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In support of our mission, there are no fees to submit or publish manuscripts so that cost will never be a barrier. Typeset and graphics are intentionally simple in order that the journal can be more easily accessed on a variety of devices worldwide to fulfill the mission of the journal.

I hope that the practices discussed in this journal will be helpful to you, our readers.

Sincerely,

Ann Cancilla Gaudino, Ed.D., Founder and Editor-in-Chief
eejeditor@gmail.com

With gratitude to our reviewers who serve the journal:

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What is Math: Exploring and Impacting Students' Perceptions of Mathematics

Taajah Witherspoon and Cora Causey

Abstract

Mathematics is one of the universal subjects taught in schools across the globe. Knowledge, understanding, and application of mathematics are essential for all members of society to fully participate without restrictions in Science, Technology, Engineering, and Mathematics (STEM) careers (Gulnaz & Fatima, 2019). Although universal and ubiquitous, students usually take a moment to think of a response when asked to state the meaning of math. The participants of this study from kindergarten, second through sixth grades, as well as ninth and tenth grades, indicate that most individuals perceive math as numbers including tracing, writing, counting, and operating (addition, subtraction, multiplication, and division). However, some high school students indicated that they could not provide a definition for mathematics. According to Hwang and Son (2021), students' perceptions of math are shaped by accumulated experiences with the subject over time. Ajuksukmo and Saputri (2017) revealed a significant correlation between students' attitudes toward math and their mathematical achievement. These researchers further posit that positive attitudes about mathematics motivate students to improve their learning achievement in mathematics. In this article, we share a model lesson as an example of how to expand elementary and high school students' perception(s) of mathematics.

Keywords: defining math, student perceptions

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Introduction

To prepare for the upcoming sessions, I (the lead author) created and introduced a lesson using cove molding, blocks, and marbles. The session was introduced to the teacher candidates in my math methods course. These teacher candidates experienced the lesson first with the intent to refine and later introduce a similar lesson to elementary and high school students. The teacher candidates were informed that their primary roles were to avail themselves to answer potential questions and capture the students' comments during the upcoming sessions.

I facilitated the task with the elementary and high school students where they were invited to reflect on the meaning of mathematics. The hands-on lesson allowed students to use one foot and two feet cove molding pieces to create ramps for different types and sizes of marbles to roll at varying rates. The lessons took place at two elementary schools (Kindergarten, second through fifth graders) and one high school (ninth and tenth graders). At each school we met in large common areas i.e., media center or auditorium. In the following sections, we describe in detail how the students responded to the pre- and post- questions, where students stated their definitions of math and then discussed what they learned from the task.

In each setting, we met with students in their respective grades during their scheduled math blocks. At the beginning of each 60-minute session, I greeted all students in one large group and then provided brief introductions of myself and the teacher candidates who were also available to provide support and answer questions. Immediately following introductions, I invited students to respond to the question, "What is math?" The students' responses were recorded in a shared document by the teacher candidates. Kindergartners were eager to share their meaning of mathematics with one word or short responses such as, "copying numbers," "counting," "adding," or "taking away numbers." Except for second and third graders, every

group described math as numbers. Second through fifth graders and high schoolers' primary perceptions of math included the four basic operations as indicated in their one-word responses, i.e., "adding, plus, subtracting, minus, multiplication," or "times." They also stated subjects such as Algebra and Geometry, as well as concepts i.e., fractions, decimals, and exponents. Fifth, sixth, and ninth/tenth graders explicitly stated "calculations" to define mathematics. The sixth graders' and high schoolers' responses indicated that the perception of mathematics shifted to algorithms and equations as evidenced in the following responses, "math is solutions to problems, …series of steps to get an answer," and "…calculation of problems with numbers." It is also noteworthy to mention that both subgroups indicated that math "helps us understand" or serves as the "foundation for science." Negative perceptions of math began to emerge within this group i.e., "Math is painful, …not fun" or "torture." Others within this group indicated that math was "a requirement," "random /scattered," and "complicated patterns that lead to simple solutions." Five high school students indicated that they "don't know" how to define mathematics.

Exploration: Creation

In the exploration phase, learners engaged in a whole group discussion exploring the materials that the instructor presented. Learners continued to work as a whole group, where they were further engaged through a quick discussion to state what the instructor was holding up and displaying. Students described the cove molding as a piece of wood, ruler, stick, or ramp. In every meeting, two students accepted the challenge to make the marble move on the cove molding without touching it. Each time a student blew on the marble to make it move and then another student followed up with a demonstration of a simple ramp where he or she elevated one side of the cove molding to make the marble roll. After introducing the students to the materials

(one foot and two feet cove molding, unit blocks, masking tape, and recyclables e.g., toilet and paper towel rolls), they were instructed to form groups of three and then approach a teacher candidate to receive a marble. The groups of students were given a challenge to create and build their own construction to make the marble move without touching it. With their self-selected groups, each group of students immediately began collecting materials and went to available spaces to construct various ramps. Although the students had free reign to collect any supplies deemed necessary for their creations, they were only issued one marble per group. Only one student, a kindergartener, chose to work alone. During the investigation, the students engaged in discourse that promoted collaboration focused on problem solving i.e., "Where should I place the ramp to make the marble move?" Even though the students were only tasked with making the marble roll, their creations were far beyond simplistic.

After the small groups successfully met the first challenge of making the marble roll, the facilitators charged them with another challenge to gain control of the marble after it rolled on their newly crafted construction. Most students quickly met this challenge by creating a quick stopper with blocks. The final provocation challenged students to make the marble turn up to two times. A kindergartner, some sixth graders, and high schoolers created an additional challenge to make the marble knock over pieces of wood or drop from an elevated platform into a specific object. Prior to cleaning up and returning the materials to the designated locations, the students were provided with opportunities to share their creations with their peers. Most student groups eagerly shared and applauded each other when a group shared a unique or complex construction.

Debrief: What Did You learn?

Immediately following the challenge task, the students were called back to whole group discussions and invited to share what they learned from the experience. Although every group of

students used the test and run strategy as a primary method to problem solve, only second graders explicitly referred to "trial and error" as a learning accomplishment. Several fourth graders stated that they learned the "importance of play" during math. A Kindergartener affirmed this belief with the statement, "Playing makes you smart." Some second and third graders directly stated "teamwork" as a skill learned whereas others indicated learning collaborative qualities such as "listening to" and "encouraging each other."

In addition to the sixth graders who explicitly stated that they learned "physics," students from every grade level cited experiences they had learned that pertained to the concept:

- How to make a marble move (K)
- If there are gaps the marble can't get through (K)
- Put stuff under the ramp to make it taller (K)
- The higher the ramp the more speed (2nd)
- Hard to make a marble move on a flat track (3rd)
- How to make a marble go fast or slow (4th)
- It's hard to make a marble turn (5th)
- The faster the marble the greater the distance (6th)

Second through sixth graders provided examples of social and emotional learning and work ethics.

- It doesn't have to be perfect (2nd)
- Starting over is good (4th)
- It takes a lot of adjustments to be successful (4th)
- Just because it doesn't work doesn't mean it won't work (5th)
- Little changes can make a big difference (6th)
- It takes patience and time (6th)

Kindergarten through sixth graders shared motivational quotes such as "Never give up" and many students spoke specifically to failure e.g., "If you fail, don't quit; Failure motivates you to do better; It's ok to fail in math;" or "When you fail try again." My favorite quotes are embedded in perseverance and productive struggle, "Just because it doesn't work doesn't mean it won't work; It takes a lot of changes to make a difference; It can take a lot of people for one successful creation;" and "The most minute change can have a major effect."

Post Assessment: What is Math

After engaging with their creations and discussing what they learned, the students were asked to revisit the question, "What is Math?" Table 1 in the Appendix provides pre- and post-perceptions of mathematics.

Kindergarten and Second Grades

Fifty-seven percent of the kindergarteners described math as "combining two blocks, 2+2, plus, take away" or "minus." Nineteen percent of this subgroup explained the concept of flexibility through numerous statements such as, "There is more than one way to do something" or "solve problems." A smaller number of kindergarteners (24%) expressed creativity, learning,

and play as a definition for math. One student in kindergarten and another in second grade simply stated math as counting. The majority (52%) of second graders viewed math as "solving problems, more specifically, to "figure things out to help solve another problem." Most of the remaining second graders (45%) expressed math as an operation, concept, or subject e.g., "adding, take-away, times table, dividing, fractions, or Algebra."

