; Kassam, 2008; Merryfield, 2003). Participation in such initiatives entails *exposure to multiple points of view* (Paulus et al., 2006; UNDV, 2008; Vrasidas et al., 2007), and *sharing ideas* and *initiating dialogue* between participants (Buchanan et al., 2008; Doering, 2006, 2007; Doering & Veletsianos, 2008b; Drexler et al., 2008; Ferdig et al., 2007; Meadows & Murphy, 2004; Paulus et al., 2006). Such initiatives often allow forms of *perspective taking* to take place (Bosworth et al., 1998; Goldsworthy et al., 2007; Oravec, 2004). For example, in two peace-related projects supported by educational technology, individuals were encouraged to conceptualise the narratives of others as presented in web blogs (Oravec, 2004), or to assume the perspective of others within simulation games or interactive interviews (Bosworth et al., 1998).

Initiatives that promote awareness, exposure to multiple perspectives, sharing of ideas, initiation of dialogue, and perspective taking can promote *respect for diversity* (Doering & Veletsianos, 2008b; Ferdig et al., 2007; Verbaan, 2008) by (a) mediating the deconstruction of images of the "other"/ "enemy" (Buchanan et al., 2008; Carano & Berson, 2007; Doering & Veletsianos, 2008; Ferdig et al., 2007; Lee, 2006; Vrasidas et al., 2007), and/or (b) offering the potential for participants to create more favourable images of the "other" (Buchanan et al., 2008; Goldsworthy et al., 2007; Yablov & Katz, 2001). Cultivating an ethos of respect for diversity therefore can become a building block within peace-seeking endeavours.

For example, Buchanan et al. (2008) noted that exposing students to peers from other countries, within an intervention strategy to examine the issue of racism, was sufficient to allow students to discover commonalities in their experiences. Nonetheless, Carano & Berson (2007) warn that mere exposure to diverse groups of people is not the determining factor to promoting respect for diversity. Instead, it is important to engage in an ongoing dialogue with individuals or groups of people in order to enhance ones cultural awareness and to develop a greater understanding of difference. This process can lead to the elimination of cultural obstacles to peace (Nastase, 1983), such as prejudice and stereotyping against people who are different than us, and subsequently to the promotion of greater respect for diversity.

A major concern of educational interventions therefore, lies within attempts to abolish images of the "other" or the "enemy" (Burns & Aspeslagh, 1983). Such initiatives are predominantly identified within conflict resolution curricula. For example, Vrasidas et al. (2007, p.133) refer to reconciliation initiatives as "societal and cultural processes in which new emotions and beliefs that encompass respect, coexistence and peace are formed about an adversary". To instigate such drastic changes Vrasidas and colleagues note that it is essential to identify narratives that evoke fear and mistrust and publicize the stories that show positive behaviors, emotions, and actions about the "other." If antecedents to peace are thoughtfully integrated in formal learning experiences, they can become learned behaviors and can provide the foundations upon which modern societies cooperate to solve conflicts.

Antecedents to peace can also be part of informal learning processes. Awareness of and respect for diversity, as well as the sharing of ideas and perspectives can occur in peoples' daily lives. For instance, Ferdig et al. (2007) propose that Web 2.0 technologies can informally serve as platforms for online communication and collaboration, where people of diverse backgrounds and cultures can potentially congregate (Authors, 2009).

Technologies used to promote peace antecedents

Although numerous technologies appear to have been used in interventions associated with the promotion of peace, seven technologies appear to have been predominantly used. The majority of the selected studies have used Learning Management Systems (LMS) or Virtual Learning Environments (VLEs), (Buchanan et al., 2008; Merryfield, 2003; Verbaan, 2008) to host learning activities. Web 2.0 technology has also been used in various forms: Despite blogs being the most commonly used form of technological intervention (Carano & Berson, 2007; Drexler et al., 2008; Oravec, 2004), other studies have made use of wikis (Drexler et al., 2008; Ferdig et al., 2007), social networking sites (Ferdig et al., 2007), and video sharing sites (Buchanan et al., 2008; Meadows & Murphy, 2004). Importantly, Web 2.0 applications have been mostly linked to antecedents to peace via their association with social, and specifically Vykotskian, notions of learning (Vygotsky, 1978), in that promoting collaboration, communication, diversity, and interaction leads to desirable outcomes. Email (Carano & Berson, 2007; Merryfield, 2003; Yablov & Katz, 2001) and video conferencing (Buchanan et al., 2008; Laterza et al., 2007; Lee, 2006) have also been used for the same purposes, while mobile phones have been proposed as tools to encourage the dissemination of information around the world and to promote mutual understanding and peace through exposing people to diverse ideas (UNDV, 2008)

