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Ethan Conti

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"Bringing the Outdoors In: Creating Classroom Environments with Plants and Animals"

Ethan M. Conti

College of Education, Cal State Monterey Bay

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Dr. Patty Whang

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Abstract

The focus addressed in this Capstone Project is the benefits of live plants and animals within the classroom. This is an important issue for both students and teachers because live organisms within the classroom aids mental health, physical health, strengthens morals, and broadens horizons. An evidence based argument is offered that these issues are growing within the schools and need to be addressed with all tools available. The primary stakeholder perspectives chosen were teachers, because they are affected and can see the benefits of the topic at hand. Three themes/action options emerged from an analysis of the data and explored as ways to address the issue presented. Three themes emerged from an analysis of the data: 1) many students are not in touch with nature; 2) there are many students struggling with mental illness; and 3) morals need to be strengthened and discussed within the classroom. The introduction of plants and animals is argued to be the most effective way to tackle the challenges stated above.

Bringing the Outdoors in: Setting the Stage

I grew up at the base of Yosemite National Park in a little town called Bass Lake. As anyone can imagine, nature has always been a massive part of my life. Being around such breathtaking views, spectacular wildlife, wonderful rivers and waterfalls, was truly a blessing. Days spent out hiking with a sandwich in a backpack up to a water hold surrounded by the gorgeous outdoors was something I got to experience rather regularly. As I began to grow up the ventures went further and more exciting. From catching and holding salamanders to driving up a hill sideways in the snow, what I was able to experience was amazing. As I began to leap into the next stage I looked out for what the future may hold for me. I looked at numerous different schools and settled on CSUMB. I felt out of place, it was not as accessible to get to certain hikes I once took for granted. It took a little bit of getting used to until I began to shift my focus. You see growing up I was so intrigued with what was hiding behind every tree, why the trees were growing, where the next pond might. I was lucky enough to live with a marine biology major who was also getting his dive certification. He began telling me about what lived behind every rock under water, why the tide was moving a certain way, where certain fish like to call home. It sounded all too familiar to the excitement I felt back home in the mountains. Unfortunately getting certified to scuba dive was far too expensive and time consuming. So with a thin wetsuit, a pair of free fins, and \$15 goggles I began to learn how to free dive. Excited to see the world underneath the water I prepared to get in, as the frigid water rushed into my suit my breathing got short and the sense panic set in. I had to remember to stay calm and slow my breath as I stuck my head under water. Once I calmed down enough I began to process what I was seeing: kelp swaying with the waves, fish jetting off into the blue, starfish in more colors than I imagined. Of course the first dive was short spurts underwater at

shallow depths. However, as we began to get better we would go 30-40 feet underwater for close to a minute at a time before returning to the surface.

As I continued to learn more about what was in the gorgeous bay I now called home I began to aid in local classrooms. It saddened me how many students not only knew about the beauty in the mountains but the magnificent life that was teeming right underneath them. As I began to realize how passionate I was both about wildlife and teaching I grew ever closer to being able combine the two into one spectacular classroom. Students often miss out on very simplistic experiences like trimming a fern or watering a bird of paradise. While my dream is to allow students to experience my goals is much larger. My passion is to ensure that every student that enters my classroom leaves more rounded and knowledgeable. Not every third grader is going to be able to see the amphibians I have seen out in the mountains nor are they going to be able to hold a starfish pulled from the bottom of the ocean. Being able to bridge that gap for each and every student regardless of background is a truly exciting thought. I have been so incredibly blessed to have the opportunity to connect with wildlife and nature many people are only able to see on vacation. It feels selfish to not do everything in my power to not try and give my students the same experience.

