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Self-Assessment of Elementary Lesson Plans Through an Ecological Lens

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SELF-ASSESSMENT OF ELEMENTARY LESSON PLANS THROUGH AN ECOLOGICAL LENS

by

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Abstract

Classrooms are ecosystems. Classrooms have well defined boundaries and host living and nonliving elements. These elements interact as classroom lessons and day to day ongoings occur. These interactions have potential to be synergized to increase learning outcomes. The purpose of this research was to develop a self-reflective instrument for teachers to consider the elements, interactions, and synergy of lessons. An instrument was developed based on models of other survey instruments (Cantu, 2015).Content validity experts were recruited, and the instrument was refined as a self-reflective tool. As a self-reflective instrument teachers can use reflective practice to further intentional teaching within their lessons and classroom. Intentional teaching is done by using data and observations in conjunction with consideration of all elements interacting within a lesson plan.

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Chapter One: Introduction

Background

Ecosystems can be defined as broad as the planet or as miniscule as microorganisms (Reese et. al, 2014). Within an ecosystem there are living and non-living elements. Biology uses the terms biotic for living and abiotic for non-living. Ecologists observe and study different interactions within defined ecosystems. Some look at the biosphere (global) and how global ecology influences life on the planet. Conversely, others study niche ecologies like fungi on a log and how energy is transferred from the plant to the fungus through chemical digestion. It is important to define the limits of an ecosystem when observing the interactions of the biotic and abiotic within the ecosystem. Reese et al. (2014) describes interactions as, "...be(ing) organized into a hierarchy that ranges in scale from single organisms to the planet" (p. 1158). On this scale, an analogy unfolds in relation to education and classrooms. Learning does not happen in a vacuum- it is known there are multiple influences on learning. These influences are interactions between biotic elements (students, teachers) and abiotic (the classroom, pedagogy and supports) elements in classrooms. Therein lies a theoretical framework for the classroom ecology.

Theoretical framework

Traditional brick and mortar classrooms are well defined ecosystems. Buckelew and Fishman (2011) would say, "From the point of view of education, a classroom, a school, and a school district are all educational ecosystems" (p.xiv). Based on the steps needed to establish a domain of a model proposed by Pickett and Cadenasso (2001), classrooms fit the following criteria. Classroom boundaries are concrete within the physical space of a school. Classrooms operate within regimented periods of time. Classrooms are environments that host living and

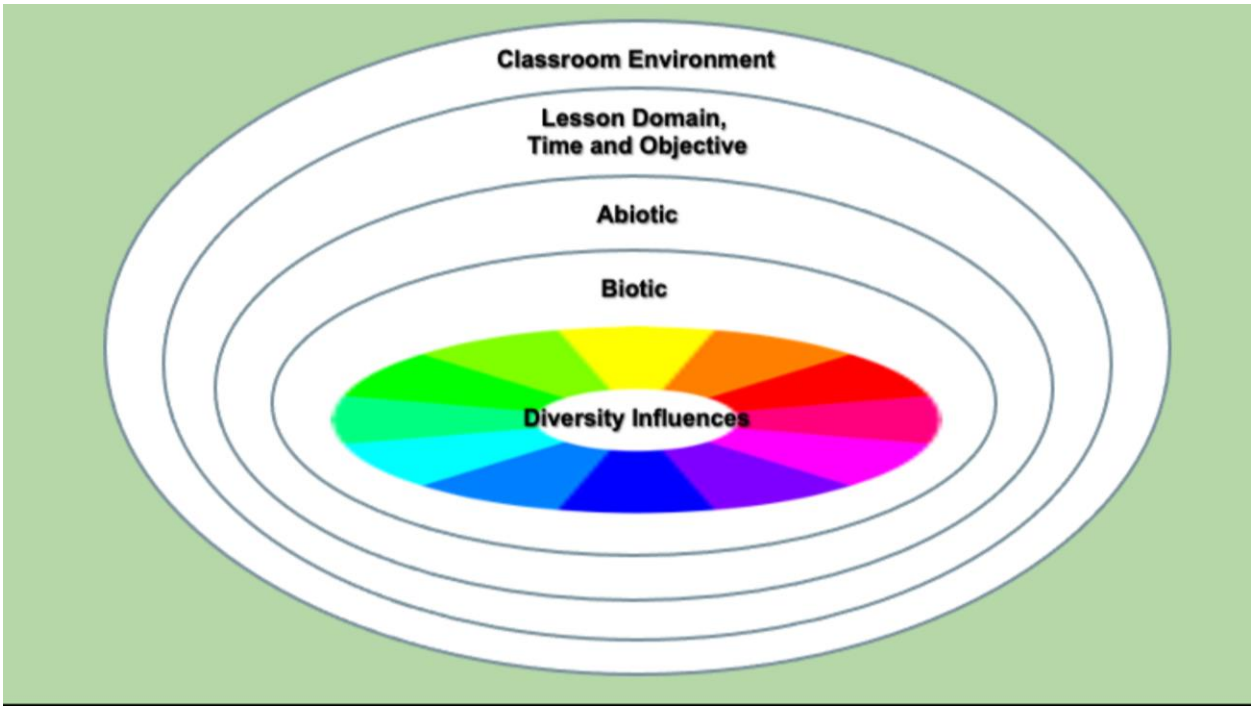
nonliving components. Classroom ecology is the holistic perspective of the interactions between biotic and abiotic elements within the classroom.

Purpose

This study's purpose was to develop a self-reflective instrument for elementary school teachers using the theoretical framework suggested by Buckelew and Fishman (2011). The proposed instrument would utilize the ecological model (**Figure 1.**) as a lens for development and advancement of learning outcomes. This ecological lens would focus on lesson plan analysis to guide teachers toward recognizing the elements of classrooms, how they interact, and how to synergize interactions to increase learning outcomes by applying intentional teaching methods.

Figure 1.

Classroom Ecosystem Model



Key terminology

Throughout this research, bioecology terminology is used in relation to education terminology; Table 1 below is adapted from Buckelew and Fishman (2011 p. xv).

Table 1.

Key Terminology

Ecosystem	Biological community of interacting organisms and their environment.
Abiotic elements-non living	Non-living elements within an ecosystem.
Biotic elements- living	Living elements within an ecosystem.
Equilibrium	A state in which opposing forces or influences are balanced.
Disequilibrium-biology	A state in which a force or influence is disproportionate to the other forces or influences.
Disequilibrium-education	Imbalance between what is understood and what is encountered.
Synergy	The interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects.
Intentional teaching	Teaching for a reason or a purpose.

Having set the purpose of this research and introduced key terminology to be used, the literature review begins next. Key search criteria and vital articles are presented and expanded upon in the following chapter.

Chapter Two: Review of the Research Literature

The research for this topic started with a passion for biology, followed by noticing an analogy between classrooms and ecosystems. Reece et.al's (2014) "Campbell Biology" book was the initial source for topic exploration. From there, research in databases with specific categories such as elementary education, educational science, and educational psychology were conducted. Key terms used were 'elementary,' 'classroom,' 'ecology,' 'ecosystem,' and 'model'. Key books and articles along with supporting books and articles were identified. Other sources used in this research, include textbooks selected by professors for classes in an Elementary Education teacher preparation program. Through course-assigned readings, connections were formed from the material read to the topic of classroom ecosystems.

The purpose of this thesis was to develop a self-survey tool using the ecological model, aiming to intentionally improve learning outcomes from lesson plans by identifying ways to synergize elements within a classroom ecosystem. This section is organized by the constructs that have been included in the reflective instrument. The first heading is ecosystems, with subheadings of biotic and abiotic elements. Proceeded by headings of balance, equilibrium and disequilibrium with subheadings, intentional teaching, and synergy.

Ecosystems

Ecosystems encompass the world and can be defined within each stratum of the planet. Reese et al. (2014) defines ecology as, " ...the scientific study of interactions between organisms and the environment" (p. 1158). As a base definition, its application is paramount to classrooms and this research. As a result there are three questions that present themselves, "how to define an ecosystem?," "what are the parameters of the environment?," and "what are the organisms

present?". Pickett and Cadenasso (2002) provided a framework for developing an ecological model. The authors detailed how to establish the domain of a model based on the research and work of American ecologist Howard T. Odum (1993). They described,

> The following steps are needed to establish the domain of a model: (a) identify the components of the model, (b) state the spatial and temporal scale addressed by the model, (c) delimit the physical boundaries of the system, (e) articulate the connections among the components, and (f) identify the constraints on system behavior. (Odum, 1993, as cited in Pickett & Cadenasso, 2002, p.4)

Classrooms fit well within these parameters and follow the paradigm of an ecosystem. The spatial scale and physical boundaries of a classroom would be within the walls that house it at a school. The temporal scale is the time that the classroom operates. This could be the one-hundred-eighty days of school or the average of eight hours, Monday through Friday that the classrooms operate. For teachers, it could be narrowed down to subject blocks of times. There are constraints within classroom ecosystems addressed in chapter three. The last details of an ecosystem are defining the components of the model, the biotic and abiotic elements, and their interactions.