Furthermore, online and video games are increasingly becoming associated with peace-related outcomes, as serious games have become complex learning environments where learners can engage in authentic learning activities (Oblinger, 2006). For example, Massive Multiplayer Online Role Playing Games (MMORPGs) offer opportunities for exposure to diverse populations (Ferdig et al., 2007), and collaborative learning and knowledge construction through social interaction (Papastergiou, 2009). Carr (2007) notes the growing interest in the use of commercial games within classrooms and suggests that if the focus is placed on playing the game it might be possible to break down some of the

"cultural baggage" that games carry, such as predominant representations of a specific ethnic group or gender in the imagery used within certain games. Felini (2008) reviews the "serious games" field and argues for the need to promote media education as a mode of learning since video games have recently penetrated media consumption behaviours. Fontana & Beckerman (2004) used story-based animated characters accompanied with a number of learning activities, in order to investigate the potential to instigate positive beliefs and attitudes. The recorded positive outcomes indicate that the use of video games can enhance interventions used for conflict resolution and conflict management within educational settings.

It is perhaps important to note that the outcomes of technology-enhanced peace-seeking initiatives *do not depend on technology per se but on the affordances of the technology and the pedagogy used to enable these outcomes*. For instance, in an attempt to promote communication, cultural awareness and inter-cultural understanding within communities who have different access to technology, Kassam (2008) notes that "global activism, constructivist curriculum development and teacher involvement [matter more] than having the latest technological gismos". Instead of focusing on the technology, it is essential to identify how to use technology and how to capitalize on its affordances to enable researchers and practitioners to target antecedents to peace in ways that were not possible prior to using the technology.

Pedagogies and educational practices implementing peace antecedents

As already mentioned, antecedents to peace can be materialized through both formal and informal learning experiences. Within formal educational settings, various curricula, approaches, and theories that specifically target peace outcomes exist. Importantly *social interdependence theory* (Deutsch, 1949) is frequently cited as the foundation upon which to structure peace-related activities and curricula. Social interdependence exists when

individuals share common goals and when individuals' actions influence the outcomes of others (Johnson & Johnson, 2005).

Our search of the literature identified various pedagogical approaches to peace-related outcomes. On the one hand, we identified the use of educational approaches that are traditionally associated with peace, equality and social justice: inclusive education, multicultural education, peace education, human rights education, anti-racist education, and conflict resolution strategies. On the other hand, we identified "generic" pedagogies which have been used in the pursuit of antecedents to peace. These involved collaborative learning, inquiry- and problem-based learning, situated learning, experiential learning, and authentic learning pedagogies. In addition, our literature search has indicated that perspective taking seems to be the learning activity most frequently used for peace-related learning.

Our review also indicates that it is essential to provide sufficient support and preparation to teachers developing curricula that promote peace and inter-cultural understanding. Ferdig et al. (2007) for example, claim that through the use of the Reading Classroom Explorer education literacy tool, teachers felt more prepared to develop curricula that would account for the perspectives, experiences and contributions of culturally diverse student groups. Preparing teachers to develop curricula that can promote inter-cultural understanding might be even more essential or difficult in conflict-ridden areas. For example, Vrasidas et al. (2007) have proposed the use of an online learning environment to provide teachers with a number of resources, modules and workshops, in an attempt to empower Greek-Cypriot and Turkish-Cypriot teachers to facilitate peace, mutual understanding and tolerance within their teaching.

The element of engagement

One of the critiques towards peace-seeking interventions is the fact that most of these interventions cannot account for long term sustainability in any positive outcomes they have

yielded. Nonetheless, many studies have reported that one element that seemed imperative to promoting positive outcomes relevant to peace-seeking is whether the people participating in such interventions are genuinely and actively engaged with the material and experience (Bosworth et al., 1998). For example, Drexler et al. (2008) claimed that through providing students with opportunities to participate in authentic learning experiences using Web 2.0 technologies, it was possible to engage students to such an extend that some students proceeded to participate in collaborative research projects that had sparked their interest but were beyond the course's requirement.