Literature Synthesis

There is an opportunity to take a classroom's environment and energy to the next level to aid in students' learning. Students are often not in touch with nature or may be in an area where those resources are not available (Wells, 2000). Bringing students closer to nature (Cornershop, 2019) can be such a vital way to expand their horizons and benefit their cognitive development. The introduction of class pets and plants (Bohra 2022) can make a huge impact on the student in many different ways (Ganzert & McCullough, 2017). Terrestrial plants can create a healthier space by cleaning air quality as well as aiding in students' health (Hall & Knuth 2019). Creating

a space with live plants within the classroom will aid the classroom's aesthetic but more importantly has been shown to drastically improve the mental and physical health of those who spend time around this form of nature (Hall & Dickens, 2011). Many students will never have or rarely have an opportunity to see some exotic plants (Wells, 2000). Creating a space where students are exposed to something they may otherwise not can make a huge impact on their time within the classroom and could be something they use in their own life which will improve all forms of health (Bohra, 2022). Continuing with these themes many students who come from a background of economic hardships might not have the opportunity to have a pet of any kind. They might have not been introduced to pets such as dogs but maybe not reptiles, amphibians, fish, turtles, tortoises, rodents, etc (Mars Petcare, 2017). Classroom pets however are not just for fun they have a very strong impact on the students' learning (Mars Petcare, 2017). Having pets in the classroom teaches important lessons that involve compassion, leadership, responsibility, and respect for living creatures (Ganzert & McCullough, 2017). There is a gorgeous opportunity to increase students' mental health, physical health, and increase their ethics and personal character. All of this can be done through the introduction of plants and animals into the classroom.

The issue is that teachers truly have not mastered how to fully benefit each student's mental, physical and intellectual health. This is an issue at a much larger scale. The proposed ideas show the ability to aid three major issues we are currently seeing. The first being the students' ecological comprehension especially with the current issues our planet is facing. Our planet has been facing this issue of climate change which is having severe consequences on all of its inhabitants (Nasa, 2022). One huge issue is that it is hard to get people to care about what they don't know or can't comprehend. Creating an environment within the classroom that forces students to care for plants, animals, and living organisms will create a generation who is more

conscious of these issues (Baxter, 2019). The second issue is the equity informed within the education system may vary based on location. There are groups especially in rural communities who don't have access to view these sorts of resources. For example; a student in Fresno might not be able to ever see a blue tang or turban snail or a cypress tree, these are items that students from Carmel are able to see extremely often. The issue is many parents in Fresno are unable to provide that sort of exposure to their students (Wells, 2000). The third issue that is vital to bring up is the global implication proposed. As discussed in Ganzert & McCullough (2017), having pets in the classroom can truly help with students' ethics. Schools in Japan put a heavy impact on the teaching of good ethics through the students' entire time within the classroom (Bamkin, 2020). These implications are having an immense impact on the entire country of Japan, as it is one of the safest places in the world (IEP, 2021). While this idea looks far different from the teaching of ethics in Japan, the product produced through the students could look nearly identical. This concept that is being proposed would allow a larger comprehension of ecological issues. The barriers that are placed by location, economic background, and ethnic background, all which the student has no power over could shift drastically. In addition, students would get global teaching that would have a beneficial impact on the students' morals.

The discussion of the impact of plants and animals is not a new topic however it is slowly growing and making a big splash in education. Teachers, educators, school districts, are all slowly beginning to realize the impact these minor changes can have, however there is still more to be done. There are students in large numbers that are suffering from mental health issues (Weare & Nind, 2011). As these rates of mental struggles are beginning to grow is it extremely apparent that action needs to be taken (Raines & Talapatra). There are studies being done constantly continuing to prove the impact these changes have. "American Humane's research

team recruited a total of 41 classrooms across 19 schools to take part in the study. A total of 591 third and fourth grade students from 15 U.S. states were enrolled in this study. Overall, 20 participating classrooms had a pet and 21 did not” (Baxter, 2019). Throughout studies like these everyone from teachers to parents to other faculty saw a difference in the students behavior making them more excited to be in the classroom. They displayed more empathy and more leadership skills, in correlation to those classrooms that did not participate (Baxter 2019). Indoor plants can aid in one physiological, cognitive, health-related, and behavioral functions (Han, Ruan, & Liao, 2022). As students continue to struggle with their mental health, and personability, the recent epidemic has truly not helped this situation in any regards. Over covid students have struggles with their development and mental health (O'Sullivan, 2021). Now is the best time to begin implementing practices that increase students' mental health, physical health, and increase their ethics and personal character.