Biotic

The biotic elements within a classroom are the students, teachers, paraprofessionals, administration, custodians, plants, and classroom pets. This research focused on students and teachers as the main biotic elements in a classroom. It should be noted that the other biotic elements do have interactions in a classroom, however their interactions are either less researched or infrequent enough to not warrant targeting. Also of note, "...although classrooms

have common elements, every learning situation is different" (Guillaume, 2016, p. 3) this is because students and teachers differ. Each is composed of their own, "...ethnicity, culture, social class, and home language. They differ in gender. Some have disabilities and some are gifted or talented in one or more areas. They differ in performance level, learning rate, and learning style" (Slavin, 2018, p. 65). All of these differences influence the interactions within a classroom. For teachers, these differences become guiding beacons for instruction, and curriculum (Slavin, 2018). Just by entering a classroom, students and teachers bring with them a base of interactions stemming from their personal identities and cultural diversity.

Influences on biotic interactions

Slavin (2018) defines culture as, "the shared norms, traditions, behaviors, language, and perceptions of a group (p. 66). Each student brings with them a piece of their culture into the classroom that will dictate how they interact with others. Guillaume (2016) says that teachers should have cultural competence defined as, "The ability to interact with people from cultures other than one's own with knowledge and sensitivity" (p. 267). Students will also vary in race and ethnicity. Race only reflects physical characteristics, while ethnicity is a history, culture, and sense of identity shared by a group, usually based on common origin (Slavin, 2018). Within culture, race, and ethnic groups there also lies another difference that has effects on classroom interactions, socioeconomic status, defined by Slavin (2018) as, "...terms of an individual's income, occupation, education, and prestige in society" (p. 67). These culminate to many positive and negative influences on the interactions between the biotic elements in a classroom. This is because students are at different stages of social and moral development theorized by Erikson and Piaget. That is to say that most students start judging and perceiving the world based on their ethnic group's views and judgements. Erikson's stage of psychosocial development for

most children entering school is stage four where Slavin (2018) explains, “Up to this point...their world has been that of home, family and possibly preschool or daycare” (p. 53). The moral stage is theorized by Piaget as heteronomous morality or, “subject to the rules imposed by others" (Slavin, 2018, p. 49). With these two reasons, the culture at home is brought to the classroom via each student. These are important factors to think about when discussing interactions between students and students, and students and teachers. This is because, “Children also play better with familiar peers and same sex peers” (Slavin, 2018, p. 53). Gender is another influence on interactions.

Sadker (2017) says “The gender wall blocking boys and girls from interacting is stronger than barriers to racial integration…” (p. 131). That is to say that children of differing ethnic backgrounds will play together before crossing gender boundaries within the same background. There is much room for conjecture of this thought. The following excerpt from Sadker (2017) by a female student illustrates this:

> If you say you like someone, other kids spread it all over the school and that’s embarrassing.... If you even sit beside a boy in class, other kids will say you like him. And they come to you in the bathroom and tease you about liking the boy. Once some of the girls put J.S. and B.B. on the bathroom walls. That was embarrassing. (p. 131)

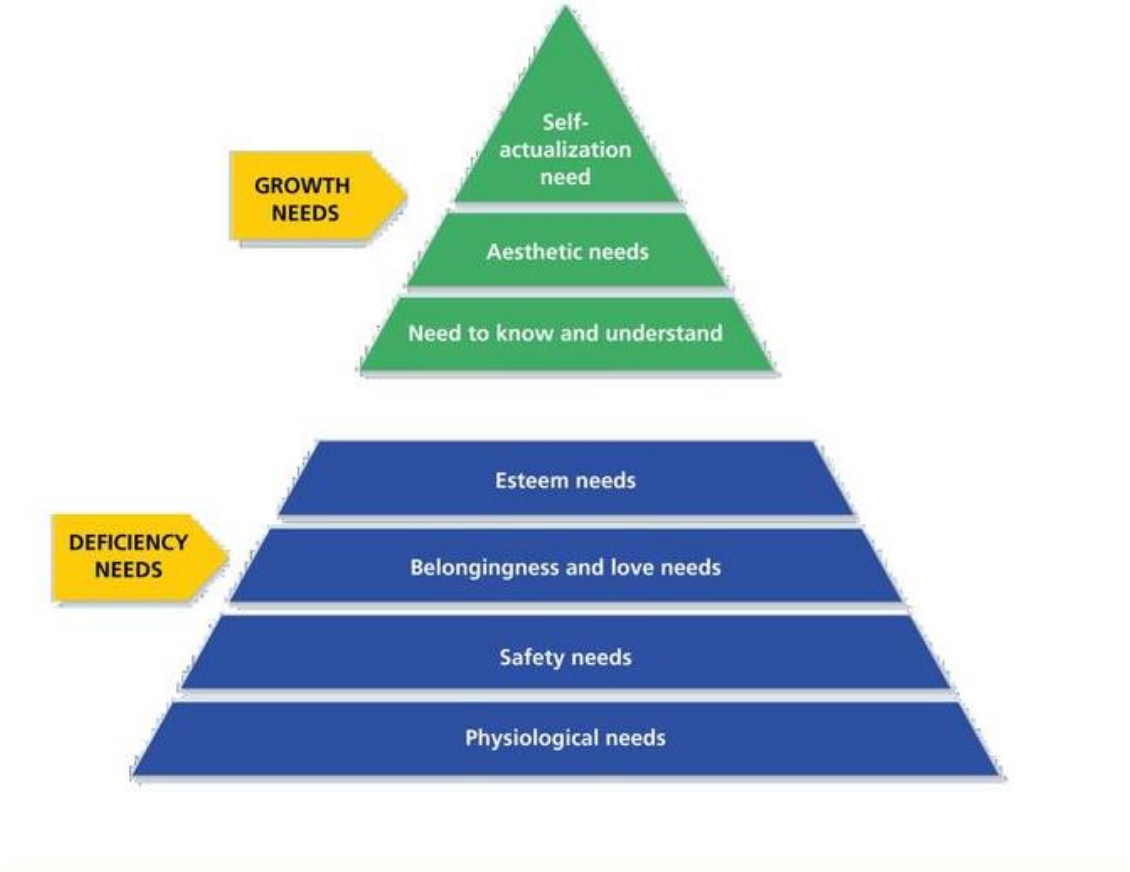
Differences are what drive the base of interactions within a classroom. The list can continue, touching on students with exceptionalities. Sadker (2017) names a few, “Learning disabilities, developmental disabilities/intellectual disabilities, emotional disturbances or behavior disorders, hearing impairments, visual impairments, speech and communication disorders, attention deficit hyperactivity disorder, autism spectrum disorder, traumatic brain

injury, orthopedic impairments, other health impairments, severe and multiple disabilities" (p.39). The diversity of a classroom's biotic elements does not stop here, nor do the influences of interactions. This assortment can extend to students who are gifted, talented, or have differing learning styles.

All of these influences can be seen in each classroom and in some cases in one given student. Half of the biotic component of a student is the influence from a student's background. It is important to recognize these influences, but it is even more significant to know the students themselves. The other half to take into consideration is the student's point of view and needs. Guillaume (2016) explains, "...students must extend willingness and effort to learn" (p. 39). Before these parameters can be met, students must have their hierarchy of needs attended to. Slavin (2018) states, "Obviously, students who are very hungry or in physical danger will have little psychological energy to put into learning" (p. 251). Essentially if students' basic needs are not met, learning will suffer. Maslow proposed a Hierarchy of needs Slavin explains, "In Maslow's theory, needs that are lower in this hierarchy must be at least partially satisfied…" (2018, p.250). See **Figure 2** below. Students make up the largest and most important biotic element in a classroom by sheer numbers, they compose the very purpose of a classroom.

Figure 2.

Maslow's Hierarchy of Needs



Slavin, 2018, p.250

Teachers as a biotic element

The other major biotic element in the classroom is the teacher. Teachers host the aforementioned influences in their many diversities, but usually there are only one or two teachers in a classroom. Teachers make up the second largest biotic component and this is because, "Students are cognitively, emotionally, and socially dependent on their teachers who formulate the learning goals, determine which type of interaction is allowed and generally coerce them to adjust to the learning environment they [teachers] have created" (Boekaerts, 2002, p. 594). This dependence is based on teachers' preference of teaching style and classroom management. Teaching style is the way teachers adapt, express, and facilitate education. It is based on the teachers' backgrounds and education. Classroom management is the way the teachers manage the nexus of interactions from multiple diverse backgrounds and influences to keep equilibrium in the classroom. Both factors are well researched and yet highly personal. Even though teachers may know the same techniques, there will never be absolute uniformity between delivery of these systems. This is because students and teachers are composed of their own unique identities and experiences (Buckelew & Fishman, 2011).

