The benefits and drawbacks of using technology in outdoor education

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Abstract

This research study was designed to investigate teacher and student perspectives on using

technology in outdoor education (OE) classes. I wanted to research this topic because I am

passionate about physical and outdoor education and was curious to see how technology can be

used in OE without taking away from the students' relationship with their natural surroundings. I

think technology can be very beneficial in any subject if used properly and not overused. I

created a survey with _Google Forms_ and sent it to education students, education professors, and

attendees at the YYC Outdoor Education Networking Day at Connect Charter School on

February 10th 2014. Many people who completed the survey said that technology, such as GPS

units and computers, can be useful to help students research the outdoors and create projects. I

also found that many people believe technology can be a distraction in OE. Overall there are

many benefits and drawbacks to using technology in outdoor education.

Introduction

Technology is constantly growing and evolving, therefore it is inevitable that students will be exposed to new and emerging technology during their schooling career. Outdoor education connects to the idea of spirituality and teaching children to be in touch with their environment. Outdoor education also relates to health and physical education - students are able to get plenty of exercise in a variety of different environments. And, of course connects with the idea of emerging technology in our classrooms. Teachers are beginning to rely on technology more and more as a teaching aid, but should technology be used in all aspects of education? Priest (1986) refers to outdoor education as "an experiential method of learning by doing, which takes place primarily through exposure to the out-of-doors. In outdoor education, the emphasis for the subject of learning is placed on RELATIONSHIPS: relationships concerning human and natural resources" (p. 13). If technology is being used in outdoor education, are these relationships between the students and their natural surroundings being jeopardized?

I am very passionate about outdoor education (OE) being promoted in the school system and hope that someday OE will be offered all across the country. Throughout my research I have learned about the benefits that children experience from being outdoors and building relationships with their environment. I also love the idea of incorporating technology into the classroom to help aid in both teaching and learning. However, I am hesitant about the possibility that technology may be used excessively in schools. Nowadays, it is rare to see a lesson being taught or an assignment being completed without the use of technology. We need to remember the importance of taking students outdoors and ensuring they are physically active and learning about their environment.

I was curious to learn how my fellow Bachelor of Education students, professors, and educators within the city of Calgary, perceive the use of technology in OE. I wanted to know what their role in OE is or was, how they have seen or used technology in the OE program both in the classroom and outdoors, what devices are commonly used, the benefits and drawbacks of using technology in OE, and if the participants would recommend using technology in OE.

There is no escaping the quickly rising increase of technology in our world but, if technology is used with purpose and intention it can aid learning and teaching in a variety of school subjects. As a future educator, I want to ensure that students participating in OE are learning about the environment and building relationships with their peers and nature without technology becoming a distraction or hindering their outdoor experience in any other way.

Background

Many of the articles I read regarding technology and outdoor education pointed out the exact questions that come to my mind when I consider the use of technology in OE. One idea that I read was regarding the two goals of OE, which are to "counterbalance the effects of modern urban lifestyles (Neill, 2001) and encourage its participants to connect with the rest of nature" (Van Matre, 1983) (cited in Cuthbertson, Socha, & Potter, 2007, p. 134). In today's world we spend a lot of time caught up in this modern lifestyle and often do not take the time to be outdoors and connect with nature. As an educator, it is essential to teach children the importance of exploring our natural surroundings. This same article also sums up my overall research question nicely in saying, "one must ask where the balance lies for a responsible use of technology in a field that attempts to encourage profound connections with nature" (Cuthbertson et al., 2007, p. 137). Unfortunately there is no concrete answer; this balance will change depending on the individuals involved and the experience they are taking part in.

In the article, *Technology Works in the Outdoors,* Zita (2008) says, "I have personally witnessed children thrive physically, emotionally, and academically when they are given the opportunity to explore and discover the outdoors and nature" (p. 10). It is essential for children to develop physical literacy from a young age so they become comfortable participating in a variety of physical activities, including physical activity outdoors. Outdoor education gives students the opportunity to experiment with discovery learning in order to learn more about the natural world. As MacEachren (2012) says, "As electronic technology becomes ubiquitous even in the outdoors, we must learn to attend to its influence on us and those we teach" (p. 32). We must learn how to use technology to benefit outdoor education and not let it influence us so much that it takes away from the relationships being developed with nature.