While it is vital to discuss the implication these sorts of practices have on students there is also a flip side of this argument. Teachers are experiencing a very real burn out at a very alarming rate (Leiter & Maslach, 2016). Teaching is a very emotionally demanding job as well as mentally demanding. Oftentimes the students' struggles and worries are given to the teacher because oftentimes they are the only person to turn to. Teachers have to give 200% to their students in order for them to truly find success. Giving 200% has unfortunately led to a major issue in the teaching communitie. Many teachers don't make it past year 5 due to these struggles that they face (Brackett & Cipriana, 2020). As previously discussed classroom pets, plants, living natural organisms aid in mental health and stress (O'Sullivan, 2021). The fact is that these mental and physical benefits can truly aid a person especially when they are surrounded by stress. While students have a lot going on inside and outside the classroom, so do teachers. These

concepts being proposed can have massively beneficial impacts on the teachers. A classroom environment can make a huge difference and help aid teacher burnout. Creating a place that has been proven to aid in the issues could prove to have major implications to stop the burn out in teachers. Unfortunately many of the teachers experiencing burnout are those who come from rural areas (Sutcher, 2018). Where the students often are unable to experience these objects such as more exotic plants and animals are from the more rural portions of this country. The proposed concepts and ideas can broaden students horizons, and just as importantly create an environment that teachers stick around for the children in their community. It is vital to create a location where students are able to go to a place that they feel safe, welcomed, and are able to grow both academically and personally.

Introducing plants and animals into the classroom presents an attractive opportunity to enhance students' mental and physical health, as well as foster their ethical and personal development. As the need for more mental health aid grows so does the students' need for increased exposure. There are students who may have never seen a bird of paradise, crested gecko, neon pothos, bearded dragon, firefish goby, etc. Whoever may be reading this might have never been exposed to these living plants and creatures. Being able to create an environment where everyday students are exposed to creatures that the average person doesn't know is truly something special. There is a crisis where students don't have anyone that they can count on. It is vital to ensure students have at least one teacher they can return to even after they have left that teacher's classroom. The goal is to continue to recreate the way we teach and aid students learning one day at a time. The time to make change is now, the students' growth and development is on the line and anything can and easily aid a teacher is an outlet that must be explored.

Method

For this Capstone Project the researcher investigated how teachers and parents view bringing nature into the classroom and what they think could be done to improve it. In addition the researcher investigated how bringing nature into the classroom might impact a student's learning. Based on an analysis of the data and the relevant research literature, the researcher will use what he has learned to formulate an action that responds to the focus issue in a way that inspires, informs, or involves a particular audience.

Context

The two teachers interviewed came from contrasting schools with distinct teaching approaches. The first teacher, Teacher A, had a pet rabbit and had been teaching at the same school for over a decade. Teacher A, who was also the interviewer's former 5th-grade teacher, used the rabbit named Orea as a reward for students who remained focused. Orea added a unique and engaging element to the classroom. In contrast, the second teacher, Teacher B, worked at a private school in the Bay Area for about five years. Teacher B did not have any classroom pets but incorporated plants into the learning environment. These plants served as both teaching tools and enhancers of air quality and aesthetics. Both teachers demonstrated their creativity by utilizing elements from the natural world in their classrooms. Teacher A's rabbit created motivation for students, while Teacher B's plants offered hands-on learning experiences and improved the classroom atmosphere. These unique approaches enriched the students' educational experiences and fostered a positive learning environment.