It is perhaps important to explicitly define what we mean by *engagement* vis-à-vis appeal and interest here, as interest and participation in a lesson or a learning experience may not necessarily translate to lasting impressions and behavioral and/or emotional change. Wilson et al. (2008, p. 42) exemplify this point when they argue that engagement is a multidirectional relationship that places demands upon all those who participate in the learning experience. Specifically, compared to appeal,

> engagement suggests a deeper and more complex relationship to a learning experience…While appeal suggests merely the ability to draw learners to the experience (a unidirectional force), engagement suggests a reciprocating relationship that changes the nature of the experience. Rather than just being sufficiently attracted to pay attention, learners invest creative effort and emotional commitment—and a willingness to risk in anticipation of valued outcomes.

Empirical evidence and sustainable change

A consistent observation during our review has been the fact that very few studies provide evidence to support the positive findings they record in relation to peace-building. While authors present the perceived positive results that can emerge through the use of

technology, empirical investigations to evaluate such outcomes are unfortunately scarce. Our search identified just three studies that have focused on evaluating the effectiveness of the interventions used: Fontana & Beckerman (2004) evaluated the outcomes of a violence prevention education project that used video games; Gaine & Weiner (2003) presented an evaluation of the effectiveness of anti-racist education on the web; and Roberts et al. (2004) focused on the evaluation of a project targeting conflict resolution strategies. Additionally, two pilot studies were identified: one aimed at evaluating a curriculum promoting conflict resolution (Goldsworthy et al., 2007), and the second evaluated a multimedia tool used as a violence prevention intervention (Bosworth et al., 1998). Furthermore, despite the fact that the articles identified above have presented evaluations of the effectiveness of the interventions used and provided empirical evidence to support this, it became apparent that no single study has provided longitudinal evidence to indicate a sustainable behavioural, cognitive, or affective change.

Sustaining outcomes after the end of specific interventions is important. It is therefore essential that future research be directed at evaluating the longitudinal effects of such interventions. Attaining peace or aiming for the promotion of peace-related outcomes, such as those of collaboration, inter-cultural understanding and respect for diversity will only be valuable if these outcomes persist through time. This argument echoes Roberts et al. (2004) who claim that a similar need exists in the field of conflict resolution.

Adventure Learning as a Means to Conceptualize Technology for Peace

Throughout the globe, individuals have traveled and gone on expeditions and adventures in search of new experiences and new understandings. Ernesto Guevara and Alberto Granado took a motorcycle trip across South America "to explore a continent they had only known in books" (Salles et al., 2004); Jack Kerouac (1957) traveled across the United States chronicling his spontaneous road trips in a fascinating and widely influential

novel; Weiner (2008) set out on a worldwide trip to understand what makes people happy; and Boellstorff (2008) traversed a three-dimensional environment for two years in a quest to understand real life in a virtual world. In addition to these formalized examples, the rise of Web 2.0 technologies and user-generated content has also revealed that numerous individuals across the globe engage in countrywide and worldwide travels in a quest to learn about the world beyond their surroundings and immediate culture. For example, This American Summer ("This American Summer," 2009) presents three students' road trip across the United States of America.

The Adventure Learning (AL) approach to education grew out of the experiential nature and powerful appeal of adventure, and seems to provide a means to conceptualize the task of using technology to foster peace within formal and informal learning contexts. In the sections that follow, we first describe the AL approach and then delineate its principles, linking it to peace-seeking. It is important to note here that the influence of AL experiences on cross-cultural participation, interaction, and collaboration has not yet been investigated (Authors, 2009). Current AL initiatives have focused on multidisciplinary education in the K-12 (ages 5-18) environment (Authors, 2009) and, in this context, project participants were provided with numerous opportunities to present their way of life to others. For example, through the use of text and media capturing day-to-day activities, project participants initiated global understanding and collaboration and set the foundations to eliminating cultural misconceptions.

Importantly, while AL projects have demonstrated a powerful potential for promoting intercultural understanding and have used environmental education as a form of peace education (Harris, 2004), our literature searches identified no adventure learning initiatives that explicitly focus on fostering peace antecedents. The realisation that the AL approach aligns with the promotion of the antecedents to peace identified through the literature review,

offered the impetus to exploring the use of AL to conceptualise the task of using technology within educational interventions to promote peace antecedents. In order to do that we will proceed to define the AL approach and outline the issues which need to be considered when designing peace-seeking AL interventions.