There are many ways that technology can become a distraction in outdoor education, which is why so many people advocate against its use in OE. Even if we are trying to use technology to enrich the learning experience of students in OE, sometimes it can have the opposite effect. Cuthbertson et al. (2007) state, "as a result of employing certain technologies, the opposite of the intended effect may actually occur" (p. 135-136). This effect is referred to as the "revenge effect" (Cuthbertson et al., 2007, p. 135). Technology is so prevalent in our lives today that even when we are outdoors "technology is lingering there, in the back of our minds" (Zita, 2008, p. 8). Personally, when I do not have my phone on me, or another way of communicating with the 'outside world,' I cannot wait to get back in touch, even when I am enjoying the outdoors. I do not want to feel this connected to technology but because we use it so often it is difficult to escape. Cuthbertson et al. (2007) mention that technology "adds membranous layers to our direct encounter with the natural world which has the potential to work against the actual goal of the outdoor education programme" (p. 137). Technology can put

up a wall between students and their environment, which takes away from the experience and joy that comes from spending time exploring the outdoors.

Even though there are many flaws with the use of technology in outdoor education, my research also opened my eyes to some of the benefits that come from using technology in OE. In my research I came across a video from the National Environmental Education Foundation (NEEF) about a school in Maine that promotes the use of technology in their outdoor education program. One of the men in the video, Aaron Maguire, who is the Director at Islesboro Island Land Trust, says, "Having those devices be a part of their learning experience can be a way of pulling them in and applying their existing knowledge to a new thing" (Using Technology to Connect Students and the Environment, 2012). If students learn how to use technology to enhance their learning experience they will be able to see the balance between how technology can be beneficial and how it can be harmful to education. Maguire also explains that when children have positive outdoor experiences, "it turns technology from a distraction and from something that's pulling them away from what's important in life into something that's directing them towards, and helping them learn about the things that are really important in life" (Using Technology, 2012). Knowing how to use technology properly pulls children into their environment without relying too heavily on the technology. The students at Iselesboro Central School are able to put their information online to be shared with people all around the world. This gives them the feeling that their work is meaningful and gives them purpose to work hard and learn new things about their environment (Using Technology, 2012).

One form of technology that is heavily discussed in the articles I came across is the use of global positioning system (GPS) devices. Zita (2008) explains, "With GPS technology we have an opportunity to create hands-on learning opportunities that will stimulate students' curiosity for

the unknown through a medium that is familiar to today's generation" (p. 10). The previously discussed video mentions that children are "very, very into technology" (Using Technology, 2012), therefore using technology to engage them in outdoor education will reach them on a level they are comfortable with and spark their desire to explore their surroundings more thoroughly. Zita (2008) also mentions that, "Our task as educators is to try to show the learner that these technologies [maps, compasses, GPS units] can work for them and increase their appreciation, understanding, and knowledge of the natural world" (p. 8). These types of technologies allow us to understand where we are in the world in relation to other people, cities, and even countries and can help to lead us in the proper direction during an outdoor education excursion.

<div align="center">Research Context and Methods of Investigation</div>

The majority of my research was conducted online through a survey using *Google Forms*. All this data was received anonymously online, and *Google* automatically organized my data into a spreadsheet to allow easier analysis. The specific context of my survey was to discover the positive and negative ways in which technology impacts outdoor education based on the perspectives of those who are likely to have a background or interest in OE. I gathered all my research from my *Google Forms* survey, the Calgary Outdoor Education Networking Day on February 10, 2014 at the Connect Charter School (CCS), and from several articles I read for my literature review. The survey I created was sent to all Mount Royal education students and professors via email and was also sent to participants from the YYC Outdoor Education Networking day who shared their contact information with the rest of the attendees. I selected my participants based on people who I thought would have a background with outdoor education and share the same passion for teaching, physical activity, and outdoor education. I did not need

to gain permission from parents or guardians because all participants were over the age of 18 and able to make decisions for themselves about being a part of my survey. To ensure that my participants would be protected from any kind of harm, I made sure that my survey was completely anonymous, and made questions optional so they could chose not to answer a question that they were uncomfortable answering. There was no obligation for anyone that I sent my survey to, to complete the survey if they did not want to. Another way I was able to ensure participants were protected from harm was by completing the TCPS 2: Core - Ethical Conduct for Research Involving Humans Course on Research Ethics designed by the Government of Canada.

My survey consisted of eight questions: select the position that applies to you (teacher, student, etc), what grade do you teach, what is your contribution to the world of outdoor education, how do you use technology in outdoor education, what types of technology do you use in outdoor education, what do you think are the benefits of including technology in outdoor education, what do you think are the drawbacks of using technology in outdoor education, and overall, would you recommend using technology in outdoor education?

I chose to approach my research with an online survey because I believe it was the best way to reach a larger audience and I wanted to keep it short and simple to increase my chances of participants' willingness to take part. The data I collected was mostly qualitative since the use of technology in outdoor education cannot be explained fully with quantitative data. I was interested in my participants' personal experiences and opinions. Since I created my survey with *Google Forms,* it was automatically organized into a spreadsheet that allowed me to see individual answers. *Google* also provided me with a summary of answers for each question. I

used this summary to create word clouds with the *Wordle* application that provided me with the main themes in my responses.