Abiotic

The non-living elements of a classroom outnumber the living elements. The four main non-living elements are the physical space of the classroom, its contents, the curriculum, and support systems. Guillaume (2016) explains, "classroom management is the organization and maintenance of relationships, physical space, resources, and time in service of student learning" maintenance of relationships may be the only biotic interaction in this definition (p. 197). In some classrooms, time is subject to a "master schedule" and classrooms are expected to address

specific curriculums at specific times. Regardless, most classrooms in public school systems operate Monday through Friday, roughly 8 hours per day, and 180 days per year.

A well-defined ecosystem needs boundaries. This research focuses on an indoor classroom model (Pickett & Cadenasso, 2001). Therefore, a classroom can exist outside of the walls of a school however, for this research, the classroom is defined within walls. The classroom's physical space and layout houses a plethora of materials- ranging from curriculum and manipulatives to textbooks. Each of these items holds vast potential for interactions with biotic elements. The curriculum is the subject taught to students. Essex (2015) says, "minimal standards in public schools are established by state statute" (p. 9) putting subjects required by state as non-living elements interacting with teachers and students. Support systems are the technology and implementation pieces that aid teachers and students. An example would be smart boards, projectors, grading, communication, and word processing software platforms from companies such as Microsoft and Google.

Classroom and Content Influences

Classrooms are composed of four walls, a physical layout, and contents. The physical features of a classroom matter in difference of natural versus synthetic light source, temperature, noise, thickness of walls, exits, position in school interior, exterior, bathroom, and/or pods. Students spend a quarter of each year (with the assumed variables of 8hrs average of sleep, 8hrs a day at school of a 180day school year) within these walls, and how they are composed influences interactions. Guillaume (2016) states about a classroom, "...it is a place that provides for physical safety, psychological security and pleasure, cognitive growth, social contact, and symbolic identification" (p. 201). In most situations, classrooms are optimized by a combination

of teacher and student aesthetic. Combinations of posted curriculum, decorations, achievements, memorabilia, signage, and brick a brack strewn about the room. In addition to the four walls, cabinets, closets, storage, tables, shelves, desks, and chairs are often provided or brought in. These items are not haphazardly placed, some are immobile, and others are mobile. Most commonly, the arrangement of desks, students, and teachers is in relation to the focal point of instruction. This layout is the interaction we focus on when describing abiotic items in classrooms interacting with biotic items. This is because, "physical space can constrain our activities and learning, or it can fuel them" (Guillaume, 2016, p. 201). Physical layout should be accessible for all during day-to-day use and easy to transgress in the event of an emergency. The last part of classrooms is the contents. Contents in the classroom range from curriculum-based items such as manipulatives, books, and beakers, to everyday items such as pencils, lunchboxes, etc. The vast amount of content in classrooms can be mind-boggling. The classroom ecology has limitations on its expression due to regulatory matters of being a public institution. For example, fire departments must perform audits for fire safety through classrooms. If too much paper is on the walls teachers are asked to take it down, yet there also must be content displayed for students. This demonstrates the active balance teachers navigate within a classroom ecosystem.

Curriculum

Math, English language arts, reading, science, and social studies are the subjects that comprise the typical curriculum in classrooms. Essex (2015) explains, "In almost all cases, certain courses and minimum achievement standards are determined through state statute" (p.9). For the purpose of this research, the primary five subjects are taken into consideration when discussing abiotic interactions in a classroom. Curriculum and the standards of achievement are determined by state and local school districts. Most curriculum comes from a textbook in

classrooms, which allows for student's state and nationwide to be on the same page (Sadker, 2017). The textbooks come with a teacher edition that touches on all the standards set forth by the state for that grade. In fact, "Teachers base more than 70% of their instructional decisions and as much as 90% of homework assignments on the text" (Sadker, 2017, p. 326). This dependency on state and school district textbook selections makes curriculum an abiotic factor in classrooms. Students and teachers both must interact with this curriculum. Teachers must understand the curriculum and subjects well enough to provide effective instruction and sometimes that means having support to do so, likewise for students.

Support systems of classrooms

The classroom has forever been changed by the presence of technology. For example, without technology, distance learning would not have been possible in 2020 during the pandemic, outlines it as an element for consideration. Technology is saturated into daily lives of many people. Schools and classrooms depend greatly on technology to facilitate daily operations. Technology can alleviate and assist, it can also hamper and harm. Students with differing needs require certain assistive technologies. Guillaume (2016) describes assistive technology as, "… any invention that enhances the performance of people with disabilities" (p. 69). Certain forms of assistive technology bridge the gap between instruction and students' physical capabilities. For example, larger keyboards, magnifying text, electronic pointing devices, and Braille embossers to name a few (Guillaume, 2016). Also, a plethora of support systems are technology-based, which range from implementation devices to diagnostic software. For example, I-ready is a diagnostic and curriculum instructive device used in schools. Websites also host supports such as Nearpod, YouTube, and Khan Academy to name a few. Technology can also have a simpler interaction in a classroom such as projecting images onto the board or word processing software.

Then there is the internet, a huge and complex tool that sits within most every classroom and school. Unrestricted internet access for students can pose a content conflict, not to mention plausible cybersecurity issues within a school. On the other hand, it also hosts supportive platforms such as Google, and Microsoft. Each holds untold potential for interactions within the classroom ecosystem.

Balance

Outlined above are the usual biotic, abiotic elements, and some of their influences present in a classroom. The next aspect to think about is in the interactions of these elements. “Students go to [school] learn things, we do not agree on just what those things are " (Sadker, 2017, p. 286). States dictate the subjects and standards students should achieve in a public school. Then there are ancillary things that students learn in a classroom from their interactions with other elements. Students bring their diverse backgrounds, perspectives, and lived experience into a classroom. Over the course of time, they spend in a classroom they share pieces of all of this and create some new. All these interactions are happening in conjunction with attempting to learn.

This nexus of interactions can be chaotic. In most cases, teachers implement some sort of classroom management system to bring about harmony. The chaos in a classroom is known as disequilibrium and the restoration of balance is equilibrium (Buckelew & Fishman, 2011). Piaget theorized that learning is a constant cycle of equilibrium and disequilibrium. Slavin (2018) says, “according to Piaget, learning depends on this process. When equilibrium is upset, children have the opportunity to grow and develop” (p. 26). Essentially, students come in with a base of knowledge, teachers add new information which disrupts students' equilibrium, and then through lessons and practice, teachers help restore students' equilibrium. LiPing Ma (2020) explains,

“from this perspective, learning is a continual process during which new knowledge is supported by previous knowledge and the previous knowledge is reinforced and deepened by new knowledge” (p. 77). This is the constructivist theory of learning, but teachers are only a piece of the cycle of equilibrium and disequilibrium.

Students, with their broad range of backgrounds and knowledge, cause much disruption in equilibrium between themselves, their teacher, and the classroom. The following are examples that can influence the disorder within the learning environment. One stark view is how “messy” a classroom can get, disagreements between students, or challenges in understanding subject matter- the list is potentially infinite. Students also take part in restoring equilibrium by working and applying themselves. They attempt to make sense of the information and gain proficiency with it. Cavanagh (2015) states, “Student’s engagement in learning is defined as a balance between a student's capability for learning and the expectations of learning in a particular learning environment - both capability and expectations are context specific” (p. 350).

This balance is aided by teachers who use Vygotsky’s scaffolding within a student’s zone of proximal development (ZPD) (Slavin, 2018). Scaffolding is support that starts heavy and tapers off as the student gains proficiency. Scaffolding and ZPD was proposed by Lev Vygotsky a Russian psychologist (Slavin, 2018). Tasks that frustrate could be considered outside a student’s ZPD. Zone of proximal development sets a range of accomplishment starting with independent accomplishment, meaning by oneself. The next level is tasks accomplishable with help. The last being tasks one cannot accomplish yet. Slavin states, “…learning takes place most effectively when children are working within their zone of proximal development” (Slavin, 2018, p.34). It is important that students do not struggle too long in disequilibrium, and that they have assistance restoring equilibrium if needed.