Third and Fourth Grades

Over half (57%) of the third graders described math as solving problems. Nineteen percent of this population expressed math as play and fun. Two students revisited the idea of embracing failure by reiterating that math is "failure that causes learning." The remaining third graders expressed math as something that is ubiquitous and one student encapsulated the idea in a statement, "math is in everything we do." Thirty-six percent of fourth graders expressed math as using manipulatives such as blocks, toys, and ramps to "do math with" and 27% expressed math as "using multiple strategies" to solve problems or tasks. Like third graders, a few fourth graders (18%) indicated that math is playing. One student described math as measurement.

Fifth and Sixth Grades

Fifth and sixth graders were eager to share their refined definitions of mathematics. Thirty-four percent of the fifth graders focused on problem solving to define mathematics where half of them explicitly connected this concept to solving with multiple strategies and different perspectives. The next highest group at 22% viewed mathematics as the art of creating and experimenting. The next three foci represented 36% of the population at 12% each: Thinking with emphasis on "Growth Mindset," Math operations (multiplication and division), and specific content such as fractions, decimals, and exponents. Ten percent of these fifth-grade students simply described math as numbers and another two students described math as "words." A small

population of these students, 7% and 3%, respectively described math as using manipulatives specifically marbles and the others described the concept of perseverance i.e., "If you don't get a strategy right the first time you keep going."

The majority (36%) of the sixth graders continued to define math as the four-operation group as well as equations, angles, and Physics. Nineteen percent described math through the lens of problem solving i.e., "trying a series of problems to find a solution; finding new ways to solve a problem." One student described math as a puzzle to solve. Fifteen percent of this population further expressed math as exploration or "trying new things. Four to six percent of the sixth graders described math as numbers, fun, and including "a lot of different components."

Ninth and Tenth Grades

As expected, 26% of the ninth and tenth graders defined mathematics as problem solving, and 13% indicated that math was finding and "using different strategies." Surprisingly, the high schoolers began to share unorthodox views of math, i.e., "Math is thinking (17%), …helpful (13%)," and "collaborating (13%)." Nine percent of the students expressed that, "Math is learning through failure." One student even shared, "Math is engaging."

Where's the Math?

Although this exploratory session was designed to expand students' thinking about the meaning of mathematics, it also served as a foundation for future math lessons. In subsequent meetings with various classes, I used this experience to explicitly teach mathematical concepts and vocabulary. After students constructed their models, academic language was introduced and reinforced to describe the direction of the marble or position of the ramp i.e., ascend or descend. I also encouraged students to predict and then verify the speed and distance of the marble based on the construction. After predictions were made, the students used appropriate tools to measure

the distance and speed. In some small groups, I challenged students to use the longer pieces (three feet) of cove molding to post at an angle on a block and then measure the distance and or time of the marble movement. The students repeated at least three iterations of this by increasing the ramp with one block at a time. In upper elementary and high school, students measured to the nearest fraction (sixteenths) and second (milliseconds). The use of academic language and measurement provided all students with opportunities to apply the Standards of Mathematical Practice, *Attend to precision*. Table 2 provides some examples of potential vocabulary words that may be used in conjunction with this lesson, depending on the grade level taught.

Another follow up task could be designed to direct students to review their creations and then identify the math within their models. Although I have not completed this lesson with any students, I can imagine that most students would default to counting the number of pieces within their creations. Even if students don't initially connect to more advanced concepts such as angles and slope, this task with ramps lends itself to teaching and learning these abstract concepts. Thus, this practice provides an opportunity for teachers to connect abstract concepts with concrete models and real-life experiences. For example, students can build ramps and then analyze and calculate the slope with the slope-intercept equation.

Again, this session was designed to expand students' perception of mathematics where they may continue to make connections to day-to-day experiences. Although it is highly unlikely that this session alone can totally transform their thinking about math, it can serve as a foundation to broaden and expand one's knowledge, understanding, and application of mathematics.

What did I Learn?

After working with various grade levels, I learned several key concepts. First, I learned that most students regardless of grade primarily thought of math as numbers and operations. They began to consider math as thinking, creating, exploring, playing, and problem solving after experiencing and connecting to hands-on learning. Secondly, I learned the power of asking questions to prompt change and improvements with student designs. I also found it more beneficial to ask questions and then walk away. Students seemed to look at me for further assistance or responded with, "I don't know" if I remained in the area in which they were working. However, if I walked away and then returned after several minutes the students were found to be working diligently toward the goal or had successfully met the challenge and moved to self-initiated challenges. I used the following questions with all age groups to promote thinking and action:

- What can you do to make the marble move without being pushed or thrust forward?
- How can you gain control of the marble, so it doesn't roll in random spaces?
- What can you do to make the marble turn?
- What can you do to solve the current problem? *(Marble obstructed from flowing without getting stuck).*

Conclusion

According to Ingram (2013) students who enjoyed math view it as useful and are more likely to engage in-depth. DeBellis and Goldin's (2006) analyzed engagement skills according to students' "mathematical intimacy and integrity" which refers to emotional engagement and respectively commitment to search for understanding. Mathematical intimacy was evidenced when students made every attempt to protect their construction from others or expressed

disappointment even if someone mistakenly knocked over a piece of their models. Each student demonstrated mathematical integrity as they persevered to understand and master the challenge to manipulate the marble. This session further provided alternative methods to analyze engagement through the level of "concentration, independence, cooperation and reflection" that each student demonstrated throughout this session (Ingram, 2013).

During the initial discussion of mathematics, the students' voices were monotone, and their faces seemed unenthused while some even groaned and made negative comments. When students of all ages began to explore the materials and gather supplies, the collective energy in the room shifted from calm to energetic through jovial conversations and shared responsibilities to secure materials and a workspace. While a few students observed and discussed plans, most of them immediately began to tinker with supplies to construct ramps. After the assignment was complete, themes regarding the importance of teamwork and failure emerged from all groups during the whole group discussion about what they learned from the task. Even though many students initially described math as numbers i.e., tracing, counting, or combining, it was rewarding to witness kindergarteners include context to their descriptions such as "combining two blocks" which more clearly expressed the concept of addition. These kindergarteners also progressed their thinking about math as active, flexible, and creative. Most students in all grades broadened their initial concept of math from rote memorization, operations, and procedures with numbers to perceiving math as creativity, flexibility, thinking, problem solving, and sense making. Students' attitude towards mathematics appears to be shaped by how they experience engaging tasks that directly relate to the subject. Hwang and Son's (2021) push for students to be provided with opportunities like these to develop a positive attitude towards math suggests a

correlation between performance and perception with mathematics. Thus, we encourage educators to use hands-on problem-solving tasks to help shape students' perception of math.

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Appendix

Table 1:

Perceptions of Math – What is Math?

Grade level/ Participants	**Initial Perceptions of Math** "Math is…"	**Perceptions of Math Revisited** "Math is…"
Kindergarten 21	Copying numbers Counting numbers Combining / adding numbers Take away numbers	Counting Combining two blocks, plus, Take away something, minus More than one way to do something More than one way to solve a problem Playing, creativity, learning Math helps you create something in your brain
Second 29	Adding or plus Subtracting or minus Multiplication or times table, division Algebra, Geometry Equations Square root Money	Counting Solving problems - to help you solve another problem Helps you figure things out Operations - adding, take away, times table, dividing, fractions, or Algebra
Third 32	Adding Subtracting Multiplication/ Times Measurement Algebra	Math is in everything we do Math is solving problems Play & fun (include) A place where failure occurs Everywhere Everything we do
Fourth 22	Using numbers Add Multiply or Multiples Divide Subtract Fractions Algebra Symbols to figure things out	Math is playing Using manipulatives - blocks, toys, ramps Using multiple strategies Playing Measurement
Fifth 59	Numbers Division Multiplication Decimals Fractions Exponents Calculations Geometry Arts Manipulatives	Problem solving - multiple strategies - different perspectives Creativity / Art Thinking - Growth Mindset Operations - Multiplication - Division Fractions/Decimals/Exponents Numbers Words Perseverance/ "If you don't get it right the first time you keep going."