I was also able to take notes at the Calgary Outdoor Education Networking Day at CCS which helped me understand how teachers in my city are facilitating outdoor education. I was able to see a variety of perspectives from these educators and take some of their thoughts and ideas into account for my own research.

Findings

In total, twenty-two participants answered my survey, the majority of participants in my research were Mount Royal University students (82%). There were also a couple junior high teachers, one high school teacher, and one student from another institution. These statistics can be found in Figure 1. Another question that was asked in my survey was, "what types of technology do you use in outdoor education classes?" The responses I received can be found in Figure 2. I found that computers or laptops were the most common type of technology used and GPS units and cameras such as *GoPros* followed closely behind. A few participants stated that they used *iPhones* or android phones and *iPads* or tablets. A large portion of participants, thirty-one percent, stated 'other' and specified that they were unsure of the types of technology they have used or seen used in outdoor education.
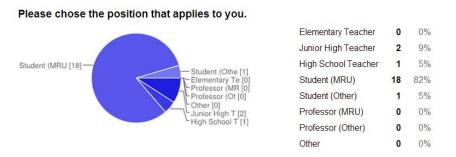
Please chose the position that applies to you.

Elementary Teacher	0	0%
Junior High Teacher	2	9%
High School Teacher	1	5%
Student (MRU)	18	82%
Student (Other)	1	5%
Professor (MRU)	0	0%
Professor (Other)	0	0%
Other	0	0%

Pie chart labels: Student (MRU [18]), Student (Othe [1]), Elementary Te [0], Professor (MR [0], Professor (Ot [0], Other [0], Junior High T [2], High School T [1]

Figure 1. Participants' demographic background

What types of technology do you use in outdoor education classes?

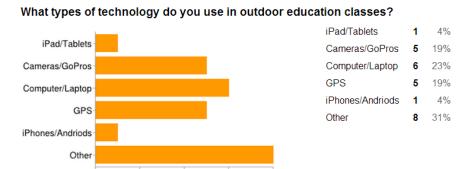|		
iPad/Tablets	1	4%
Cameras/GoPros	5	19%
Computer/Laptop	6	23%
GPS	5	19%
iPhones/Andriods	1	4%
Other	8	31%

Figure 2. Types of technology used in outdoor education

When participants were asked, "what is your role in the world of outdoor education?" I received a variety of interesting answers that are displayed as a word cloud in Figure 3. Some participants mentioned that they taught or volunteered in outdoor education classes. Some went hiking, sailing, camping or played games in outdoor education. Others have taken courses in outdoor education, and many participants again, were unsure of their role in OE.

Figure 3. Roles in outdoor education

When participants were asked about how they use technology in outdoor education, I again received some interesting and creative answers. Some responses that stuck out most to me were: GPS units, research, computers, cameras, videos, stove, safety, shelters, lighting, blogs, *Moodle*, presentations, and transceivers (Figure 4). I think it is very interesting to see how a variety of educators, or future educators, have used technology in different ways to help improve

their outdoor education programs. I was surprised to see how many different uses of technology could be incorporated into outdoor education classes.

Figure 4. Uses of Technology in Outdoor Education

Next, I asked some questions that were essential to answering my overall research question - "What do you believe are the benefits of including technology in outdoor education?" I received a wide variety of responses with varying opinions. I was very surprised by the amount of participants that stated they were unsure of the benefits or believed that there were no benefits at all. A shocking 45% (10 participants) answered that they were either unsure or believed there were no benefits. However, the other 55% of participants tried their best to explain the benefits they found in including technology in outdoor education classes. Some of these answers included:

- "With cameras alone it can help prolong the learning so that students can remember certain details that they may otherwise forget."
- "May open doors to newly found information."
- "It allows students to present to a larger audience, social media, and use the internet to display their projects and outcomes."

- "It can allow the students to do some of their own research and planning, it can provide new activities to do outdoors."

- "At the moment I'm not 100% sure. This is something I want to look into further. One of the beauties of outdoor ed is the time to focus on hearing the world, instead of imparting noise upon it."

Again, some of the common themes from this question have been organized into a word cloud that can be found in Figure 5. These responses helped to open my eyes to the possibilities that technology can provide when used in outdoor education, but have also lead me to question the possible cons in using technology.
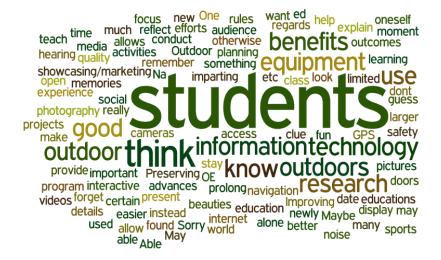

Figure 5. Benefits of Using Technology in Outdoor Education

Another essential question that was asked was, "What do you believe are the drawbacks of including technology in outdoor education?" This time, only five participants (23%) answered saying they were unsure. The remaining participants mentioned that technology can be a distraction for children or that it can take away from their outdoor experience. Here are some of the responses I received:

- "Students often spent too much time on tech already. Maybe a fear that they will miss the moment by getting caught up in the tech."