<div align="center">Adventure Learning</div>

Adventure Learning (Doering, 2006) is an approach for the design of learning experiences that provides students with opportunities to explore real-world issues through authentic learning within collaborative learning environments. Grounded on experiential (Kolb, 1984) and inquiry-based learning (Bransford et al., 1999; Dewey, 1938), students become active participants in identifying and posing questions, solving real-world problems, and taking action within their own community. Noteworthy features of the AL approach include the use of technology as an integral part of the experience, a focus on adventure, synchronized learning opportunities, media and curricular enhancements, collaboration and interaction, and a modular curriculum.

One example of an AL project is the GoNorth! program (Doering & Veletsianos, 2007, 2008) focused on the circumpolar Arctic and environmental issues of global concern. Every year, the GoNorth! expedition team of educators and explorers travels *live* to circumpolar Arctic regions via dog sleds to provide opportunities for learners to explore real world issues. The curriculum, travel experiences, and observations of the team are delivered in tandem to an online learning environment that classrooms and individuals use to hold synchronous conversations with international experts, peoples of the native culture, and the team itself. In addition, participants are provided with a multitude of opportunities to interact with others using blogs, video feeds, photographs, and 360° QuickTime virtual reality movies. The program is interdisciplinary and free to use with over three million students from around the world participating annually.

The latest GoNorth! project (which at the time of writing encompassed a traversal of the Nunavut, Canada) can be found at http://www.polarhusky.com. Results from the Adventure Learning approach in general, and the GoNorth! program in particular, have been very positive, with participants reporting being excited, motivated and eager to engage with tasks, collaborate with others, and initiate action in their own community (Doering & Veletsianos, 2007, 2008).

<div align="center">Harnessing Peace through Adventure Learning</div>

To harness the power of adventure learning for peace, rather than the affordances of environmental education for peace (e.g. Vrasidas et al., 2007), we delineate the adventure learning approach in the context of peace by infusing our literature review findings with AL practice, and embedding conflict resolution principles and cooperative learning practices within the AL approach. The reasons for integrating our understandings of the literature on technology and peace-related outcomes with Adventure Learning are multifold, but center on the fact that Adventure Learning has exhibited outcomes aligned with antecedents to peace and appears to provide a promising approach through which technology can be used to promote peace.

The Adventure Learning approach is situated within the following nine interrelated principles (The Learning Technologies Collaborative, in press; Doering, 2006):

- A researched curriculum based on inquiry,

- Opportunities for collaboration and interaction,

- Use of the Internet for delivering the curriculum and the learning environment,

- Timely delivery of media and text from the field to enhance the curriculum,

- Synchronized learning opportunities,

- Pedagogical guidelines for the implementation of the curriculum and the online learning environment,

- Education that is adventure-based.

- A specific issue and location of exploration, and

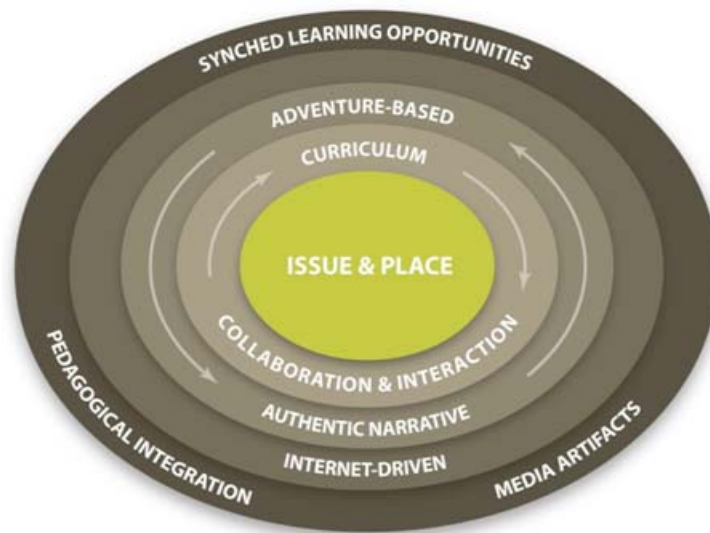- An authentic narrative situating the learning experience.