Sixth 47	Numbers Letters / Symbols Adding Subtracting Equations Series of steps to get an answer Solutions to problems Calculation of problems with numbers Basis of science Random and scattered Complicated patterns that lead to simple solutions "not fun" "a requirement"	Operations - Adding, Subtracting, Multiplying, Dividing Equations Angles Physics Problem solving - Trying a series of problems to find a solution - finding news ways to solve a problem - a puzzle to solve Exploration/ Trying new things Fun Includes a lot of different components

To the Wayside: Relational and Instructional Outcomes of High Stakes Testing for a First Year Elementary School Teacher

Jacob S. Bennett

Abstract

In this manuscript, I present data related to my work alongside Jane Watson (pseudonym), a White female identifying, first-year, third grade teacher in a rural majority-White public school. Over a two-year period while Jane was in her final year at a teacher preparation program and into her first-year teaching, we met through both traditional and dialogic interviews as well as classroom observations. As the results below will show, Jane's goals of instilling Growth Mindsets (Dweck, 2008) in her students expressed during first-year interviews were pushed to the wayside when she entered her first-year classroom. Moreover, goals of being "colorblind[1]" in her teacher/student interactions were reinforced by curriculum content decisions tied state-mandated testing.

In what follows, I present the ways public education, neoliberalism, and high stakes testing policies are connected within United States (U.S.) public schools. I include this section to understand the origins of the belief that high-stakes testing is an objective assessment measure for students, a central element to Jane's perception of the importance of testing to inform her curriculum and instructional practices. I then provide the methods and conceptual framework used to uncover the ways the pressures of high stakes testing policies reinforced Jane's belief in the effectiveness of color-evasiveness and diminished her belief in the importance of developing growth mindsets within her students as a first-year teacher.

[1] I use this phrase here because of Jane's usage. Based on the deficit nature of the term in that it places lack of sight with lack of knowledge, I will instead use the term "color evasive" as described by Annamma, Jackson and Morrison (2017) throughout the manuscript.

Keywords: Testing, Growth Mindset, First-year teacher

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Systems and Schooling

As discussed by scholars such as but not limited to Lee (2010), Pinkhard (2019), and Shujaa (1993) learning does not only take place within the classroom. Rather, students are influenced by numerous factors outside the school building that contribute to their experiences therein (Milner, 2007). As such, taking an ecological approach to analyze teaching and learning is essential to developing a deeper understanding of reasons for teacher and student decisions in the classroom. On the macro-level of analysis, incentives created by specific social, political, and economic structures within certain societies should be considered important to better understand individual and groups choices within such systems (Kamenica, 2012). Neoliberalism as an ideology can be understood to influence decisions at all these levels of societal structure.

Neoliberalism has been defined as a "programme of resolving problems of, and developing, human society by means of competitive markets" (Patomäki, 2009, p. 433). The strategies and ways-of-thinking associated with this program have been adopted by policy makers in many disciplines, including education. For instance, as this ideology relates to education in the United States, Marshall, Mitchel and Wirt (1989) found that goals of efficiency and accountability, both of which can be associated with neoliberal ideals, overtook goals of equity within educational reform models beginning in the 1980s.

In the 1960s, educational policies at the federal level were designed to place more attention on supporting children with "special needs," develop procedures to ensure greater "equalization of resources," and were organized around goals to include "broader participation" in the decision-making process (Marshall, Mitchel & Wirt, 1989, p. 93). In the 1980s, however, a clear shift in values by educational policy makers toward efficiency and quality defined as, "an instrumental and immediate public value, one with which to judge school performance and

formulate policies aimed at shaping their performance" (p. 90). While cultural preferences within specific states were found to contribute to policy needs, the authors also found, "receding support for educational equity [was] clearly evident in the data" (p. 94). Moreover, the authors explained policy makers who valued quality sought to improve "testing programs" as a priority of reform.

Aligning with and extending the results of Marshall, Mitchel and Writ (1989), Au (2016) explained high stakes standardized testing policies, "provide the data on which student, teacher, and school value are measured" (p.40) and create a process in which certain content knowledge is determined "correct" or valuable. This inversely creates "other" knowledge that is deemed worthless. He continued, tying high stakes testing to the program of neoliberalism in that such tests, "establish the basis for viewing education as a market where consumers can make choices about where to send their children to school" (p. 40). As the case study below will show, Au's (2016) theorizing was validated based on my work with Jane. Au's work also pushed me to consider how my work with Jane further complicated conceptualizations of high stakes testing by analyzing the ways race and neoliberalism coalesce.

Neoliberalism and Race

Authors and scholars in a variety of disciplines, from environmental sciences (Sbicca & Myers, 2017) and geography education (Roberts & Mahatini, 2010), to education policy (Au, 2016) and sociology (Apple, 2011), have described the ways neoliberalism complicates the outcomes of being racialized in the United States. For example, Sbicca and Myers (2017) argued that researchers should discontinue their conceptualizations of neoliberalism as a purely economic system and begin understanding the concept as a social process. They explained:

> . . . instead of seeing neoliberalization as strictly an economic process that furthers capital accumulation, we agree that it is also a malleable racial project 'underwritten by the hegemony of colorblindness' (p. 31)

Sbicca and Myers (2017) went on to argue that race and neoliberalism are extremely interconnected. Echoing the work of Goldberg (2009), they recommended the usage of "racial neoliberalism" rather than race *and* neoliberalism to underscore such a relationship:

> . . . racial neoliberalism . . . uses the discourse of equal opportunity and personal responsibility to build a white working class and middle class voting bloc that supports a political project to defund the welfare state, enforce austerity on low-income communities, and pursue mass incarceration in order to criminalize the poor (p. 32).

By analyzing connections between systemic inequities and race, how teachers define themselves within teacher education and after the profession, they might be better understood. In the next section, I seek to begin this process by utilizing Alsup's (2006) concept of Borderland Discourse to connect the influence of testing on Jane's identity and curriculum practices as a preservice and first-year teacher.

A Borderland Discourse

Alsup (2006) pushes those interested in understanding teacher identity formation to take a holistic approach to their conceptualizations of the topic. She explained a holistic approach is, "inclusive of the intellectual, the corporeal, and the affective aspects of human identity" (p. 6). She named her holistic approach to understanding teacher identity development "Borderland Discourses". To Alsup (2006), teacher identity development, especially for early-career teachers such as Jane, lies in the space between professional and social life (i.e., the borderland). Borderland discourse emphasizes the importance of understanding how the back and forth

influences between each border are essential in developing a teachers professional and personal identity.

As Alsup (2006) explained, Gee's (1999) conceptualization of discourse was most impactful for her needs as a teacher educator moving preservice teachers to consider their future professional selves. Gee conceptualized a borderland discourse used by students in a study conducted of middle and high school students in an urban context who, when they met in the schoolyard, "came together [and used] a borderland discourse to communicate . . . a discourse that was 'a mixture of the various neighborhood peer discourses, with some emergent properties on its own' (Gee, 1999, p. 2 as quoted in Alsup, 2006, p. 37). In other words, a borderland discourse urges researchers to consider the ecological elements of teacher identity, as discussed above. For my work with Jane, the concept of Borderland Discourse pushed me to consider how Jane's views regarding the emphasis placed on passing state mandated tests by her administration influenced her perception of self as a teacher.

In conceptualizing borderland discourse this way, I hoped to address the following research question:

> How does high-stakes testing influence the professional identity of a first-year teacher who described the importance of adhering to a color-evasive ideology and supporting students in developing growth mindsets as a preservice teacher?

As the data below will show, the message pushed by Jane's administration as a product of a larger societal discourse related to the objective power of high stakes testing to sort/define student achievement heavily influenced her interpretation of what "good teaching" was. This message reinforced Jane's racial ideology of color evasiveness and pushed her goals of developing growth mindsets in her students to the wayside. Such results provide useful

implications to better inform both teacher preparation and the support of early-career K12 teachers.

I recruited possible participants for this study by using a university participation pool. I offered undergraduate students one research credit to take a survey about discrimination. Over 100 students took the survey, and I contacted a group of 30 based on their race (White) and year in the undergraduate program (third or fourth). I chose students who self-identified as White because I hoped to understand how White preservice teachers perceived topics such as race and oppression, and how such perceptions might affect their teaching practice. Jane was one of the students who agreed to participate in four interviews with me throughout the school year when she was a preservice teacher. During our final interview that year, Jane described her goal of being color evasive with her students. Based on this, I asked if she would consider continuing working with me during her first year as an in-service teacher (upon being hired for a job). I shared with her that I would like to observe how her teaching practices were influenced by her ideology of color evasiveness. She agreed. Based on the importance pushed within a Borderland Discourse framework of understanding professional identity development through an ecological approach, it is essential to acknowledge the ways the context of Jane's school influenced her perception of self professionally and personally. To so do, in the following subsections I break down the context of Jane's teaching experience to the state, school, and classroom level.