- "The kids might become too independent."

- "Not appreciating surrounding nature"

- "Take away from the essence of outdoor ed"

- "Routers handling capabilities, wifi down, not everyone having computers, tablets or GPS receivers etc"

- "I think excessive use of technology could interfere with students authentically learning about the outdoors."

All of these answers made a lot of sense to me, making it difficult for me to decide if I believe technology should or should not be used in outdoor education. Again, I created a word cloud that can be found in Figure 6, which helps to display the participants' answers to this particular question.

Figure 6. Drawbacks of using technology in outdoor education

I thought my participants would be able to offer a variety of benefits and drawbacks, but I was also interested to see if they would use technology in OE, if given the option. I decided to ask, "Overall, would you recommend using technology in outdoor education?" Six of my

participants (27%) stated that they would not recommend using technology in outdoor education, five (23%) said they did not have enough experience to answer the question or were on the fence about their answer and said "maybe," six (27%) answered that they would recommend using technology in outdoor education, some of which mentioned using technology in moderation, and the other four participants (18%) chose not to answer this question. Some specific responses I received were:

- "Yes, if it does not take away from the main principles of outdoor education."
- "I think in moderation it is beneficial but not all the time"
- "Yes, if used appropriately"

Overall, the possibility for recommendation was split almost completely in half. I believe that there is no definitive answer to whether or not technology should be used in outdoor education. The answer lies in each specific outdoor education experience and program, and will differ between those involved in teaching or participating in outdoor education (Figure 7).
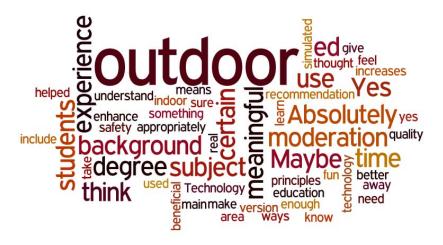

Figure 7. Would you recommend using technology in outdoor education?

Conclusions and Recommendations

As a future teacher, this research has helped me to discover how I can use technology in outdoor education in a manner that will not allow the technology to take away from the students' connection with nature. I found that there were a lot of benefits and a lot of drawbacks that can arise from incorporating technology in outdoor education. I chose to compare the pros and cons using a chart than can be seen in Table 1. It is up to the individual to decide whether they believe technology will help or hinder their outdoor education class. In conclusion, I have decided that technology should be used in outdoor education in moderation. I believe it is important for students' to share their knowledge with a larger audience because it provides them with more purpose and motivation to do well in outdoor education; the assignments become more meaningful for students when they feel their work is being appreciated by a variety of people. I also really like the idea that technology, such as cameras or *GoPros*, can be used to capture important moments during outdoor excursions and that GPS units can be used to help students' navigate and stay on track while in nature. I still do believe that there are drawbacks to using technology in outdoor education as well, but if used properly, technology can aid in the learning experience without taking away from the students experience in the outdoors. They will still be able to enjoy their outdoor learning moments and have the technology to research, reflect, and present their findings based on hands-on experiences.

Table 1

Benefits versus drawbacks of using technology in outdoor education

Benefits of Using Technology in OE	Drawbacks of Using Technology in OE
Can conduct research and planning before heading into the outdoor environment	Technology can be a distraction – students are focusing on screens rather than nature
Allows students to present their work to a larger audience	Students may become too dependent on the use of technology outdoors
Can use cameras to capture moments for reflection and analysis later on	Takes away from the outdoor experience
A GPS system can help keep students on track during outdoor excursions	Decreases the opportunity for children to be physically active
Having cell phones to keep in contact with schools and parents can be helpful in case of an emergency	Technology can be difficult to access when outdoors so we cannot rely on something that we may lose access to

In completing my research, there were a couple questions that came to mind that I believe would be interesting to research in the future. My first recommended research question is, "How do students believe technology influences their experience in outdoor education?" A lot of my research came from educators or future educators, but I believe it is just as important to discover how the participants of outdoor education view the use of technology. The other question that I have is, "How can technology be used differently in the spring, summer, winter, and fall time?" I do not know if the season has an impact on the way technology can be used in outdoor education but I am curious to see how the use could differ. I also believe that further research could be completed regarding the benefits and drawbacks of using technology in outdoor education. I unfortunately did not receive a high number of responses to my survey and I would be interested in gaining further perspectives on this topic.

References

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