Figure 1. The Adventure Learning model (from Learning Technologies Collaborative, 2009)

Using the AL model (figure 1), we propose that Adventure Learning initiatives fostering peace and humanitarian outcomes should be *grounded on a controversial issue of societal concern relevant to the interests of participants from conflict-laden groups that exhibit incompatible opinions.* To successfully design peace-seeking adventure learning projects however, it is important to clarify what we mean when we refer to (a) controversial issues, (b) issues of societal concern, (c) conflict, and (d) incompatible groups. We will discuss these terms in the context of the AL principles in such a way as to contextualize the use of Adventure Learning aimed at fostering peace, following and expanding the principles laid out by Doering (2006).

A researched curriculum based on inquiry

The AL curriculum needs to encompass multiple perspectives and be grounded in inquiry, essentially, immersing learners in analysis, evaluation, and synthesis. Ultimately, it should engage participants in seeking solutions to real-world *issues of societal concern* (complex problems faced by society). Complex problems are multifaceted, encompass multiple solutions, and are prone to debate, argumentation, and controversy. Such issues may be global (e.g., climate change) or local (e.g., educational reform), and can form the core of inquiry-based curricula in general, and adventure learning projects in particular.

The facts that (a) no single solution exists to these problems, and (b) students already espouse diverse and opposing views on these issues, are important because they instigate controversy. A *controversy* occurs when "one person's ideas, information, conclusions, theories, or opinions are incompatible with those of another person, and the two seek to reach an agreement" (Johnson & Johnson, 1995, p.238). At the heart of peace-seeking adventure learning projects therefore is the process of communication, cooperation, reflection and negotiation. Academic controversy enhances interpersonal relationships when learners present their point of view to others, face an opposing view from others, switch perspectives, and collaborate on integrating their findings into the best solution possible (Johnson & Johnson, 1989; Johnson & Johnson, 1995). When participants engage in this process with others whom they mistrust or consider an enemy, academic controversy might enable understanding of "others," breaking down barriers and misconceptions, and deconstructing of images of the "other." Zembylas (2007, p.208) notes that "finding commonality through identification with the 'enemy' is perhaps the most difficult and yet profound step in the re-humanization of the Other".

Opportunities for collaboration and interaction

Collaboration and interaction between students, teachers, experts, and content are an important part of the adventure learning experience. Learners not only need access to text and

media, they need to be able to interact with others that participate in the experience. Such interactions may take the form of formal (e.g., panned chat sessions with experts) or informal activities (e.g., exchanging notes with others who participate in the project). Collaboration and interaction becomes an important part of peace-guided AL projects because it is in this process that participants will come to face the "other" and re-evaluate their perceptions. For example, Adventure Learning projects have allowed individuals worldwide to discuss deforestation and oil exploration with both environmental experts and Inuit cultures that may be impacted by such practices (Doering & Veletsianos, 2007).

Use of the Internet for delivering the curriculum and the learning environment

The curriculum and the learning environment in AL projects are delivered through the Internet in an effort to capitalize on the affordances of technology to enhance the learning experience. Using the internet allows instantaneous connections between the classroom and individuals in the field, as well as immediate updates from the field. In essence, interaction and collaboration between individuals participating in the project is heightened through the use of the internet. The advancement of contemporary technology and its pervasive integration in our daily lives has allowed individuals to engage with topics, issues, ideas, and practices that otherwise would have been impossible to engage with.

Timely delivery of media and text from the field to enhance the curriculum

Effective and engaging participation in adventure learning projects requires consistent and timely delivery of information and media from the field. In other words the expedition team should coordinate the times and days that specific data is provided to students/teachers through the learning environment, and students/teachers should know when these data are to be available on the learning environment. Data from the field (e.g., photographs, videos) can help motivate students by providing a level of authenticity for the curriculum, while timely delivery allows teachers to plan their lessons and activities.

Synchronized learning opportunities

Adventure Learning curricula do not exist as stand-alone units. Rather, they are transformed and enhanced by synched learning opportunities provided via the online learning environment. For instance, while a lesson may ask students to brainstorm solutions to influenza pandemics, the learning environment can provide opportunities for students to discuss this issue with other students (bringing students from the conflict-laden communities together), engage with media that further explores the issue (e.g., video interviews with experts), or even share media from their local environment that adds value to the debate. The last point is especially important for conflict-ridden areas as *commonalities between individuals who are in conflict* can be easily explored through contemporary media such as photographs, audio, and video. In line with the literature review findings, the type of technology used to provide synched learning opportunities is of little concern; what is important is the use of technologies to enable such opportunities.

