Increasing a Sense of Place Using Blended Online and On Site Learning

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Abstract: Finding time for place-based instruction can be difficult using a traditional ground classroom or online format. This is a case study report showing how blending the two modalities can increase opportunities to go more in depth on environmental topics. This blending of both classroom and online creates a sense of place and encourages teaching with multiple learning styles. The increased classroom flexibility allows more individualized instruction for student's needs and interests. This report will share how an environmental biology class implemented a blended learning class over two semesters. Results of this pilot show an increased student effort by allowing for more varied learning about the local environment.

Keywords: blended learning, hybrid, online, place based, flipped, educational assessment, course design

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Introduction: What is Blended Learning?
Blended learning is a way to combine ground instruction with online discussion.

Literature Review
What made this study unique was the incorporation of best practices within the environmental education field. Three types of place based experiences from Karrow and Fazio (2010) were attempted. While the use of face to face instruction is not controversial when teaching about the environment, there is some controversy related to using an online format. The reason for this is because it can decrease place-based instruction (Whitehouse, 2008). The use of online learning in environmental education is not new. A university in Australia, for example, has an introduction to soil course that includes a discussion and virtual field trips (Clark, James, 2005). Though this may not seem place-based, using online guided field trips and student reflections on their local environment increases an understanding of their local area (Whitehouse, 2008; Arnold, 2011). Thomas (2015) suggests that blended learning should have increasing student engagement. This is done by including synchronous and asynchronous student learning, increasing collaboration, providing assessments (to determine effectiveness), and increasing support materials. According to Toa, Fore, and Forbes (2011), blended learning should integrate: laptops, interactive games, quizzes, review for challenging material, clickers, group work that includes case studies, and archived lectures.

Methods to Incorporate Blended Learning in an Environmental Biology Class
In the fall of 2014 Grand Canyon University decided to run a pilot of blended learning classes in Math, Physics, Anatomy, and Environmental Biology. The overarching goals of the pilot were to: increase the student's choices on how to study, have the opportunity to go deeper into class concepts, and have students be more productive with their use of time. During the duration of the pilot, the instructors met multiple times to brainstorm how to implement best practices in their individual classrooms. The pilot program set uniform classroom expectations such as requiring one to two discussion questions each week and encouraging instructors to implement a variety of hands on individualized activities.

The goal of the pilot program of spring 2015 was to duplicate successful blended learning strategies that were determined from the fall of 2014 surveys. For the environmental biology class in the fall of 2014, sixteen students participated in the midterm and end of course surveys. In the spring of 2015, ten students responded to the surveys. Classroom surveys (using poll everywhere) had a varying degree of participation based on student attendance. Students were not required to participate in the study and the Likart scale questions (ranging from strongly disagree, disagree, neutral, agree, and strongly agree) were vetted via the Center for Innovation in Research and Teaching at Grand Canyon University. The environmental biology blended learning course of spring 2015 focused on using the framework of Thomas' research to increase student engagement. Areas of focus included using synchronous and asynchronous learning, providing assessments to determine effectiveness, and increasing support material (Thomas, 2105). The online component was designed to help students build discussions to apply the course content at a deeper level. Students were encouraged to apply their own life experiences and be more prepared for a flipped classroom on most Fridays. By student request, some of the online discussions became presentations, online videos, and posters using http://www.kizoa.com/.

Students, as a result, had more of an opportunity to go more in depth regarding local issues by engaging in a virtual and ground format. The instructor was expected to use Poll Everywhere (provided for by the University) to evaluate student's perceptions of the course and check for understanding.

Unlike a hybrid course where there is no designated class time that is missed, blended learning at Grand Canyon University included a "free" Wednesday class period which was used for special occasions. Wednesday classroom time was used for when there were weeks with holidays, when guest speakers were scheduled, or when field trips were planned. Most students utilized this optional time in one of two ways. The first gave students the ability to ask for extra help during this time. Very few students utilized this option, potentially because the class time was at 7am. Mainly students took advantage of the classroom time to work on group projects.