Participants and Participant Selection

Hello my name is Ethan Conti and I am doing my Capstone project on how bringing nature into the classroom can impact students' learning . I grew up just south of Yosemite National Park, so

nature is embedded in my lifestyle. When I moved to Monterey my concept of nature shifted. It changed from hiking and trees, to coastal environment, and marine biology. I began to create my own collection of three freshwater fish tanks, and a 40 gallon saltwater tank. I have well over 20 plants and it is truly my passion. Hearing that there are students in Salinas who have not even been in the ocean saddens my heart. As someone who has been able to go freediving all throughout the bay I want to bring some of that into the classroom. Creating an opportunity that students are able to see and interact with living organisms they only would otherwise see on Tv. I am excited and driven to make a difference in the students' lives and expand their horizons further than ever believed possible. I will invite Cassy Hasen, Robin Ward, and teachers at Monterey Charter to participate in this study. Cassy Hasen is a current teacher in the Santa Cruz Elementary school district at the third grade level without any classroom pets or plants. Robin Ward is a current teacher in the Oakhurst Elementary school district with a classroom pet of many years. Finally the Monterey Charter school has a heavy connection to the discussion and involvement of nature within the classroom.

Semi-Structured Interview and Survey Questions

1. What have been your experiences with bringing nature or the outdoors into classrooms?
How would you feel if you had a number of natural elements in your classroom? How do you believe it could impact the students' learning?
2. What is currently being done to improve teachers' ability to bring nature or the outdoors into classrooms - by whom - and do you think this is good, bad, or indifferent? Why?
3. What do you think should be done to make it easier for teachers to bring nature or the outdoors into classrooms?
4. What are the challenges or barriers for teachers who want nature or the outdoors into

classrooms?

5. Is there anything else you'd like to say about bringing nature or the outdoors into classrooms?

Procedure

Participants were interviewed. All interviews were done individually. When it is not possible to interview participants in person, they were invited to complete a phone interview of the same questions. Face-to-Face interviews took less than one hour, were audio-recorded (with participant consent), and took place in the teachers classroom. A semi-structured interview format will be used for face-to-face interviews, to allow for follow-up questions to unclear, interesting or unexpected responses. All interviews/surveys will be scheduled at the convenience of the interviewee and should take approximately 20 minutes to complete.

Data Analysis

Transcribed interviews were coded and analyzed for emergent themes.

Results

For this Capstone Project, teachers were interviewed to see what they think could be done to improve nature within the classroom. This is important because [explain why your focus issue is authentic, meaningful, and/or urgent.. Based on an analysis of the data and the relevant research literature three themes emerged (see Table 1). Evidence-based decision-making required evaluating each potential Action Option by the following criteria: usage of plants; pets; and a culmination of the two. Based on the evaluation of each Action Option an action will be recommended and justified.

Table 1

Evaluation of Action Options

	Time required/ Effort	Effectiveness	Price
Plants	Low	Medium	Low/Medium
Pets/Fish Tanks	Medium	Medium	Medium/High
Pets & Plants	High	High	High

Name for Emergent Theme/Action Option 1

The use of live plants in the classroom is invaluable and offers numerous benefits. Beyond enhancing the aesthetics of the classroom, incorporating live plants has been shown to have significant positive impacts on the mental and physical health of individuals who are exposed to nature in this way. Research has demonstrated that exposure to nature, such as through the presence of live plants, can lead to improved mental health, including reduced stress, increased focus and concentration, enhanced mood, and increased creativity. Incorporating live plants in the classroom can also have positive effects on physical health. Plants release oxygen and absorb carbon dioxide, improving air quality and reducing the risk of respiratory issues. They can also help regulate humidity levels, reducing dryness or excess moisture in the air, which can positively impact students' comfort and health. In addition to the mental and physical health benefits, using live plants in the classroom can also be seen as a passive way to enhance students' learning environment. A visually appealing and natural environment can create a sense of calm and well-being, making the classroom a more conducive space for learning.