Abiotic elements also influence disequilibrium and equilibrium. Fire drills, tornado drills, and active shooter drills bring about disequilibrium in a classroom. These drills are practice for plausible events but are disruptive to the classroom point of education. Technology can bring about both disequilibrium and equilibrium. For example, students in some counties of Florida use I-ready. I-ready is a web-based diagnostic and practice tool for reading and math. Students are assessed by an initial diagnostic that assigns them a level based on their answers. These diagnostics are done in a testing environment usually and usually for a prescribed block of time. Equilibrium is created by assessing students' foundation of knowledge, a baseline of their understanding. From here they have a scaffold path through Florida standards that should grow with them as they achieve lessons or remediates as needed. Disequilibrium can occur though if the web-based platform is down. It could also occur if a student who shows capability outside the platform tests on I-ready poorly and the software remediates the student's lessons. Both can cause equilibrium, but if not working they create disruptions with little learning availability.

Intentional Teaching and Synergy

Maximizing learning outcomes of disequilibrate situations requires two parts. The first part is in intentional teaching and the second part is in synergy. Intentional teaching is a product of intentionality which means, "doing things for a reason, on purpose" (Slavin, 2018. p. 6). Liu and Chao (2017) exemplify this well in their work following a professor in Taiwan with the alias Lillian. In response to Lillian using a piece of technology in her classroom intentionally, they say, "Lillian obviously puts in thought and reflection on her teaching with technology; she is willing to critically review it until she knows how best to support her goal" (Liu & Chao, 2017, p. 79). Intentional thought as to the goal of the lesson and the outcome is paramount, but most significant is how the intention will be put into action. Lillian puts intentional thought into how

she will use an element and how it will interact with her students. Consideration should be offered for each abiotic element in the classroom.

While considering learning outcomes, one should also consider how to maximize them. Synergy is, “the combining or cooperation of two or more agents to produce a combined effect greater than the sum of the individual parts” (Oxford Dictionary, 2021). Each piece in the classroom and in lessons should be intentionally chosen and paired for synergy to increase learning outcomes. Synergy can be applied towards students by choosing books that represent their cultural and ethnic background. It can be applied to students' interests. Synergy can be used in thematic units to pull across multiple subject areas.

Classrooms host a broad range of interactions and teachers are in the position to leverage these interactions. Identification of the classroom elements and how best to utilize them is key to effective implementation. The following chapters delved into how the researcher attempted to design the self-survey instrument for teacher use.

Chapter Three: Methodology/Research Design

The purpose of this study was to develop a self-survey tool for elementary school teachers' (K-6) lesson plans, using the theoretical ecological framework suggested by Buckelew and Fishman (2011). Using the ecological model as a lens, the self-assessment instrument was intended to guide teachers toward identifying the synergy between elements in a classroom ecosystem to produce a greater learning outcome of a lesson plan. Cantu (2015) says that self-assessment is, "the involvement of [teachers] in identifying standards and/or criteria to apply to their work and making judgments about the extent to which they have met these criteria and standards (pp. 12-13)" (p. 50). The self-assessment instrument developed in this study guides users in identifying the domain, biotic elements and abiotic elements of a lesson plan and asks users to reflect on plausible synergies between the elements to support a better learning outcome from the lesson. This self-assessment tool was designed for use in the planning stage of teachers lessons.

Methodology

Survey Development Overview

Development of the self- assessment instrument went through a development process of three iterations. Iteration one was a conceptual outline of self-assessment tool. Iteration two developed an initial draft of the tool. Iteration three provided a final draft of the self-assessment instrument. Throughout the process content experts and practitioners from the field were consulted to provide feedback for revisions between each iteration. Methodology to advise iteration revisions expanded upon in the sections that follow.

Iteration 1

During conceptualization of iteration one, an expert in teacher preparation was consulted. The original concept for the tool was to be a self-survey instrument based in Qualtrics. Qualtrics is a survey platform with multiple templates available to host a variety of survey tools. The survey instrument was intended to be based off Cantu's model of a reflective survey instrument (**Appendix A**). Feedback from this consultation, discussed further in Chapter four, lead to iteration two.

Iteration 2

For Iteration two, this researcher developed a self-survey tool based on a modified version Cantu's model of a reflective survey instrument (**Appendix A**). The developed tool was submitted to two content experts for review and feedback (**Appendix C**). A 62-line-item content validity sheet was developed (**Appendix E**) based on Sangoseni, Hellman, & Hill (2013) validity sheet (**Appendix D**) and submitted to the content experts.

Additionally, a focus group of three in-service teachers and two preservice teachers were solicited to review and provide feedback on the instrument's clarity and intended use.

Iteration 3

Iteration three resulted in the final tool developed in this study (**Appendix B**), revised in response to the content experts' and focus group's feedback. A pivot point for the use of the instrument as a reflective tool only was made in response to the validity review results and feedback from the content experts and focus group. Details of the specific feedback provided is provided in Chapter four.

Instrument Assumptions

This tool assumes that the teacher completing it has a general knowledge of standards, data collection, the role of student relationships and best practices in instruction. Teachers should know the content they are teaching, and the standards expected by their state, district, and school (Essex, 2015). A firm knowledge of data collection is integral to being able to effectively use and apply this instrument. Effective data collection and interpretation is a skill teachers need and should utilize (DeVries, 2017). For example, best practices would have a teacher analyze data from class assessments to determine effectiveness of a lesson or piece of a lesson. This can be done by aggregating what answers on an assessment did students miss. Basic statistics here will also help in analyzing and aggregating information. Knowledge of students' backgrounds and strong relationships with students will also aid in the use of this instrument. These will help identify influences on interactions by students.

Chapter Four

The intention of this research was to develop a self-survey instrument for reflecting on a single lesson plan through the ecological lens and guide teachers in recognizing synergies to yield greater learning outcomes.

Rationale for Section Development

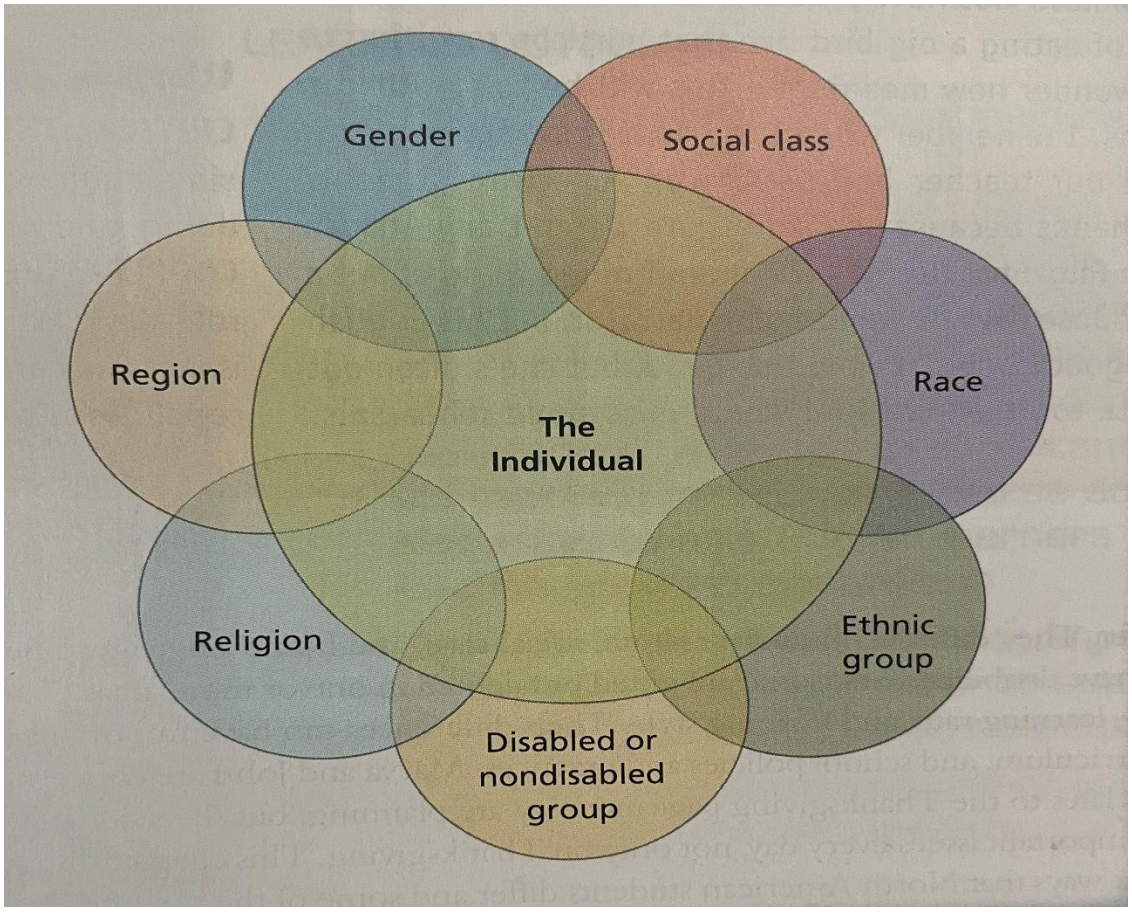
The following sections are represented in the developed self-survey instrument. To develop the instrument, the first step was defining the limitations of the ecosystem. Defining limitations at the beginning of the instrument sets the domain of the lesson. Domain (defined in this self-assessment tool development study as the definite limits of an ecosystem) will focus on a specified space and time per Pickett and Cadenasso's (2001) definition of the domain of an ecosystem. Lessons take place within some physical boundary classroom, field, library, etc. Lessons also span some course of time whether a single day occurrence with a learning outcome or a multi-day lesson sequence building on a concept (Guillaume, 2016). Thus, for the purpose of those research, the domain for reflection and evaluation was determined to be a single lesson plan. Sentence frames were made that allow the teacher to fill in the space and time limits of the lesson (**Appendix B**). To continue clarity of purpose, another sentence frame was added that prompts teachers to fill in the objective of the lesson.