Context is Key

Considering where Jane worked was essential to developing the sort of ecological knowledge as recommended by Lee (2010). Such knowledge is key to understanding how context was key to influencing Jane's definition of self as a teacher. At the time of this study, the state Board of Education (BOE) mandated end-of-the year testing for students in third through

twelfth grade. Almost all tests were administered online, and were designed to inform parents and others in the community if students, collectively and/or individually, were meeting state-standards in Math, English, Science and History. Standards were reviewed by a group of selected classroom teachers at least twice to determine test content.

The school where this research was conducted is located in a rural district within the Mid-Atlantic United States. At the time of this study, the school had a majority White student population (84%) and 46% of students received free and reduced lunch. For the school year prior to this work, the school was not fully accredited by the state BOE. During our work together, the school was warned by the state BOE that they might lose accreditation for the next school year based on student failure to meet state-standard achievement levels.

There was a practice within the school to publicly display achievement on these assessments. While not tied to teacher salary, assessment scores remained on student academic records for the duration of their time in the district. The assessments were specifically used by the state BOE to determine which schools were performing well and which needed "further assistance." For schools not fully accredited, such as the one where Jane worked, policies mandated that teachers send all individual lesson plans and achievement goals to the state BOE to document efforts put in place to meet achievement levels.

Jane taught in a third-grade classroom. Based on the state-mandated testing parameters, this was the first time students were required to take end-of-year tests in their elementary school experiences. Student demographics of the classroom were described by Jane as follows: 1 Black Female, 1 Bi-Racial Male; 2 Hispanic Males; 1 Chinese Male, 9 White Females, 5 White males (n=19).

Data presented below come from two years of interviews and one year of classroom observations. Jane and I completed four interviews during our first year together during her time as a preservice teacher. During our second year, 10 more interviews were completed alongside 10 classroom observations while Jane was an inservice teacher. Altogether, our work included over 14 hours of recorded interviews and approximately 10 hours of classroom observations. I believed it essential to get to know Jane in a way that allowed me to better understand the borderland of her identity between herself inside and outside of the teaching profession. To do so, conversational interviews were extremely important.

Let's Talk

Jane and I met four times for a total of four hours within a private teacher education office. Three of the interviews were open-ended. For our third interview, I prepared guiding questions based on experiences I had as a high school social studies teacher to ask Jane how she might react to possible scenarios that could take place in her future classroom (Appendix A). I chose the third interview because I hoped our prior two discussions would provide us a foundation of trust to be able to begin discussing topics that some may find uncomfortable (i.e., race, racism). Similar to the results of Bloom et al. (2021), the trust I developed with Jane during our first-year interviews were essential to our ability to engage in dialogic interviews during year two.

Second year interviews (n=10) took place at a local coffee shop the week following a classroom observation. I chose a coffee shop to remove Jane from the context of her school in the hopes of making our interviews more conversational. Generally, we discussed instances I observed in her class so I could gain more clarity of her reasoning behind her actions. For example, I observed that Jane placed student names on her whiteboard at the front of the room

under large numbers. During the subsequent interview, I asked her reasoning behind these groupings, and she described that the groups were designed based on student ability on benchmark assessments (i.e., tests taken periodically throughout the school year to measure a student's progress in a specific content area). It was during these discussions that testing was repeatedly brought up in relation to her thinking/implementation of her teaching strategies.

Let's Look

I observed Jane's teaching and curriculum practices in her classroom 10 times over the school year. I observed Jane at all times of the school day and at least once each day of the week to try and capture the largest variety of classroom experiences. During my first visit to her classroom, I did not take notes but attended to let the students know I was interested in observing how Ms. Watson interacted with them. During each observation, I engaged with any student who asked me questions (e.g., who I was, how my day was going, etc.). Throughout observations, I sat in the back of the classroom at a student desk and followed Jane's movements throughout the class, listening to how she spoke to students and watching the ways she supported students with her teaching strategies. I wrote field notes on a yellow legal pad and then transferred those notes to a computer-based Word document for analysis. I shared the Word document with Jane during our subsequent dialogic interviews so she could also review them and tell me if something was not accurately presented based on her understanding of the classroom and her students.

Analysis for this manuscript took the form of inductive axial constant comparative coding to generate analytical memos by searching for themes in the data. As analysis was ongoing throughout data generation, the theme of testing emerged based on Jane's repeated discussion of the ways state testing affected her perceptions regarding how she could support her students in the classroom. Once this code was generated, I searched for evidence within the interview and

observation data linking testing policies to Jane's perception of identity. I then searched for evidence that disconnected the two (i.e., disconfirming evidence). This strategy allowed me to validate my empirical assertions when the majority of evidence supported the linkage through a process of analytic induction (Erickson, 1985).

Analytic induction is a strategy that allows researchers to develop explanations of interactional processes through which individuals develop distinct forms of social action (Smelser & Bates, 2001). Further, "initial cases are inspected to locate common factors and provisional explanations. As new cases are examined and initial hypotheses are contradicted, the explanation is reworked" (Smelser & Bates, 2001, p. 1). Echoing this description, Anderson and Jack (2015) explained analytic induction is best used for explaining social situations because it allows for adaptability. Therefore, this technique was useful for my needs based on my goal of developing empirical assertions.

For instance, in my search for disconfirming evidence in the data connecting Jane's perception of identity and high-stakes testing, I was able to find instances in which Jane's views about race and racism seemed to shift throughout our two-years working together (Author, 2019a). The process of analytic induction allowed me to adapt my analysis to understand if such shifting views affected Jane's goal to be color evasive and support students in developing growth mindsets (Dweck, 2008). I shared all data and my interpretations of results with Jane during my analysis in an effort to represent her perspectives to the best of my ability. If Jane believed I was misrepresenting her stance on a certain topic, we discussed our different views and I adapted to create more reliable empirical assertions. The results presented below are the outcomes of these processes.

The Power of a Process

The discourse perpetuated by school administrators of the importance in having students pass state-mandated tests weighed heavily on Jane's perception of what it meant to be an effective first-year teacher. As a Borderland Discourse, this administrative push in turn reinforced Jane's views that color evasiveness was the best strategy to inform the curriculum supports she sought to develop for her students. Such supports were most often based on testing content.

Observing Practice

During all observations, Jane often interacted with students in congenial ways. These interactions, however, were relatively short in relation to the time spent on test-prep. For example, during a morning observation a White male student was playing with a toy car when the time was allotted for reading enrichment. To redirect the student, Jane called him to her desk and began asking questions about the toy. In my field notes, I wrote down the following exchange. While not verbatim because I was on the other side of the room, I was still able to capture the basic details of the interaction:

> Jane: Can you show me that car you're playing with? That's so cool!
>
> Student: Sure! It's a blue jeep. My dad has a jeep.
>
> Jane: That's awesome! Can I hold it up here for a bit and give it back to you later? I want to make sure it stays safe.
>
> Student: OK.
>
> Jane: Thanks so much!

The student then proceeded to return to his desk. This was similar to other interactions Jane had with students: always jovial, but not very sincere. Moreover, Jane was always seemingly

apprehensive to engage students in conversations that did not relate to classroom content. As the following section will show, that content was almost entirely based on what students would be assessed during their end of year state-mandated test.

Testing and Curriculum Content Choices

During first year interviews, Jane described her hope to support her future students on an individual basis: ". . . I think it always has to be individual based . . . every person has their own learning style and their own interests" (Interview 2, 11/9/2015). When Jane entered her classroom as a first-year teacher, the testing policies designed by her school administration reinforced this ideal within Jane's conceptualization of effective teaching. For instance, the classroom-level instructional and curricula supports Jane designed to prepare her students for the year-end state-mandated test were solely based on student achievement on benchmark assessments given throughout the year. The content on those assessments were based on state content standards, which directly related to the content Jane included in her curriculum.

For example, in relation to the literacy standards, I asked Jane if she would be willing to ask the literacy coaches at her school to select content that represented a variety of cultural, racial, and ethnic experiences for student to develop their reading compression. She responded that:

> Where it's hard is because it's not really even their [literacy specialists] fault because they're getting things to support the standards . . . the big concern with [the administration] I think right now, they're trying to figure out what we can buy to get them to pass the reading test and they're not really looking as much at these sorts of things . . . it's [including multiple perspectives/experiences] second priority. (Interview 11, 4/6/2017)

In this quote, Jane's perception of what was important for students to learn was heavily influenced by her administration's emphasis on students passing state tests. Jane believed that to be an effective teacher she had to design classroom content to support test readiness.