Name for Emergent Theme/Action Option 2

Another impactful action for classroom enrichment is the introduction of class pets. The benefits of having animals in the classroom are multifaceted and can have a profound impact on students' development. One of the most notable benefits is the cultivation of empathy, leadership, and responsibility among students. Caring for animals in the classroom can foster empathy as students learn to understand and meet the needs of the animals. It can also provide opportunities for students to take on leadership roles in caring for the pets, such as feeding, cleaning, and providing companionship. Class pets can also serve as a valuable tool for facilitating learning. Teachers can incorporate the animals into lessons and activities, using them as a way to engage students and make learning more enjoyable and memorable. For instance, students can observe and learn about the animals' behaviors, anatomy, and natural habitats, which can provide hands-on learning experiences and spark curiosity and interest in the subject matter. The presence of animals in the classroom can have a positive impact on students' emotional well-being. Many teachers have reported that class pets can brighten up a child's day and serve as a source of comfort and companionship. Students may find solace in spending time with the animals during moments of stress or anxiety, and the animals can serve as a calming presence in the classroom environment. The educational and emotional benefits, having class pets can also serve as leverage for positive behavior management throughout the day. Students may be motivated to earn time with the animals as a reward for good behavior or completion of tasks, fostering a sense of responsibility and accountability.

Name for Emergent Theme/Action Option 3

Including live plants in the classroom can enhance the aesthetics of the learning environment, creating a visually pleasing and inviting space for students. In addition, plants can

help improve indoor air quality by reducing levels of pollutants and releasing oxygen, which can have a positive impact on students' physical health and overall well-being. Plants have been shown to have a positive effect on mental health. Studies have found that exposure to nature, even in the form of indoor plants, can help reduce stress, improve concentration, and promote a sense of well-being among students. Having plants in the classroom can create a calming and nurturing environment that can aid in managing mental health struggles and promoting emotional well-being. In addition to plants, class pets can contribute to students' learning and character development. Animals in the classroom can foster a sense of responsibility, empathy, and leadership as students take on caring roles for the pets. This can help students develop important life skills and values such as compassion, accountability, and respect for living beings. Animals can also be used as a tool for learning, providing unique opportunities for hands-on experiences and real-world connections. Students can learn about the animals' biology, behavior, and care requirements, integrating science, biology, and other subjects into their learning. The presence of animals can also spark curiosity, engagement, and motivation to learn among students. Combining live plants and class pets in the classroom can create a holistic approach to enhancing the learning environment, promoting mental health, and fostering character development among students. The aesthetic and air quality benefits of plants, along with the learning and character development opportunities provided by animals, can create a well-rounded and enriching classroom experience for students.

Conclusion

Recommendation.

It is my recommendation to implement the third option. While both plants and pets have extreme benefits within the classroom the ability to use both is extremely beneficial.

Concessions.

The strengths are very visibly displayed through both the literature and the interviews. BRinging in these live organisms helps with the aesthetic of the room as well as the air quality. It helps fight against students' poor mental health. It also helps the students' morals and ethics grow and develop as they begin to care for something living on a day to day. In addition it helps broaden students' horizons, regardless of their background.

Limitations.

The recommendation made could be limited by the teacher's ability to care for these living organisms within the classroom.

Potential negative outcomes.

After conducting the interviews the only issue we found is that sometimes the pets and plants can be a distraction in the classroom.

Conclusion.

In conclusion, incorporating live plants and class pets in the classroom can offer a multitude of benefits that are supported by both literature and interviews. The aesthetic improvement and air quality benefits of live plants, along with the positive impact on students' mental health, can create a conducive learning environment. Additionally, the presence of animals in the classroom can foster the development of students' morals, ethics, and sense of responsibility as they care for living beings on a daily basis. Moreover, it can provide opportunities for students to broaden their horizons and learn about the natural world, regardless of their background.