This course was flipped by providing student opportunities to explore and utilize background knowledge. This was achieved in the virtual world as well as hands-on experiences. Asynchronous discussion activities provided low stake assessments to determine if the students were ready to apply the week's knowledge in the classroom on Friday and expand on students understanding of lectures on Monday. The first part of class on Friday highlighted what happened in the online discussion forum, while correcting any misunderstandings. At the end of class a ticket out the door acted as an additional formative assessment to gauge student understanding on Monday and Friday. This flipped model focused on: pre teaching, providing multiple low stake assessments, and increasing complex thoughts (Dreon, 2014). This three-pronged approach stressed accountability and provided an outlet for individual research to make the content more meaningful. Additionally, students could attend an optional field trip to a local restoration area. Students that were unable to attend the field trip learned about local efforts by participating in a virtual trip. What makes this blended format unique was students from both groups then interacted in an online discussion format to increase the depth of understanding about the importance of local restoration.

Outside of class, students needed to use computers to participate. In the classroom, students were encouraged to bring laptops and phones to research class topics in small groups. PowerPoint review quizzes were provided in the learning management system via a link to an outside Webley webpage dedicated to the course. The reason for this was to make the content as uniform for students when the learning management system was undergoing continuous updates. In the beginning of class, students were given probing questions to see what information from the previous class was retained using the program Poll Everywhere. With this program, students only needed a phone (capable to text message) or a laptop to respond anonymously. (see graphic 1). In addition students were also asked what types of questions they wanted to respond to (open ended, multiple choice…), so students took an active part in how they would be assessed. Graphs showing student's responses or compiled open ended questions were viewed from the projector for students to see. Streamlined lectures were also posted for the students to review material using the class website.
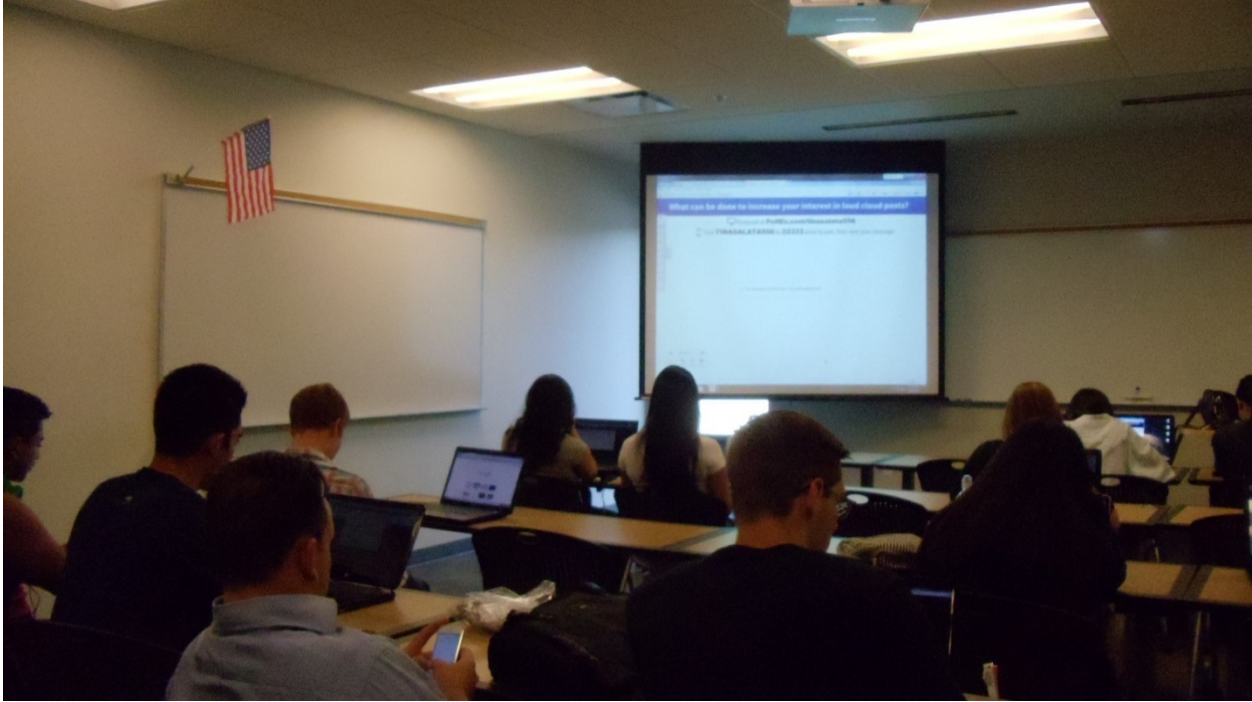
Figure 1: Students Responding to Poll Everywhere (a cell phone based survey program)