Biotic elements (teachers & students), abiotic elements (Classroom layout, Classroom contents, Curriculum, Supports) as sections of the instrument will guide teachers into identifying the biotic and abiotic elements that will be present in the lesson. The first biotic section prompts the teacher to consider themselves, with a subheading of what influences they bring to the domain and lesson objective. The next section considers the students' side, accompanied by a subheading (larger space) for influences. A larger list space was provided for student's section,

as there are more students in a classroom than teachers. A reference to the diversity wheel was inserted for teachers to reference when considering student influences (**Figure 3**) (**Appendix B**).

Figure 3.

Individual Diversity Wheel



Slavin, 2018, p.66

After consideration of the living components, it is pertinent to further focus the lens. Here users would consider the nonliving items involved in the lesson. Lines were added for listing abiotic elements. Listing of these items will bring into focus the elements and their interactions in a classroom ecosystem. At this point, the instrument should have guided the teacher in defining the space, time, lesson objective, biotic, and abiotic elements of the lesson they intend to use.

Development of the instrument further addressed the balance of the ecosystem and reflection on synergizing the elements. A heading for the elements that may cause disequilibrium and equilibrium is prompted next (**Appendix B**). Based on Piaget's schema theory, disequilibrium occurs when there is an imbalance of what is understood and what is encountered (Slavin, 2018, p. 26). Equilibrium is when the balance is restored in terms of what a student understands (Slavin, 2018, p. 26). Listing of biotic and abiotic influences that will aid in disequilibrium, and equilibrium of the lesson objective will be prompted next on the instrument. Some interactions may be incorporated, ignored, or acknowledged with intent to circle back later. Consideration here is essential to respecting the time of the lesson and acknowledging that tangents can occur. An example would be when discussing Amelia Earhart a student may ask, “What was Amelia Earhart’s sexuality?” based on seeing a picture of her. This question is influenced by the student’s background but does not aid in reestablishing equilibrium of the lessons objective.

Last, the self-assessment instrument ends in reflecting on synergizing common or like interactions. The instrument prompts teachers into considering the elements they have listed and applying the ecological lens. Synergy is, “the combining or cooperation of two or more agents to produce a combined effect greater than the sum of the individual parts” (Oxford Dictionary,

2021). Due to the many variables within a classroom, a teacher will receive a prompt to only reflect on the elements, their interactions and how to synergize them.

Iteration 1

The first iteration of the instrument was the Concept Outline for the survey, which was intended to be a comprehensive instrument developed on a survey-based platform. Users would be guided through a list of questions that would end with a conclusive response guiding teachers toward reflection after completion. The initial framework was guided by Cantu's framework (2015) (**Appendix A**). Feedback from a teacher preparation expert (this researcher's thesis chair) provided clarity that the scope of the questionnaire might be too broad and laborious for teachers, the intended users. Additionally, instrument development would require an extensive survey-formatted tool. The amount of time that it would take teachers to complete the instrument and whether the reflective outcomes provided would be worth the time invested was questioned. Thus, there was a recommendation for a shift in the survey in terms of formatting as a decision tree or guiding framework rather than a traditional survey instrument.

Iteration 2

In response to feedback from the teacher preparation expert, a modified questionnaire was developed, which will be referenced moving forward in this thesis as Iteration 2. Questions included in the questionnaire were based off Cantu's (2015) model (**Appendix A**) and formatted in Google Slides. The questionnaire was submitted for content validity review by content experts and feedback was solicited from a focus group of preservice and inservice teachers.

Content Experts Feedback

The content validity sheet (**Appendix E**), adapted by this researcher from Sangoseni, Hellman, & Hill (2013) (**Appendix D**), was composed of fields to be marked positive or negative for sixty-two-line items with a comment section included for each item. The sheet assigned a numeral one through sixty-two, to the items on the instrument. Each question, reading prompt, or explanation was numbered. Two content experts were selected to review the instrument: an exceptional education professor and a science education profressor. Due to attrition of the science education professor, only one content validity sheet was returned (**Appendix C**). Of the 62-line items, 16 were marked as positive, 32 were marked as negative, and 14 were marked as inconclusive.

Line-item number one, the lens graphic showing the domain and rings of influence, received a positive score (**Appendix B**). Line item two, instrument definitions were deemed inconclusive due to the subjectivity of the audience. The content expert suggested examples to be used to clarify. For example, a clarifying statement of the context in which the definitions are being used. The title section "setting the domain" received inconclusive remarks with the comment of "domain" having a specific meaning in the state curriculum standards where this research was conducted. Item number four, setting of the domain "Location, time, and goal" received positive comments. The abiotic listing section of the instrument, number six, received conclusive comments and negative marks based on, "Need[ing] more connections; descriptions, especially depending on…audience".

The content expert provided conclusive negative comments on the Abiotic consideration section stating, "All are important questions to address. Most are yes or no. There seem to be several questions in one prompt. Research suggests one question/prompt, so you will know the

answer to the specific part of the question". The biotic elements section, lines twenty-two through twenty-seven, received four positive remarks in a row concerning diversity in the classroom, with one negative needing to "Delete opinion statements". The region and religion section of the biotic influences was deemed "Difficult to assess" with the disability section needing "resounding clarity, definitions, and credibility added." Race and ethnicity considerations of biotic elements received positive comments with one prompt needing clarity and marked negative. Socioeconomic through gender influences of the instrument received some positive marks but the negative mark comments remained like the rest, "vague, clarity, and opinionated". This continues through the rest of the instrument of being negative marks with similar comments.

Overwhelmingly, as a questionnaire survey, the instrument needed much revision, with 51 percent of it being negatively marked and overwhelming feedback suggesting that the instrument needed clarity. Twenty-two percent of the instrument was marked inconclusive, further supporting the need for clarity. From this evidence, a need for a revision and a potential shift in use arose, which impacted the third and final iteration as a reflective instrument.

Focus group

A focus group of three in-service teachers spanning 1 to 24 years of service and two preservice teachers was assembled. An open-ended response interview and guided review of the instrument were conducted for each person. Each person was given an overview of the instrument and asked to comment on the whole instrument. Overall, the instrument was positively viewed and feedback was provided by each focus group participant. A sense of uniqueness was commented for the ecological model. Each of the participants shared that

she/he/they had never thought to view the classroom as an ecology, much less view the interactions between biotic and abiotic elements. Lastly, the focus group members unanimously articulated the significance of considering the diversity in a classroom and the importance of reflecting upon connections. A few limitations were noted along with plausible uses of the tool, each of which will be further discussed in Chapter five.

Iteration 3

Incorporating feedback from the content experts and focus group, Iteration three repurposed the instrument as a reflective tool instead of a self-survey instrument (**Appendix B**). Based on the feedback from a content expert, the instrument's intended use was modified as a reflective instrument guiding users to consider the biotic elements and abiotic elements interacting within a lesson's domain. Professional reflection is a component of the instrument, as stated in chapter three, and was capitalized as a pivot point for the third and final iteration.

Chapter Five

Educational Significance

Ecologies surround our daily lives from macro to microcosms. Ecologies have defined domains, living, and non-living elements. Ecologists observe the interactions between these elements within the domain. These interactions are unique to each ecosystem. For instance, a micro-ecology could be defined as the nail bed on a finger, with bacteria, skin cells, nail cells, dirt, and other particles as the biotic and abiotic elements. Schools host classrooms which are well defined domains. It is known that classrooms host living and non-living elements, with the living elements being the teacher and the students and the non-living classroom elements. Non-living elements being classroom layout, curriculum, and classroom items to name a few. Biotic elements bring diverse background influences into the classroom. A variety of influences enter a classroom with students and teachers. These background influences affect how students and teachers interact within the classroom environment.