After Jane's response, we discussed if students can learn skills assessed on many mandated tests, such as reading comprehension, using a variety of content. For instance, a story including non-Western perspectives could be used for students to learn how to distinguish the main characters, plot and main ideas. While she agreed with this logic, she felt it was above her place in the power-structure of the school as a first-year teacher to bring this curriculum recommendation to the administrative team. Our conversation then turned to other strategies she might implement to work within her administration's push to prepare students for state mandated tests. One such effort was a discussion of multicultural teaching strategies such as the transformative approach developed by Banks (2010).

Banks (2010) explained a transformative approach to multicultural education centers teachers' efforts on developing activities and curricula that allow students to take on the perspectives of cultures/groups outside their personal experience. In relation to this definition, I asked Jane if she felt developing empathy was an important skill for her students to have. She replied, "Oh, yes," in a way that showed she emphatically believed it was. I then brought up how the transformative strategy might be implemented in an activity with students taking on the perspective of the Indigenous American Sioux to discuss the concept of Western expansion rather than from the "traditional" lens through the experiences of American settlers. Her response again showed the connection between her understanding of ways she could make curriculum choices and the content on state-mandated tests:

> It's just, I think a lot of the standards have changed slightly towards more of that. Because it was like they just had to learn about Greece and Rome. Then they added Mali to it to give that extra – like obviously it's extremely different from Greece and Rome. (Interview 10, 3/23/2017)

Jane was grappling with the relationship between testing policy and multicultural curriculum content. In relation to Banks (2010), her response was representative of the additive, rather than transformative approach to multicultural education – a less impactful strategy to build multicultural awareness in students. In other interviews, Jane expressed similar sentiments regarding the difficulty of making multicultural changes to her curriculum content.

In further discussing state content standards for social studies, Jane expressed concern that there were only three specific references to African American figures, each in relation to the Civil Rights Movement of the 1940s, 50s, and 60s. In response, I asked if she would be willing to try and include other content in her class curriculum by bringing in books and/or other materials that represented persons of color in a variety of ways, rather than only as participants in civil rights. She responded:

> It becomes so hard again because it's so hard to [include other content], it's hard enough to get all the social studies and science standards in there and cover what they have . . . I don't feel like I have a lot of extra time to go into some of the other things that you [I] may want them to learn about. (Interview 11, 4/6/2017)

As a Borderland Discourse, this quote reveals that in her explanation that she did not have time to include content she "wanted them to learn about," Jane's personal ideals regarding what content she might want to include in her course were pushed to the wayside in place of state standards. Testing policy also complicated Jane's beliefs regarding what her goals should be as a

first-year teacher and the best ways to design content supports for her students.

Jane explained, "Because once they don't pass these [tests], they're gonna be put in a low track, and then what is that gonna do to their spirit?' Jane's frustrations were evident: "Because I mean, I am a first-year teacher. I don't know what to do with these things" (Interview 10, 3/23/2017). In her capacity as a first-year teacher, it seemed Jane was very susceptible to new understandings of what it meant to be an "effective teacher" and the school administration (and her fellow teachers') emphasis on testing was crafting her perception of effective teaching to be synonymous with test preparation. Borderland Discourse also reveals this discourse not only contributed to Jane's content decisions, but perception of self as a teacher who hoped to build relationships with her students.

More Than Content

I asked Jane if in her experience with the school testing was deemed more important than relationship building with students. Her reply revealed the ways high stakes testing policy influenced her perception regarding student development and her value as a teacher:

> I just don't want to – and it sounds prideful, but I don't want to look bad . . . I don't know how I'm gonna be looked at if my kids do poorly on a test. You see what I mean? It's gonna be like, "Well, she didn't do very good." And I know that the principal is gonna see that, and they're gonna wonder what in the world are they doing in their classroom. (Interview 10, 3/23/2017)

Au's (2016) argument that, "high-stakes standardized tests provide the data on which student, teacher, and school value are measured' (p. 40) was substantiated by Jane's case. Testing not only affected Jane's perception of how she could support her students, but also the ways she believed others would perceive her value as a teacher.

Jane described feeling unhappy with the way an emphasis on testing within her school made her interact in superficial ways with her students. As a preservice teacher, Jane described her belief in the value of instilling growth mindsets (Dweck, 2008) into her students. She explained her goal would be to, "teach kids that failing can be a good thing, and learning from those experiences to help them through life" (Interview 2, 2/9/2016). To do so, she hoped to be able to develop relationships with students to understand their personal needs. She explained that in relation her student-teaching placement within a second-grade classroom:

> I see kids . . . that can't draw a straight line and they'll break down and start crying and trying to build that, that we all have things that we struggle with, let's work on it. So, I think that's the biggest part of learning is getting kids to realize that mistakes shouldn't handicap them and keep them from learning more. (Interview 2, 2/9/2016)

Prior to becoming a classroom teacher, Jane's perception of self as it related to being an effective teacher included the importance of developing an appreciation for the necessary nature of mistakes on the path to learning. During her first year of in-service teaching, however, her appreciation for taking time to allow students to iterate seemed to wane.

While her preservice placement was in a second-grade classroom, becoming a third-grade teacher brought with it a year-end state-mandated test. This, coupled with her administration's emphasis on having students pass mandated tests, shifted Jane's mindsets regarding the importance of taking time away from content-based instruction to support students' psychological development. Jane no longer believed she could support students in developing growth mindsets because that was not what student skills would be measured on.

> What it comes down to is, my kids at the end of the year are going to be evaluated on whether or not they remember that [state mandated] content. They're not being evaluated on anything else. They're not being evaluated on 'Can you [display] growth mindsets?'" (Interview 10, 3/23/2017)

Test evaluation, not students' personal growth, became Jane's measure of her effectiveness as a teacher.

In the following exchange, I asked Jane if the emphasis on testing from her administrators was changing the way she planned her curriculum and understood what it meant for her to be a teacher. She explained:

> Yes. Because I feel . . . I'm diving in so hard, and we don't have time to like stop and do anything else. It's like you have to keep on this pace . . . you will not fall behind, and know we have to keep going. Then it's like I'm getting frustrated and ugly because anything, like any side comment just feels like a waste of time, and I hate being that way. (Interview 10, 3/23/2017)

She continued by describing how she entered the profession with the hopes of being able to, "sit down and be a little more-chatty with them [students]," but now she felt the emphasis on test prep did not allow her to do that: "I feel like I'm getting slammed, and I'm getting frustrated with what I'm having to do in the classroom, and it's coming out in our relationships. Because I feel like I'm shorter with them than I would normally be" (Interview 10, 3/23/2017).

Based on the search for disconfirming evidence in the data presented above, the following empirical assertions were generated and verified with Jane:

- Jane's perception of effective teaching was heavily influenced by her administration's emphasis on test preparation.
- Content on state mandated tests presupposed Jane's content decisions in her classroom.
- State standards bolstered Jane's views that color-evasiveness was the most effective strategy to support students pass state mandated tests and moved goals of developing growth mindsets in her students to the wayside.

Moving to the Wayside

In relation to the research question that guided the analysis of the results above and aligning with previous scholarship regarding the influence of high stakes testing on teaching practice, testing policies at Jane's school were revealed to influence many decisions related to curriculum practices within her classroom. What this case study adds to, however, is that influence on Jane was both reinforcing (e.g., with her color evasiveness) and disincentivizing (e.g., with her pushing the goals described during her preservice interviews to the wayside). Specifically, Jane was averse to adopting multicultural content because such content would not support students in passing the end-of-year test. Moreover, Jane pushed goals such as developing growth mindsets within students to the wayside because such development would not be evaluated on end-of-year tests and therefore was deemed unimportant.

Jane's discussion about the difficulty in adopting content that was not included on the state mandated pacing chart showed the power of testing content in relation to controlling teacher and administrator curriculum content decisions. These are ways that high-stakes tests can further marginalize non-Western perspectives from being included in a teacher's curriculum content. Even if, as Jane explained, she wanted to cover content not assessed on the state-test, she felt

handcuffed by the time it took to cover state-mandated topics. Borderland discourse reveals that Jane's personal goals related to including topics students would not be assessed on during their end-of-year test were pushed to the wayside. Aspects of her perception of professional identity as a preservice teacher shifted as a result of the importance of having her students pass state-tests.