Results

      The blended learning format helped free up instructor classroom time by encouraging a flipped classroom using place-based learning. Students anecdotally commented that place based learning gave context to the facts in a meaningful environment. Guest speakers helped give cultural connections to the classroom topics. Student's ability to question and respond to environmental values within the discussion form provided a safe place to determine environmental morals. This met the three parts of placed based learning addressed by Karrow and Fazio (2010): natural, cultural, and ontological. Place based focused instruction included using local case study examples to learn more about the topics; which encouraged a blended learning format. A natural history awareness was provided via a guest speaker and field trips (on and off campus). The guest speaker discussed the cultural context of farming in central Arizona. A field trip to a local restoration area showed how a traditionally marginalized neighborhood could have a green space encompassing native flora and fauna. Finally, the on campus exploration encouraged discussion on campus values based on campus design and individual lifestyle choices. These experiences and activities were designed to encourage further student discussion to share their own background knowledge on information they were learning.

      The online instruction was varied, in an attempt to make students creators of knowledge rather than passive participants encouraged by Smith, (2002). In the fall of 2014, students only posted in the virtual learning management system. At the end of the semester, students requested more opportunities to be creative other than responding critically to lectures, videos, and websites (like they had in class). In response to this, the spring class of 2015 posted and also could create their own videos, PowerPoints, Prezi's, and posters either individually or in groups. Students were asked if they liked these alternative activities. Fourteen out of fifteen responded positively towards having more options for posting. On the other hand, students showed

conflicting responses on if they liked creating posters, videos, and slide shows. The majority of the students preferred the discussion format but only 38% wanted more projects.
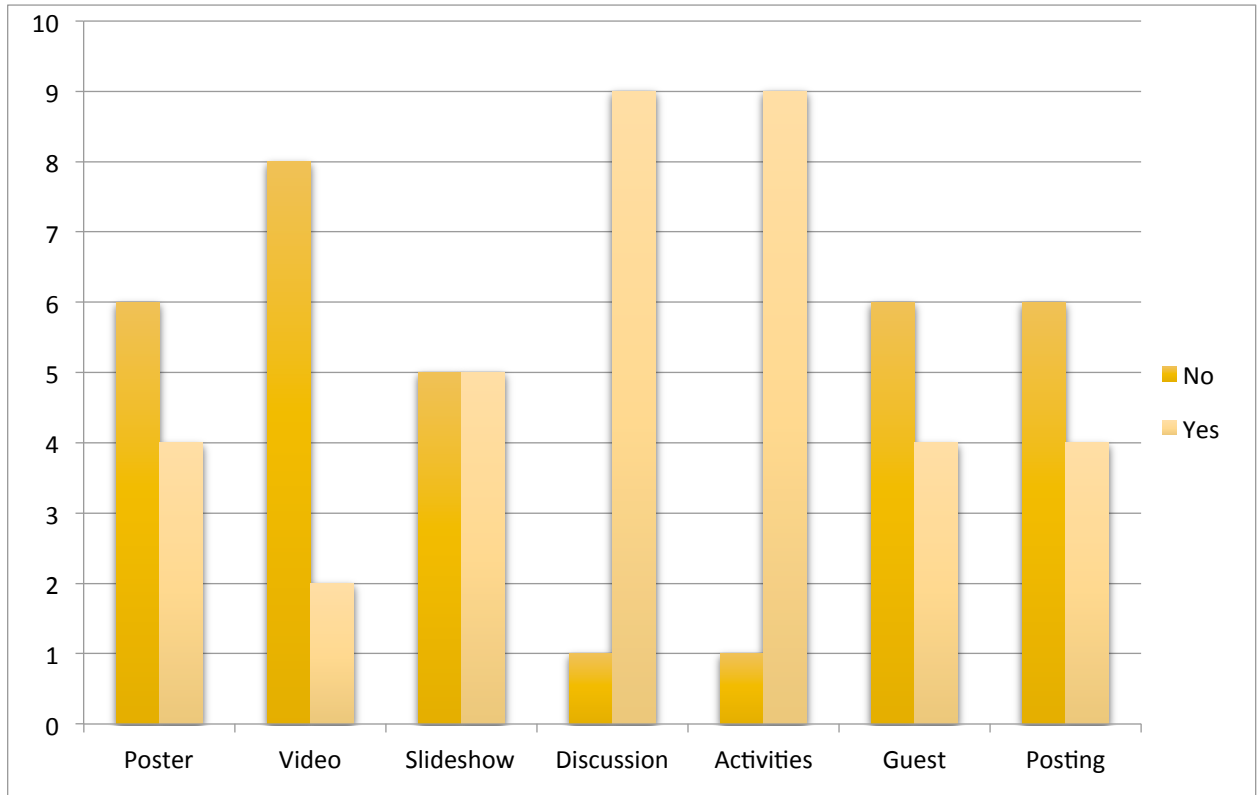