Pedagogical guidelines for the implementation of the curriculum and the online learning environment

Pedagogical guidelines are at the heart of the curriculum and online learning environment. Previous work has highlighted the importance of pedagogy for Adventure Learning (Doering, 2006; Doering & Veletsianos, 2007, 2008) as noted in the literature review, pedagogical guidelines are also important for teachers implementing peace initiatives. For peace-seeking Adventure Learning initiative *academic controversy* and *cooperative learning* are fundamental building blocks (Johnson & Johnson, 1989; Johnson & Johnson, 1995). Additionally, the understanding that *conflicts* are ubiquitous is also part of the pedagogical approach guiding peace-seeking Adventure Learning. From a misunderstanding between colleagues, to an argument between spouses, to an internal struggle, to differing opinions between countries, everyone has, at one point or another experienced a conflict in

their life. This outlook of conflicts is exemplified by Deutsch (1973) who notes that a conflict exists whenever incompatible activities occur. An *incompatible activity* is one that "prevents, blocks, or interferes with the occurrence or effectiveness" (ibid. p. 10) of a second activity. Equally important is the understanding that conflicts can be resolved constructively or destructively (Johnson & Johnson, 2006). Resolving conflicts constructively leads to numerous beneficial outcomes including strengthening liking, respect, and mutual trust, while resolving conflicts destructively leads to anger, resentment and distrust. What is important therefore is the *resolution of conflicts in a constructive way*, rather than the conflicts themselves: conflicts can co-exist with peace as long as conflicts are solved constructively.

Education that is adventure-based

Adventure is exciting and motivating, and authentic adventure is captivating. Integrating the notion of a real-world adventure that is unfolding in front of students' eyes provides additional reasons for students to engage with the curriculum and task. Importantly, we can capitalize on the excitement and engagement of authentic adventures to allow participants to set aside their differences and partake in shared activities that may strengthen trust and induce cooperation.

Identification of a specific issue and location of exploration

The curriculum upon which the project is grounded needs to be tied to a specific issue and location. As noted above, the chosen issue needs to be one of societal concern that engages students and allows them to participate in ongoing dialogue and debate. Further, designers need to identify the location where the expedition team will explore this issue. For example, if we assume that the issue of concern is environmental degradation, the location(s) where the exploration/investigation can happen can be anywhere on earth, but it would be especially beneficial if the communities who are in conflict could both identify with the location(s) and can explore commonalities as a result of the chosen location(s).

Delineation of an authentic narrative situating the learning experience

While the curriculum, adventure, interactions, and activities comprise the learning experience, the last piece of the puzzle that situates the experience is the development of the narrative of the experience. In other words, the learning experience needs to be situated in a constructed story that encompasses all of the features discussed above. The story should be based on adventure and should allow participants to actively partake in the storyline. For example, students should know that an expedition team is engaging in a two-week bicycle ride to collect images of environmental degradation across the British coastline, but they may not necessarily be aware of the difficulties the team will face during the expedition.

Summary

In this paper we explored how technology has been used to target antecedents to peace through the systematic review of relevant literature. We identified collaboration, interaction, communication, the understanding of 'others,' and the promotion of peace though varied forms of formal and informal educational initiatives and learning, as the *peace antecedents* predominantly targeted via technology. Moreover, we found that cultivating an ethos of respect for diversity can serve as a building block for peace-seeking. The literature review results suggest that if antecedents to peace are integrated in formal and informal learning experiences, they can provide the foundations upon which modern societies cooperate to solve conflicts. Specific to the use of technology for peace, we propose that instead of focusing on technology per se, it is essential to identify how to use technology to transform practice and how to capitalize on its affordances to enable researchers and practitioners to target antecedents to peace in new and creative ways.

These findings were then related and integrated within the Adventure Learning approach to education. Our understanding of the literature seeking peace outcomes via technology and the Adventure Learning literature led us to view Adventure Learning as a

way to conceptualize technology-enhanced education for peace purposes. We therefore proposed that peace-guided and peace-seeking Adventure Learning initiatives be *grounded on a controversial issue of societal concern relevant to the interests of participants from conflict-laden groups that exhibit incompatible opinions.*

We hope that this paper initiates (a) further discussions regarding the best ways to utilize technology for humanitarian outcomes, (b) the development of formal and informal peace-seeking Adventure Learning projects, and (c) research on peace-related outcomes that can be targeted through Adventure Learning.

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