The control of tests of Jane's perception of self as a teacher was also apparent in her explanation of growth mindsets. Jane explained even though such ideals were important to her (i.e., supporting students in appreciating failure and persevering through), she did not believe she was able to instill these ideals in her students because such adoption would not be assessed at the end of the year. Testing here controls more than content, but the borderland between Jane's personal beliefs/interests and perception of self as a teacher. Beyond content, testing is shown to control the relationships Jane felt she "had time" to foster with her students.

In her exchange with the student playing with the blue jeep, Jane was quick to re-direct rather than engage with him deeply about his family. It seemed Jane was always keeping an internal clock related to test-prep and did not use personal anecdotes to build connections with her students even though she described her desire to do so in our interviews. While I observed Jane to interact with her students in congenial ways, I never observed her engaging them in lengthy conversations about their lives outside of school. Moreover, the way Jane grouped her students to provide more personalized supports was not based on anything more than their scores on state-mandated benchmark assessments. While such grouping is in theory rationale, the outcome was racially segregated groups of students that, based on Jane's belief in colorblindness, were not question beyond their utility related to test preparation. Such an outcome can be connected back to neoliberalism.

Testing for Ideology

According to Apple (2006), a central goal of neoliberalism is to replace any sort of collective identity between groups with individual perceptions of self. He explained:

> For both neoliberals and neoconservatives, the educational task here is to change people's understanding of themselves as members of collective groups. Instead, to support a market economy we need to encourage everyone to think of themselves as individuals who always act in ways that maximise [sic] their own interests. (p. 23)

Because tests are measured at the individual level, any grouping of students by aspects of their identity not related to achievement can be seen as illogical and unnecessary. This occurs even though researchers (Cohen & Garcia, 2008; Duncan-Andrade, 2007; Wallace & Chhuon, 2014; Wang et al., 2020) have shown that when teachers create environments where student identity (i.e., race, gender, culture, etc.) is reflected in curriculum and appreciated openly, performance can increase for students in marginalized groups. Rather, testing based on the neoliberal ideal of accountability reinforced the strategy that sorting students should be done by their benchmark assessment scores alone, which is exactly what Jane did.

The instructional methods and curriculum practices I observed Jane using to support her students were both innovative and well designed. They were also, however, controlled by her perception that testing was the end goal, rather than a means to a larger end (e.g., developing growth mindsets). While Jane often utilized differentiation (Tomlinson, 2005) to cater learning styles and information to her students (e.g., whole group, small group, and individual instruction; displaying and explaining clearly designed learning goals on the whiteboard; flexibly adapting her lesson based on the current needs of her students), she lacked a full "toolkit" to develop the sort "high quality curriculum" Tomlinson (2005) explained differentiated strategies were meant

to enhance. This was because testing limited Jane's perception of what effective teaching should look like.

The study presented here supports other researchers (e.g., Au, 2016; Booher-Jennings, 2005) who have shown testing policies weigh heavily on a teachers' perceptions of what it means to be an effective teacher. This study adds to the extant literature by showing the effects testing can have on the practical decisions a first-year teacher who believes colorblindness to be an effective strategy to support students. In short, the borderland between Jane's sense of self as a teacher and definition of effective teaching was controlled by testing, which bolstered colorblind/color evasive ideological beliefs while relegating racial literacies further to the periphery. Such a peripheral placement seemed justified because of a lack of marginalized or critical perspectives represented in content on state-wide assessments.

Implications to the work described above might be aimed at test curricula as they relate to including more perspectives within test content and therefore state-standards. However, I would be remiss if recommendations for future work did not address the need to more deeply understand how the borderland of teachers' perceptions of self and practice are affected by testing policies. More research should be done in terms of considering the ways teacher ideology (racial, political, etc.) can affect curricular decisions made in their classrooms. Adding to and complicating these efforts should be a consideration of the ways testing policy plays a role in the construction of a teacher's practical and personal decisions as they relate to perceiving one's self as a teacher, and therefore decisions of teaching practices (e.g., curriculum practices, instructional supports, relationship building, etc.).

If more researchers provide evidence about the intersubjective nature of teaching and learning and the borderlands between teachers' conceptualization of self, ideology and testing,

future high-stakes testing policies and assessments might be better developed. Even more importantly, if such research is undertaken to show the complicated reality of teaching, which is a profession and experience heavily influenced by numerous variables on an hourly basis, high-stakes tests may no longer be perceived as an objective measure of student, teacher, and school value resulting in better outcomes related to informing multicultural curriculum practices.

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Diversity and Inclusion in Higher Education: Investigating the Factors Shaping Challenges and Opportunities for Medical Students' Engagement

Hany Zaky

Abstract

The diversity among undergraduate students in the United States has peaked recently. This quantitative study aims to investigate medical students' perceptions regarding the factors (gender/ age/ religious beliefs/ disabilities, immigration status/ political affiliation/ sexual orientation) directing their overall campus satisfaction with diversity and inclusion practice. The survey responses were collected from 180 students at a Public Health College in the State of New Jersey. The researcher performed descriptive analyses, Pearson Correlation, One-way ANOVA, and t-test to answer the overarching question and its hypotheses. The results indicate a statistically significant strong positive correlation between students' perceptions of overall campus satisfaction regarding diversity and inclusion and their interaction with people from different religious backgrounds, interaction with other students with disabilities, communication with undocumented immigrants, interaction with other students from different political affiliation, and interaction with people from different genders and age groups. However, the findings reveal no statistically significant correlation between students' overall campus satisfaction and their interaction with students from diverse ethnic and racial backgrounds, socioeconomic backgrounds, or sexual orientations. Implications of these relationships are discussed with their pedagogical and institutional best practices.

Keywords*:* Diversity, Inclusion, Equity, Student Satisfaction, Pedagogical and Organizational Implications

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Introduction

Education aims to give individuals access to jobs and develop their innate skills. It exposes persons to knowledge, different cultures, languages, and other important factors related to their communities and the world. Higher education in this context encourages and disseminates knowledge, wisdom, tolerance, critical thinking, and searching for the truth tactics. Consequently, higher education needs to represent all sections of society in order to be more inclusive. Higher education sectors entrench educational and social history, in which equity matters underpin policies and practices (Bennett & Burke, 2017). Broader inclusion in higher education is prioritized for the contributions toward a more functional economy (Adam, 2003; Garzón et al., 2020). Rights-based arguments regarding the liberal humanist universal norm are prevalent nationally and internationally. This approach, though, fosters inclusion for discrete categories of identity for specific groups such as cultural diversities, people with disabilities, and sexualities (Whitburn & Thoas, 2021).

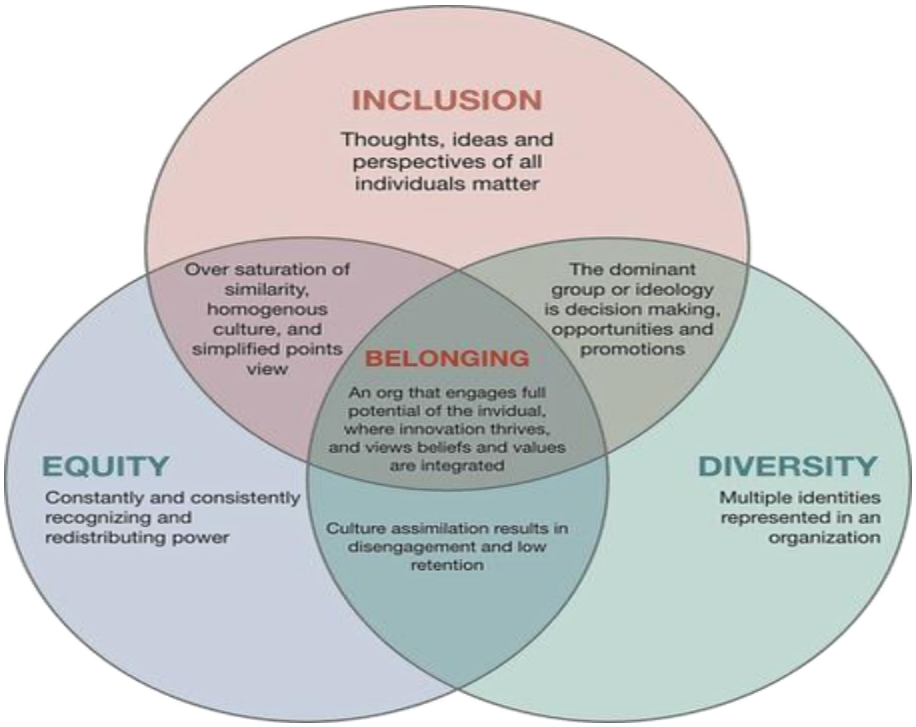
The inclusive education discourse deepens individuals' participation in all aspects of life (Simons & Masschelein, 2015). Inclusive education scholars, though, have pointed out a variety of interventions targeting specific students' identities to address the barriers to the use of inclusion. Equity and social justice practices shape higher education institutions' assessment decisions (Dawson et al., 2013). The methods higher educational institutions implement in their assessments shape the decisions that might impact their student bodies. The role of assessment in nurturing the forms of learning promotes greater social justice within institutional communities (McArthur, 2016). Fair opportunities secure a practical implementation of inclusive teaching and learning practices. Rigid practice, academic integrity, and students' core skills development are the center of students' institutional inclusive engagement (McArther, 2016). Research shows that