This research resulted in the development of a tool that prompts reflection on these background influences. Through three iterations of instrument development, it was determined that the final reflective instrument developed may be beneficial for use by preservice and in-service teachers to consider how the living and nonliving elements in a classroom interact. Reflection is a powerful and significant strategy for professionals. Mathieson (2016) would say of reflection, “Possibly the most effective method for spreading improvement is via the sharing of information gathered through critical reflection” (p. 10). Reflective practice, even if not used towards creating greater learning outcomes, is still beneficial for users because it reinforces the growth mindset. Growth mindset falls into the second tier of Maslow’s Hierarchy of needs, at the growth needs (Slavin, 2018, p.250). Future users of this tool will be prompted to reflect on the

interactions present within a lesson. These reflections could be used to employ diversity and inclusion, intentional teaching, professional development.

Reflection on biotic elements and their background influences touches upon a critical topic in education, diversity and inclusion. Schools are hosts to multiple demographics of students from diverse backgrounds. Backgrounds influence how students interact with each other and their environment. For example, Black urban fifth graders may not have the background knowledge to understand what “brocade” is, or why it is significant. Yet, students are given district assessments with texts about Chinese folktales that center around brocade. This disparity in background knowledge influences the student’s comprehension of text and affects their ability to perform well on the assessment. Teachers reflecting on the diverse backgrounds in the classroom can help set students up for success. A reflective instrument such as the one developed in this research could help by having teachers consider the backgrounds and interactions of the biotic and abiotic elements. In this instance students are the biotic elements interaction with an assessment the abiotic element.

Intentional teaching is the process by which teachers synergize the various elements in the classroom. In reflecting on interactions to synergize and increase learning outcomes, analysis of data should be performed. Data-driven instruction is when teachers make decisions based on data they have collected. Data can either by formal or informal such as observational data or state assessments By following the prompts within this tool, teachers gather observational and formal demographic data on their students. This strengthens data-driven instruction and hones observations for teachers.

Lastly, based on feedback from the focus group, this instrument, and the underlying ecological model, could be used as a form of professional development for teachers. Most schools have a professional learning community model where teachers and support staff come together to grow as a learning community. Preservice teachers also fall into this model. The scope of this instrument touches on multiple points of education academia and could be used a professional development tool for grade level meetings, school wide meetings, conference topics, or even preservice teacher education. Students and classrooms hold a wealth of potential resources that require a different perspective to utilize them. The ecological frame in this reflective tool provides that lens.

Instrument Limitations

A lack of survey design knowledge and research process greatly impeded the researcher's efforts in creating the instrument in this study. More research could have been done on survey design, which would have strengthened the iterations of survey development. This was evident after feedback was received from a content expert.

Lack of clarity was a common thread that limited the instrument. This is further reflected upon as lack of understanding of survey design by the researcher. Future expansion could provide a more user friendly and clear instrument for self-survey of a lesson plan through the ecological lens. Three current teachers and two pre-service teachers remarked on this as well and was noted by the researcher during interviews. The instrument requires many examples to convey the understanding of directions with just reading the prompts. Verbal examples and explanations helped the teachers understand the prompts. Questions posed with pictorial examples perhaps illustrated or photographed could provide more clarity for those completing the self-survey instrument.

Other limitations to this instrument development include implementation during an international pandemic. The researcher would have liked to pilot this survey and elicited feedback from in-service teachers at elementary schools. Due to restrictions from schools and unknown circumstances in response to the pandemic, this was not possible. Construct validity was also limited as attrition from content expert reviewers for survey validation.

Length of the instrument and time available to users is also considered a limitation. While viewing the instrument, three teachers and two preservice teachers commented that, while the instrument is important and significant, a per-lesson view was impractical. A suggestion was posed that it might be used as a weekly, monthly, or quarterly reflective piece. It was also suggested that the reflective tool could be considered as a focus for a professional development session for a grade level or school-wide professional learning community.

The instrument requires a vast and detailed knowledge of the teacher users' students, which can be very difficult to ascertain and could be considered invasive. The exhaustive nature of all the influences affecting biotic elements interactions within a classroom also limits the instrument, as this could be a lifelong pursuit in understanding itself. Teacher users would also need in-depth knowledge of content and pedagogical information, which is assumed by the researcher as “best practices”. Lastly, the instrument attempts to synergize elements to postively impact the majority of the students in a classroom, but differentiation should be still implemented as a critical teaching practice.

Recommendation of Future research

For future research based on additional iterations of this reflective instrument, refining, streamlining and providing further examples is suggested. Lack of clarity was a key component

in the feedback, along with length of the instrument. By making a more succinct instrument version with examples, users may be able to self-guide through the instrument more readily. Piloting the instrument and getting pre- and post- assessment data from students as to the effectiveness of the lesson after it is viewed through the ecological lens by the teacher would be suggested.

The ecological lens proposed with this research provides a change in perspective. There are many resources within a classroom. Most of these resources are found by tapping into the diverse backgrounds brought in by the biotic elements. A change in perspective is needed to find some of these resources. By identifying the elements, their influences, and the common interactions teachers can potentially synergize their lessons to improve engagement and learning outcomes. With further research and better instrument design, this self-survey tool could be used to help teachers tap the untold potential in classrooms.

Appendix A: Cantu Reflection and Self-Assessment Instrument

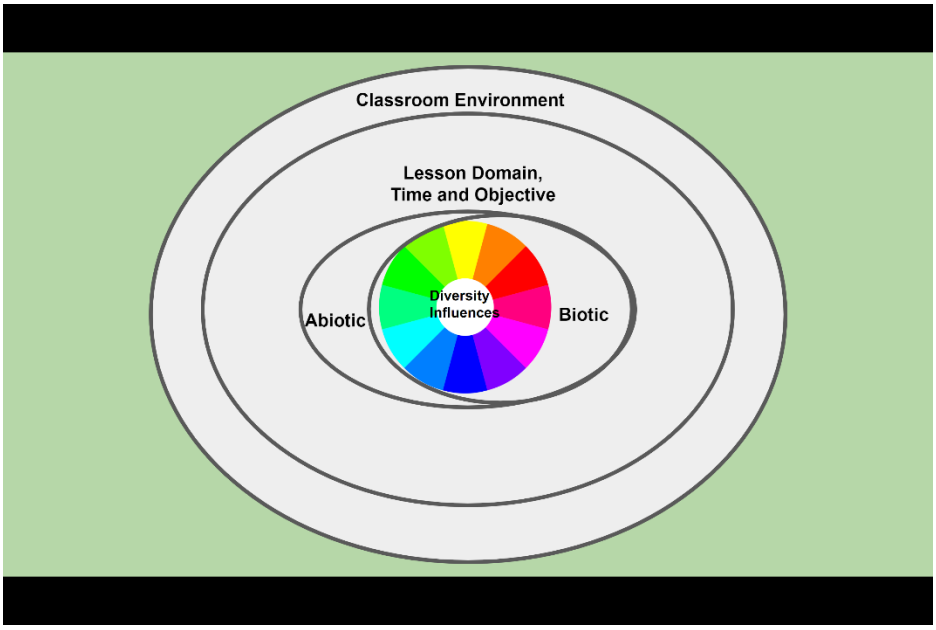
Final Reflection and Self-Assessment Instrument

Pre-Planning (Lesson Planning Stage)	*Interactive (Lesson Delivery Stage)*	*Post-Active (After Lesson Delivery)*
I can identify the following content I will need to use in this integrative STEM lesson: Science 1 2 3 4 5 6 7 8 9 10 *Comment or Example:* Technology 1 2 3 4 5 6 7 8 9 10 *Comment or Example:* Engineering 1 2 3 4 5 6 7 8 9 10 *Comment or Example:* Mathematics 1 2 3 4 5 6 7 8 9 10 *Comment or Example:*	My students are engaged in this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10 I am confident in my instruction of this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10 Area for Comments/Notes:	I used the appropriate content for this particular integrative STEM lesson in: Science 1 2 3 4 5 6 7 8 9 10 *Comment or Example:* Technology 1 2 3 4 5 6 7 8 9 10 *Comment or Example:* Engineering 1 2 3 4 5 6 7 8 9 10 *Comment or Example:* Mathematics 1 2 3 4 5 6 7 8 9 10 *Comment or Example:*
I can differentiate between each of my students' science, technology, engineering, and mathematics ability levels as I plan my integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10		I differentiated between each of my students' science, technology, engineering, and mathematics ability levels in this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10
I am taking into consideration each of my students' learning styles (auditory, kinesthetic, visual, etc.) for this particular integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10		I believe I considered each of my students' learning styles (auditory, kinesthetic, visual, etc.) for this particular integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10
I personally have the required knowledge in science, technology, engineering, and mathematics content areas to deliver this particular integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10		I believe I did have the appropriate knowledge in STEM content areas for teaching this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10
I understand and can utilize varied instructional strategies needed for this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10		I believe I did utilize the required STEM instructional strategies need for this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10