Figure 2: Student perceived interest for in activities for the spring 2015

Despite this difference, the majority of students in both semesters felt the blended learning format resulted in a manageable workload (94% in the fall and 87% in the spring) and felt positive about blended learning (75% in the fall and 67% in the spring).

Because it is known that students vary in how they best learn, the environmental biology class study also looked at students perceived learning styles (determined by a previous college success class) to see if blended learning was beneficial. Because the course is at the sophomore level, students were refreshed on the terminology via a multiple intelligence quiz found online (developed by ITC publications). Students who self-identified as having multiple learning styles preferred the blended learning environment over students who felt connected to mainly one type of learning style. Surprisingly, the kinesthetic learners (which had increased learning within the blended learning mode) were more likely to feel blended learning did not help develop their learning styles (see graphic 3).
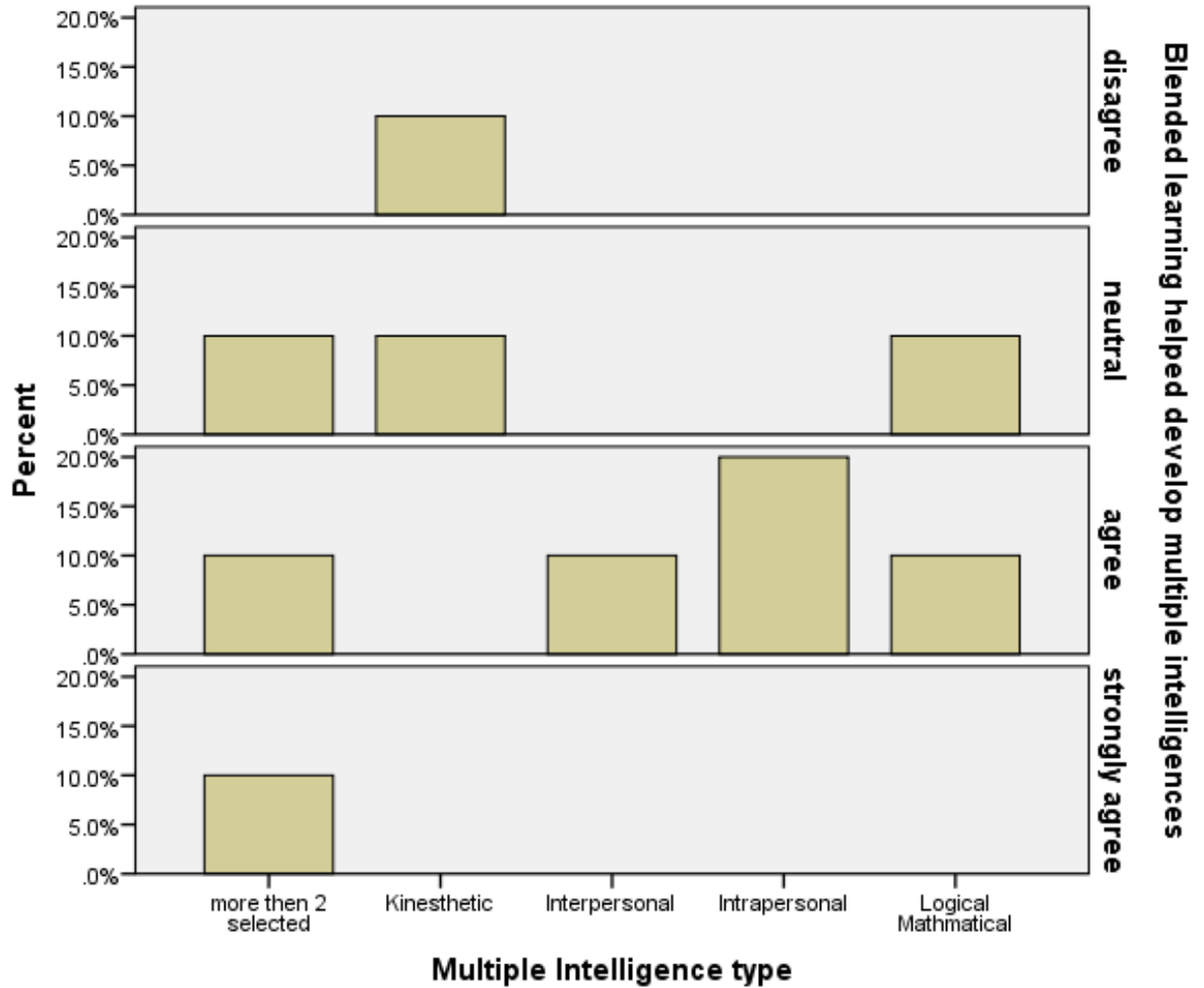
Figure 3: student's perception that blended learning helped develop multiple intelligences.

Overall, the advantage of using technology outside of the classroom allows instructors to be more flexible with in class time. This flexibility can increase hands on activities and place based learning. The online component also encourages independent learning. By comparing classes that did not participate in the pilot program with those that did, there were less C students and more A and B students. This may be due to increased engagement and the flexible class period allowing to help for students needing it.

Discussion

This study allowed for two semesters of students voluntarily responding to surveys. Some limits to this approach included having the class start at 7am, which may have limited students signing up for the class. A larger sample size would provide better data. Having more data, it would be interesting to see if tactile learners would still feel a blended learning format did not increase their learning styles. Given more opportunity to do hands on activities, they may have felt that there was not as much time to learn in ways where they felt weaker. Therefore, they may have interpreted that blended learning helped them as a tactile learner but

did not help them in learning in others ways. Alternatively, low performing students did not seem to gain any advantage using a blended learning format.

       This could mean that blended learning helps to encourage students at the C level to work harder or retain more. Anecdotally the students commented: "I like that instead of class on Wednesday we get to discuss online.", "I like the fact that we can discuss current class topics in class and online so that we have a richer class discussion for the class.", "What I like about blended learning is that there are more interaction in discussion questions", "I like that there are more options available. Also, there are some independent learning options available as well." When surveyed on Sep. 12, 2014, 87% of students felt that the learning management helped them prepare for class. It is clear additional research will be required to collaborate the results of this study. Future research is required to determine what parts of blended learning students prefer (or if they should continuously vary), how much instruction should be based on student perceptions, how to streamline class preparation time and grading, and ways to improve the learning management system.

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