institutional concerns for procedural fairness foster students' diversity and increase those students' satisfaction on campus. Educators, therefore, ought to consider the "how" and "why" assessment decisions made to foster learning conditions (Bunbury, 2020; McArthur, 2016). Equity, diversity, and inclusion (EDI) receive considerable attention in higher education. For example, in 2009, the American Association for Colleges and Universities validated its Value Rubrics for Intercultural Competencies, providing the skills and attitudes needed to successfully navigate cultural contexts to ascertain active students' participation in institutional learning and teaching activities. Situational factors in teaching and learning processes is crucial in developing and implementing courses. These situational factors include the general context of learning, the subject nature, the characteristics of the learners, the institutional core values, mission and vision, and the teacher's characteristics.

In educational settings, diversity brings together individuals with differences and unexpected similarities. It includes all aspects of identity and experiences, including nationality, ethnicity, language, gender, sexuality, ability, educational background, and learning styles. It is also found in the personalities, backgrounds, and teaching approaches. All higher education classrooms are diverse in ways that enhance learning if adequately harnessed. Students learn more if they feel secure sharing their perspectives and identities. Diversity in pedagogy, curricula, and students' identities fosters Critical Thinking, Communication, and problem-solving competencies (Lintangsari & Emaliana, 2020; Whitburn & Thomas, 2021) (see Figure 1).

Figure 1

Sense of Belonging- The Intricacies of Inclusion, Diversity, and Equity in Higher Education Settings (Adapted from Lintangsari & Emaliana, 2020; Grzanka, 2017)



Defining the Terms

Equality, Equity, Diversity, and Inclusion are terms often used interchangeably despite the apparent differences in their use and implications. Additionally, Intersectionality appears frequently in literature due to its complexity and effectiveness in solving problems people might experience in their surroundings. This section highlights the key terms and definitions used in the current research report.

Equality: The term addresses the idea that everyone has the same rights and should receive the same treatment (Luck & Harris, 2020).

Equity: This term includes needs-based support to level the participant's disadvantage and considers structural barriers to participation. Equity is the "creation of opportunities for historically underrepresented populations to have equal access and participate in educational programs that can close the achievement gaps in student success and completion" (Luck & Harris, 2020).

Diversity: It is a multidimensional concept, depending on the cultural context and the awareness level of the differences. The term is a complex and nuanced construct that represents an array of identity factors such as race, ethnicity, gender, and disability (Lintangsari & Emaliana, 2020). Research shows that educators' awareness of students' differences enhances teaching and learning effectiveness (James & Weiyan, 2016; Lee, 2015).

Inclusion: It is the process of defining the needs and wants of minority groups to integrate them into the mainstream community. The term is linked to the social aspect, where the individuals attain the required social profile corresponding to society. At the university level, inclusion embraces diversity and works to make groups identified as "diverse" and an integrated part of the community. In the higher education context, inclusion enhances learners' success, embraces diversity, promotes learners' voices, and incorporates best practices for self-evaluation improvement (Rashid & Tikly, 2010).

Intersectionality: Bowleg (2012) defined it as "a theoretical framework for understanding how multiple social identities such as race, gender, sexual orientation, SES [socioeconomic status], and disability intersect at the micro level of individual experience to reflect interlocking systems of privilege and oppression (i.e., racism, sexism, heterosexism, classism) at the macro social-

structural level" (p. 1267). The term is related to the individual identified with various dimensions of diversity. (Harris & Leonardo, 2018; Moradi & Grzanka, 2017). Intersectionality explains the complexity of the world, people, and human experiences.

Incorporating Diversity and Inclusion to Promote Learning

Higher education classrooms have important varieties of diversity that can amplify learning when recognized and hinder learning when overlooked. Educators' awareness of their students' diverse backgrounds enhances their teaching; nevertheless, educators and administrators can unintentionally harm their students by failing to acknowledge this diversity. The diversity among students and faculty deepens learning in various ways: The learning experience in diverse environments enhances students' communication, argumentation, problem-solving skills, emotional intelligence, and empathy. Learning among diverse peers and professors inculcates learners' critical thinking, encourages students to challenge their culturally bought assumptions, and shapes their interpretative capacities. Students' diversity, therefore, contributes to professional growth and institutional satisfaction (Milton & Bennett, 2009; Myron et al., 2017).

Students' diversity encourages faculty to develop new pedagogical approaches and think creatively to provide excellent education to all students. Therefore, faculty members need to seize opportunities to harness their class diversity and deepen classroom learning experiences. If students feel isolated in their classes due to their identity or background, their learning will be diminished accordingly. Students from minority groups feel alienated for two main reasons: First, when they are made invisible, and second, when their professors or their peers exoticize them. Inclusiveness has become a strategic question for many institutions and universities; thus, the entire institution must actively participate in this aspect (Bidisha et al., 2017; Brookfield,

2015). Faculty, for example, have the power to serve as models for engaging and learning from diversity and intercultural changes in their institutions. The lack of understanding of diversity could trigger a more transparent environment, leading to many in-class disagreements. On the one side, students look for leadership and ethical practices from their faculty. Similarly, faculty need to increase their awareness of how words and communicative tools impact healthy student relationships. The more faculty are aware of their students' educational background, the more likely they are to anticipate the challenges that might arise and, therefore, respond more productively to maximize students' learning (Josipa Roska et al., 2017; Lintangsari & Emaliana. 2020).

Diversity Versus Inclusion in Higher Education

Classroom diversity does not secure mutual communication among students to foster the self-awareness of other perspectives. The distinction between diversity and inclusion shows that faculty could harm their teaching and learning environments. Educators and administrators, though, need to intentionally practice and promote meaningful social and academic interactions among students. The process of implementing inclusivity in higher education can be challenging. However, well-designed policies and procedures could contribute to ensuring the success of all involved students. The shared discourses about diversity and inclusion shaped many issued policies. The increased awareness of institutions' diversity and inclusion fosters students' learning performance and classroom engagement (Zaky, 2022). Institutional strategic approach, therefore, should be aligned with diversity within the same institution. Opertti and colleagues (2014), in their typology, presented four main perspectives on the temporary educational approaches to inclusive education: Human rights (1948- present), Equity groups (2000- Present), and Changing Education Systems (2005- Present). Nevertheless, the core proposition of

inclusive education posits in the definition shared by Flavey and colleagues in 1995: "Inclusive education is about embracing all, making a commitment to do whatever it takes to provide each student and each citizen in a democracy – an inalienable right to belong, not to be excluded. Inclusion assumes that living and learning together is a better way to benefit everyone, not just children labeled differently" (p. 8).

The current demands for equitable higher education necessitate changes in considering and developing inclusive teaching. Diversity and inclusivity could be constructed using the campus's available resources (Terrell & Strayhorn, 2018). Bringing all resources together in a definitive systemic culture of inclusion fosters the implementation of inclusion in the light of accountability, knowledge development, institutional commitments and management, and student partnership (de la Torre, Calleja & Erro-Garcés, 2023; Márquez & Aguilar, 2023). To this end, institutions shape students' campus satisfaction via procedures and implement strategies to embrace individual differences and perspectives.