Pre-Planning (Lesson Planning Stage)		***Post-Active (After Lesson Delivery)***
I have considered county/district standards and/or school-based initiatives I can incorporate in my integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10	Area for Comments/Notes:	I utilized the appropriate county/district standards and/or school-based initiatives I previously set for this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10
I have considered the required state standards needed to accomplish this particular integrative STEM lesson in order to establish the proper learning objectives for it. 1 2 3 4 5 6 7 8 9 10		I met the standards and learning objectives I previously set for this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10
I am designing a integrative STEM lesson in which my students will be motivated to learn STEM concepts. 1 2 3 4 5 6 7 8 9 10		This integrative STEM lesson motivated my students to learn STEM concepts. 1 2 3 4 5 6 7 8 9 10
I am designing an integrative STEM lesson in which my students will be able to use creativity and innovation. 1 2 3 4 5 6 7 8 9 10		My students showed creativity and innovation during this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10
I am designing an integrative STEM lesson that will create a collaborative learning environment. 1 2 3 4 5 6 7 8 9 10		I designed a collaborative learning environment during this integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10
I have considered how students will need to be grouped for successful completion of this integrative STEM lesson (individual/team sizes). 1 2 3 4 5 6 7 8 9 10		I believe my students were grouped correctly for successful completion of this integrative STEM lesson (individual/ team sizes). 1 2 3 4 5 6 7 8 9 10
I have allotted time in the integrative STEM lesson for students to reflect on their work. 1 2 3 4 5 6 7 8 9 10		My students had time during the integrative STEM lesson to reflect on their work. 1 2 3 4 5 6 7 8 9 10
I am designing an integrative STEM lesson that allows for students to drive their own learning. 1 2 3 4 5 6 7 8 9 10		I allowed my students to drive some their own learning during the integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10
I can tie my integrative STEM lesson back to a real-world problem and/or real-world context. 1 2 3 4 5 6 7 8 9 10		My students were able to relate my integrative STEM lesson to a real-world context/problem. 1 2 3 4 5 6 7 8 9 10
I feel overall this will be a successful integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10		I feel overall this was a successful integrative STEM lesson. 1 2 3 4 5 6 7 8 9 10

Appendix B: Final Iteration Reflecting Survey Instrument


Ecological Lens
Self Survey
Scott E. Sebree


Classroom Environment
Lesson Domain,
Time and Objective
Diversity
Influences
Abiotic
Biotic

Ecosystem	**Biological community of interacting organisms and their environment.**
Abiotic elements-non living	**Non-living elements within an ecosystem (Classroom setting, items within, supports, and curriculum)**
Biotic elements- living	**Living elements within an ecosystem (Students and Teachers)**
Equilibrium	**A state in which opposing forces or influences are balanced**
Disequilibrium-Biology	**A state in which a force or influence is disproportionate to the other forces or influences**
Disequilibrium-Cognitive	**Imbalance between what is understood and what is encountered**
Synergy	**The interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects**
Intentional Teaching	**Teaching for a reason or a purpose**

Set the Domain of the Lesson

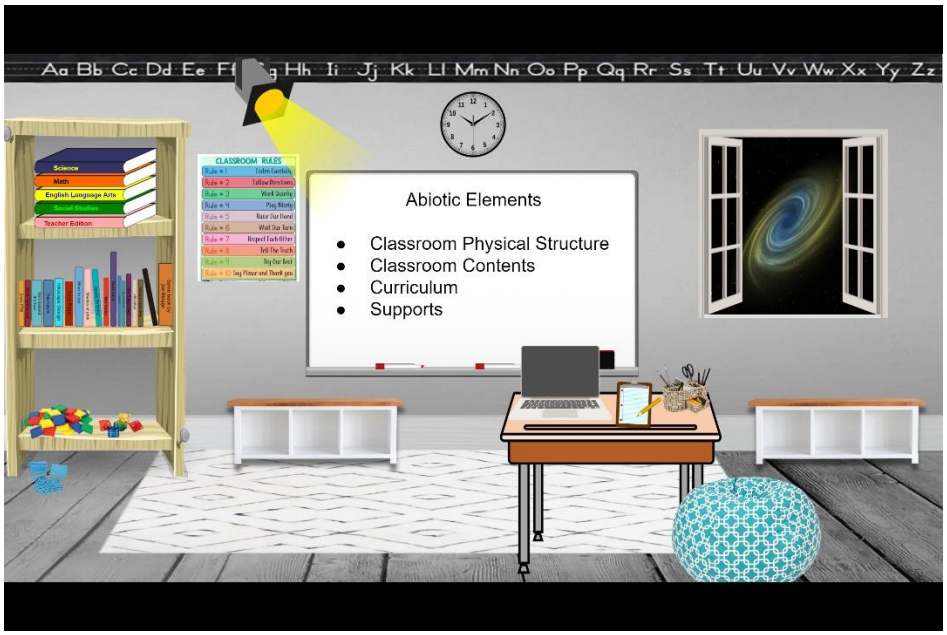
Define the domain of the lesson by outlining the location, the time frame, and learning goal.

Location:

Time:

Learning Goal:

Guiding Question: What connections can be made between the learning goal, abiotic, and biotic elements to synergize lesson outcomes?



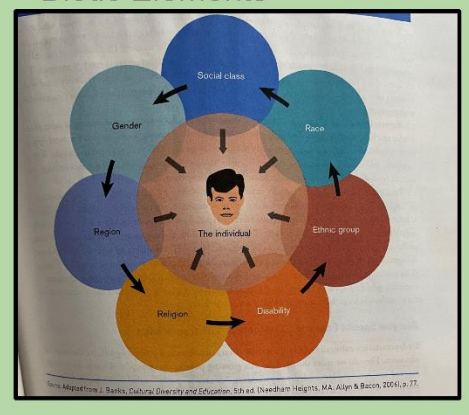
List Abiotic Elements

Abiotic Elements intentionally in Lesson	Abiotic Elements present in Classroom
List the abiotic elements within the lesson plan that are intended to be apart of the lesson. Classroom layout, materials, supports(Technology, charts, manipulatives etc), and learning goal (Standard, learning target, and success criteria).	1. What elements are present in the classroom that could cause disequilibrium? 2. How can these elements be mitigated or managed? 3. What elements within the classroom can be used to bring equilibrium back to the lesson if needed? Consider these thoughtfully to reduce having to "Put out fires" during a lesson.

Abiotic Considerations

1. What materials are needed for students to participate in the lesson?
2. When will these materials be prepared, when will they be administered, and are they student accessible?
3. Are there supports being used and is training needed to use them?
4. Does the classroom layout aid in the goal of the lesson?
5. Are the behavioral expectations set and appropriate to the lesson and students?
6. Are the learning goals and success criteria displayed and will they be addressed to students?
7. Has real world relevance of the learning goal, been considered and examples provided in the lesson?
8. Do students have enough time to comprehend the lessons learning goal and is time managed effectively?

Biotic Elements



Teachers and students are the biotic elements within a classroom.

Background diversity influences behavior and engagement in a lesson for both students and teachers.

Students background knowledge provides a base of information and connection points to new concepts.

Not all influences of biotic elements will be applicable(BUT most should be*) to a lesson based on the subject, learning goal, and student population.

Remember the guiding question:
What connections can be made between the learning goal, abiotic, and biotic elements to synergize lesson outcomes?

Biotic Elements

Region- All students live and come from a region with definable characteristics. Consider the region the school serves, then the region(s) students come from. Let the subject of the lesson guide the connections.

1.Do any regional characteristics connect to the learning goal?

Religion- Students come from varied religious backgrounds that influence moral and behavioral actions. Religions and people of faith have made many academic contributions. AVOID theological discussions unless this is the lesson topic.

2. Do any of the lessons activities or content cause disequilibrium with student engagement in the lesson based on students religious backgrounds?

3. How will inclusion and engagement be created if there is disequilibrium present?

4. Are there any major contributors or contributions to the learning subject from a religious denomination present in the biotic elements?

Biotic Elements

Disability- Is the inability or reduced capacity to perform a task in a specific way.

1. Is the lesson and activities within accessible for all students with disabilities?
2. What ways is the lesson not accessible and can this disequilibrium be accommodated?
3. Are there any contributors to the subject who have a disability?

Ethnicity and **Race-** Ethnicity is a students sense of identity based on shared commonalities such as place of origin, religion, or race. Race is the physical characteristics of a person.Consider character depictions, art, music, and cultural representations.

4. Are students diverse racial and ethnical characteristics reflected in the lesson?
5. Are experts, contributors, and professionals from the students ethnic or racial background depicted in the lesson?
6. Can a culturally relevant connections be made to the learning goal? (Like in examples, scenarios, depictions, scripts, characters, etc.)

Biotic Elements

Socioeconomic status- takes into account individuals income, occupation, education, and prestige in society. Think of the connections that can be made to the learning goal based on this category.