Action Documentation and Critical Reflection

For this Capstone Project, teachers were interviewed to see what they think could be done

to improve nature within the classroom. This is important because based on an analysis of the data and the relevant research literature three themes emerged (see Table 1). Evidence-based decision-making required evaluating each potential Action Option by the following criteria: usage of plants; pets; and a culmination of the two. Based on the evaluation of each Action Option an action will be recommended and justified. The idea and concept were there all that was left was to discuss with the teachers. I interviewed both via telephone and both came from different backgrounds. The first being a teacher who has had a classroom pet for the last 8 years the other being one with a few plants within the classroom. As I continued to discuss both of them displayed why their usages of either the pet or plants serves to be beneficial to both the student and themselves. I was extremely passionate about this topic and knew there was progress to be made. As I continued to discuss with those interviewed and my peers I noticed a recurring theme. This theme was unfortunately in doubt with the changes I was suggesting. I continued to hear statements such as “I kill every plant”, “I don't have a green thumb”, “How much money does this cost?”. These are very reasonable concerns and questions to have, and it brought me to my action. In order for my ideas to ever come into fruition I needed a way to inform teachers what to buy, where to buy it, and how to not kill it. With these three concepts in mind I settled on creating a digital flier to send out to those interested. The goal was to create a simplistic flier that allowed anyone to get quick access to information. For the plant portion of this flier I wanted to find three of the easiest plants to carefor. For this I settled on the snake plant, spider plant, and the pothos. I personally own all three of these plants and can say they are nearly impossible to kill and are very simplistic plants to carefor.



On the flier where it reads “care for plants” I have a link to a care guide for that specific plant.

After looking at just the first half of the flier one would be aware of three beautiful hardy plants and how to care for them. For the second portion of this article I wanted to focus on three different forms of classroom pets. While there are many options out there I landed on small rodents, fish tanks, and terrarium. This decision was made based on availability and simplicity.

As my interviews stated, a large issue with having a classroom pet is the cost. So for this portion of the flier I had two goals in mind the first being where to get the animal for cheap secondly how to care for the animal. For each of the pet option sides of the flier one has the ability to click on both the links. These links will show one where to affordably purchase a pet and the items necessary. The second link will give whomever may be reading it the knowledge they need to successfully care for the animal. The response I have received from this has been very exciting.

Caring for plants and animals has always been something I was interested in and passionate about and it came rather naturally to me. As I continue to do more research and begin to realize this is something that does not come easily to everyone, especially a very busy teacher. One topic that is necessary to discuss is that plants die and animals pass away and that is part of the challenge with the topic at hand. However, far too many teachers I began to realize are scared to begin or even try. This is why I felt it necessary to create a way for teachers to start in a cheap and simple way. The feedback on this flier and on the research done has been extremely positive and exciting to hear. Those that received the flier stated that they would be highly likely to begin to follow along with the flier and give some of these a try. As the reflection process begins there are a few points I wished I had been aware of prior the first being the beneficial impact it has on teachers, not just students. The second being how many people almost fear killing a plant and trying to find a way to encourage them. As this project moves forward it is vital to continue to add the flier perhaps on a website. A location for teachers to digitally access information on easy plants to care for other than the three stated above. On this site perhaps a way for teachers or other enthusiasts to help each other out and provide insight on what worked and what didn't work in their classroom.

From this project I learned a lot about myself but one thing really stood out. I completed all 4 years at CSUMB and throughout those four years had a lot of information thrown at me. There were a lot of skills and suggestions made and practiced. This project is one that is not for the faint of heart, a research project that requires the entire semester to perfect and make whole is very daunting. However it was exciting to see the information I possessed being used at the end of my time here at CSUMB. I learned to be confident in myself and in my preparation to get to this point. It is not by mistake I am about to take the stage to receive my

Bachelors degree, this paper is evidence of that. As I continued to reflect on my schooling and this project there will be a lot I take with me into this next step. I have been lucky enough to continue my education at CSUMB's credential program. I am grateful for the information the required courses taught me as I take it into my professional career. The piece of paper I will soon receive stands for what I will take into this next step. Hard work and dedication is the code to break down barriers, get through hardships, and make a difference. I am enthralled to finally be able to use the information I have acquired and apply it within my own classroom. I want to be a role model and a safe haven for students who maybe don't have that male role model in their lives. I am aware that a young man is not the typical elementary school teacher; however it is a job I take very seriously. I will continue to use the knowledge acquired and the hard work displayed throughout these four years to be an outstanding teacher at my school, and a kind heart to carry those with so many burdens.

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