1. Does the lesson show an occupational relevance to the topic?
2. Can this relevance span the levels of prestige in society?
3. Do any students parents have an occupation that relates to the topic?
4. Does the lesson provide background knowledge to all students regardless of socioeconomic status?
5. Does the lesson provide everything students will need to be successful in it?

Gender- the sex of an individal. Gender equality is important for ensuring holistic perceptions of what persons of a specific gender can do.

6. Are all genders presented equitably in the lesson? (Examples, depictions, etc.)
7. Have contributions by both genders been highlighted in the lesson?
8. Are there any cultural norms which may cause disequilibrium for persons of a specific gender to participate in the lessons activities?

Biotic Elements

Biotic Elements Contributing to Equilibrium

Based on answers above compile all applicable Biotic connections here. Sort them into explicit and implicit. Explicit are connections that have to be made directly. Implicit are connection that can be implied.Implicit items should be auto included in the lesson and explicit will need to be considered on how much time it takes to make the connection.

Explicit	Implicit

Compare Equilibrium and Disequilibrium

What connections can be made between the learning goal, abiotic, and biotic elements to synergize lesson outcomes?

1. What connections from Abiotic & Biotic elements will help with lesson Equilibrium?

2. Can it all be included for sake of time? If not choose what should be added based on student population.

3. What Elements will cause lesson Disequilibrium?

4. How will these be mitigated or managed?

Conclusion

Based off the above chart, is there more Equilibrium or disequilibrium connections?

If there is more disequilibrium, what modifications or research should be done to create more equilibrium connections?

If there is more equilibrium, what connections are already present in the lesson and what connections will be added?

Appendix C: Contact of Validity Experts

HUT Review of Instrument

To: Cheryl Van De Mark <Cheryl.VanDeMark@ucf.edu>; Mary Little <Mary.Little@ucf.edu>

Cc: Taylar Wenzel <Taylar.Wenzel@ucf.edu>

Validity Response Sheet....
23 KB

Good Afternoon Dr. Little and Dr. Van De Mark,

Thank you both so much for consenting to review my instruments validity. My research Chair is Dr. Wenzel and my committee members are Dr. Hoffman and Dr. Trenta. I have already defended my proposal and am finishing chapters 4 and 5 this semester.

Here is the link to the google document that is the Thesis : https://docs.google.com/document/d/13Kfi4-ty5leU3tTvr4ZrvB3NPmFhQ2HSmLZJpXB-bVc/edit?usp=sharing


SELF ASSESSMENT OF ELEMENTARY LESSON PLANS THROUGH AN ECOLOGICAL LENS

By

SCOTT EDWARD SEBREE

A.S.A.

Self Assessment of elementary teacher lesson plans through the Ecological Lens.

Chapter One: Introduction Background Ecosystems can be defined as broad as the planet or as miniscule as microorganisms (Reese et. al, 2014). Within an ecosystem there are living and non-living elements. Biology uses the terms biotic for living and abiotic for non-living. Ecologists look at diff...

docs.google.com

Here is the link to the instrument: https://docs.google.com/presentation/d/1ups1qaJXlrXjaESM1nD9oJ8t2zkJffcYaZwLaS82qlw/edit?usp=sharing

Ecologicla Lens SurveyDraft 2

Ecological Lens Self Survey Scott E. Sebree

docs.google.com

Attached you will find the validity response sheet for the instrument. Please provide a positive or negative mark to each line item. On negative marks please provide comments.

If you have any questions, I am available via email, cellphone, meeting, or face-to-face. If this could be returned by October 15th at the latest that would be amazing. I have CC'ed Dr. Wenzel also in case of anything I may have missed. Thank you again and enjoy!!

Scott Sebree
Scottsebree@knights.ucf.edu

Appendix D: Sangoseni, Hellman & Hill Validity Sheet

Table 1. Content Validity Indices

Item number	Content Validity Index	Item Number	Content Validity Index
1	1	41	0.777777778
2	1	42	0.777777778
3	1		
4	0.888888889	43.1	0.666666667
5	0.888888889	43.2	0.666666667
6	1	43.4	0.666666667
7	1	43.5	0.666666667
8	1	43.6	0.666666667
9	0.777777778	43.7	0.666666667
10	1	43.8	0.666666667
11	0.666666667	44.1	1
12	1	44.2	1
13	0.777777778	44.3	1
14	0.888888889	44.4	1
15	1	44.5	1
16	0.888888889	44.6	1
17	0.888888889	44.7	1
18	0.888888889	44.8	0.888888889
19	0.888888889	44.9	1
20	0.777777778	45	1
21	0.777777778	46	1
22	1	47	1
23	1	48	1
24	0.666666667	49	1
25	1	50	0.888888889
26	1	51	0.666666667
27	0.888888889	52	0.666666667
28	1	53	1
29	0.888888889	54	1
30	0.666666667	55	0.888888889
31	0.777777778	56	0.888888889
32	0.777777778	57	0.888888889
33	0.888888889	58	1
34	0.777777778	59	1
35	1	60	1
36	0.888888889	61	1
37	0.777777778	62	1
38	0.888888889	63	1
39	0.888888889		
40	0.888888889	Total # favorable	58.5
		Proportion favorable	0.93

Appendix E: Validity Response Sheet

	Item	Positive	Negative	Comment
1	Lens Graphic (Slide2)			
2	Definitions (Slide 3)			
Setting Domain (Slide 4)				
3	Directions (Slide 4)			
4	Location, Time, and Goal (Slide 4)			
5	Guiding Question (Slide 4)			
6	Abiotic Element Example (Slide 5)			
Listing Abiotic Elements (Slide 6)				
7	Abiotic Intentional (Slide 6)			
8	Abiotic Intention Prompts (slide 6)			
9	Abiotic Present (Slide 6)			
10	Abiotic Present Question 1 (Slide 6)			
11	Abiotic Present Question 2 (Slide 6)			
12	Abiotic Present Question 3 (Slide 6)			
13	Consideration prompt (Slide 6)			
Abiotic Consideration (Slide 7)				
14	Question 1 (Slide 7)			
15	Question 2 (Slide 7)			
16	Question 3 (Slide 7)			
17	Question 4 (Slide 7)			
18	Question 5 (Slide 7)			
19	Question 6 (Slide 7)			
20	Question 7 (Slide 7)			
21	Question 8 (Slide 7)			

Biotic Elements (Slide 8)				
22	Diversity Graphic (Slide 8)			
23	Sentence 1 (Slide 8)			
24	Sentence 2 (Slide 8)			
25	Sentence 3 (Slide 8)			
26	Sentence 4 (Slide 8)			
27	Restating Guiding Question (Slide 8)			
Biotic Elements Cont. 1 (Slide 9)				
28	Region Explanation (Slide 9)			
29	Region Question 1 (Slide 9)			
30	Religion Explanation (Slide 9)			
31	Religion Question 2 (Slide 9)			
32	Religion Question 3 (Slide 9)			
33	Religion Question 4 (Slide 9)			
Biotic Element Cont. 2 (Slide 10)				
34	Disability Explanation (Slide 10)			
35	Disability Question 1 (Slide 10)			
36	Disability Question 2 (Slide 10)			
37	Disability Question 3 (Slide 10)			
38	Ethnicity and Race Explanation (Slide 10)			
39	Ethnicity and Race Question 4 (Slide 10)			
40	Ethnicity and Race Question 5 (Slide 10)			
41	Ethnicity and Race Question 6 (Slide 10)			

Biotic Element Cont. 3 (Slide 11)				
42	Socioeconomic Status Explanation (Slide 11)			
43	Socioeconomic Status Question 1 (Slide 11)			
44	Socioeconomic Status Question 2 (Slide 11)			
45	Socioeconomic Status Question 3 (Slide 11)			
46	Socioeconomic Status Question 4 (Slide 11)			
47	Socioeconomic Status Question 5 (Slide 11)			
48	Gender-Explanation			
49	Gender question 6 (Slide 11)			
50	Gender Question 7 (Slide 11)			
51	Gender Question 8 (Slide 11)			
Biotic Connections equilibrium chart (Slide 12)				
52	Biotic Connections equilibrium chart directions (Slide 12)			
53	Explicit Section (Slide 12)			
54	Implicit Section (Slide 12)			
Compare equilibrium and disequilibrium connections (Slide 13)				
55	Compare equilibrium and disequilibrium connections Chart (Slide 13)			
56	Question 1 (Slide 13)			
57	Question 2 (Slide 13)			
58	Question 3 (Slide 13)			
59	Question 4 (Slide 13)			
Conclusion (Slide 14)				
60	Question 1 (Slide 14)			
61	Question 2 (Slide 14)			
62	Question 3 (Slide 14)			

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