Teaching in inclusive classrooms offers many challenges for teachers and administrators. However, the tool to settle these challenges is a collaboration among all institutional constituents, such as general education educators, administrators, and content area specialists. Educators need to be proficient collaborators to perform their jobs effectively. That level of collaboration is the educational tool for more innovation across institutions (Dolmage, 2017; Terrell & Strayhorn, 2012). Education is the legitimate context in which a sense of collaboration is instilled to foster students' required collaborative skills for the job market. In this context, the educator plays a vital role in transforming students into proficient collaborators. Working in small groups fosters job satisfaction and self-efficacy that might enhance students' career development (Ginsberg, 2015; Georgiadou, 2021). Successful collaboration requires voluntary

work, parity among participants, mutual goals, shared responsibility, and accountability (Vavvara et al., 2015).

Creating inclusive education and equal opportunities for all institutional members is a universal goal in higher education (Sengupta et al., 2019). As for the quality of education, exclusivity hurts participants' institutional success if mishandled (Tavecchio, 2020; Tomlinson & Jarvis, 2014). Initiatives for inclusive education are essential due to the diverse student population. Although various suggested frameworks, tools, and programs have been developed, inclusion for a diverse student population remains challenging (Collins, 2017; Nilson, 2010; Collins, 2017).

A broader understanding of inclusive education is to provide equal opportunities to the diverse student population. The more general definition of inclusive education is to provide students with equal opportunities. However, the perceived help is evaluated by students as unhelpful and inaccurate (Van Dijk, 2023). The support students require varies according to those students' perceptions and social perspectives of higher education institutions (Tavecchio, 2020). Views of students are not often included despite the raised voices regarding recognizing students’ inputs to foster in-class inclusivity (Ada et al., 2019; Giddens, 1984; Göhlich et al., 2018). Inclusive teaching means a change to value and respect diversity, allowing society to improve human development and growth. It offers individuals more opportunities to train, develop and invite those individuals to be more committed to their cultures. The significant impact of diversity and inclusion is placed on the facilitation process of an open creative environment that deepens the exploration and development of new ideas. In this vein, higher education offers opportunities for collaboration among peers, professors, and industry

professionals, facilitating the exchange of ideas and the development of novel approaches and solutions. Technology could play the core catalyst, enhancing collaboration in the process.

Technology plays a vital role in promoting diversity and inclusion in institutions. It helps bridge the digital divide by granting access to valuable information, educational resources, and skill-building platforms. It facilitates the exchange of ideas, traditions, and cultural practices across borders to foster cultural diversity and mutual understanding (Ose, 2023; Singh, 2023)**.** Virtual reality technology (VR) and augmented reality can promote diversity and inclusion in training and education. VR could create a safe environment where students can explore different perspectives and identities without fear of negative consequences. This is an effective practice for vulnerable groups and those uncomfortable in real-world situations. Even though VR secures a safe environment, it is an expensive technological tool in some educational environments. Nevertheless, the accuracy and realism may be questioned as they may not fully capture the complexity of diverse perspectives (Chimakurthi, 2018; Garzón et al., 2020). To this point, virtual reality (VR) has revolutionized education by providing various benefits, such as increasing engagement, supporting students' motivation, enhancing retention and call, and providing a safe and controlled learning environment (Beck, 2019; Quintero et al., 2019). Learners can practice healthcare procedures and treatments without endangering patients. It is an influential learning tool if educators properly manipulate it.

Gender and Sex Inequality in Higher Education

Higher education institutions strive to establish an environment that supports participants' sense of belonging, equity practice, and sexual equality. However, the absence of a positive role for students based on their sex or sexual orientation is the silence of their sex invisibility (Zhang Liying et al., 2007). Therefore, educators should be careful regarding the cultural dimensions of

sexualities that resonate with their students (Messiou, 2017). Recently, many institutions have moved toward affirming sexual diversity in the university policies of the various programs. However, implementing affirmation has gaps due to institutional, cultural practices, and related administrative challenges (Ada et al.,2019; Sanger, 2019).

Women's percentage of joining higher education has increased. They score higher than men in non-cognitive skills such as self-motivation, self-discipline, and organizational skills (Kristen & Renn, 2012). Therefore, it is more effective to coordinate between the state and the institution to limit gender disparity and advance women's educational attainment (Laleh et al., 2012). Women are underrepresented in some disciplines and overrepresented in specific disciplines such as nursing and education (Gautam, 2015). As a result, higher education institutions strive to attract learners regardless of their gender and sexual orientation. Institutional assessment and evaluation protocols ought to cope with the rapid social changes to create more opportunities to target the communally diverse population.

Assessment and Inclusion

Assessment in higher education is a part of any institutional success as it shapes the learners' and institutional outcomes. The assessment formulation should consider individuals' backgrounds and institutional goals (Boud, 1995; Tai et al., 2022b). Students come to institutional work with different goals: Some are career-driven personnel, others wish to change their reality and world, and others want to open new life opportunities. Therefore, equity of opportunities within the higher education setting is crucial. The institutional efforts to foster equity and social justice practice help increase student recruitment institution-wide (Department of Education Skills and Employment 2020a/ 2020b; Li & Carroll, 2019). However, universities and colleges are obligated to avoid disadvantaging the newly enrolled students or discriminating

against them and appreciate the full range of characteristics they bring to the fabric of the social and academic world.

Educators started integrating the "Inclusive Assessment" in their curricula to deepen their institutions' diversity and inclusion practices. The term was defined eloquently by Hockings (2010) while writing, "the design and use of fair and effective assessment methods and practices that enable all students to demonstrate to their full potential what they know, understand and can do" (p. 34). However, the given definition does not include how assessment contributes to the curricula and impacts learners' future trajectories and identities. McArthur (2016) also addresses assessment as a more related social justice tool to achieve a broader higher education juristic evaluation to nurture learning and foster individual participation. Inclusion is engraved by resolving conflicts and difficult conversations (Stentiford & Koutsouris, 2021). It is a practice of including different groups in a harmonious interaction; these groups are based on disability access (mental, learning, and physical), gender, sexual orientation, economic and cultural backgrounds, and political affiliations.

Research in assessment is growing in terms of inclusion and diversity. There are many inquiries for evaluation for inclusion, such as assessment design, assessment outcomes, and curriculum decolonization. Assessment and inclusion integration should be considered in the context of their occurrence among learners (Tai et al., 2021; Tai et al., 2022a, 2022b). There are two main paths to practice inclusion in assessment using Universal Design for Learning (UDL). First, it is an integrated system within a broader spectrum to provide the best learning environment to assess individual learners. UDL aims to support the proactive assessment design to give educators more flexibility to monitor their students' growth (Grimes, 2017; Ketterlin & Geller, 2005; Ketterlin et al., 2015; Tai et al., 2021). Secondly, it provides educators with

methods to accommodate and personalize the assessment to individual students, considering the time, room, and duration.

Diversity and Disability

Disability's definition includes diverse values and theoretical approaches. The medical approach defines disability as a biological impairment that hinders individuals from completing daily tasks. This approach defines disability from physical, behavioral, cognitive, and psychological aspects. It formulates disability as an individual problem rather than a social one. On the other hand, the social approach defines disability as a social construction that leaves barriers, such as attitudinal ones, and infrastructure barriers, such as inaccessible buildings and policies. In this vein, the locus of the problem is on society and not on individuals. The social model, therefore, encourages the removal of the barriers rather than fixing the persons with disability (Anastasiou et al., 2016; Hodkinson, 2007). For the last two decades, the study of disability inclusion in higher education has increased. This educational trend is initiated by multicultural education, which deepens disability inclusion through a multicultural education approach. Seeing disability from multicultural perspectives invites new insights into the differences among various cultures regarding their interpretation of disability. Multicultural theorists consider disability a cultural difference and rank disability as exceptionality (Gregor et al., 2021; Lisa et al., 2022).

Inclusive education results from policies and practices aiming to include students with disabilities in mainstream schools by fostering specific learning procedures. The inclusion benefits learners with disabilities as it decreases maladaptive behavior and increases the learning educational objectives. Inclusive environments and social initiatives enhance learners' acquired skills and grow friendships (Bunbury, 2020; Coates & Vickerman, 2008;). Preparation,

curriculum adaptation, collaboration with community, family, and student involvement are practical tools to promote inclusive education (Ainscow, 2020). Therefore, institutions need to consider the available tools and procedures to address the needs of their students with disabilities by creating a healthier teaching and learning environment.

Age, Diversity, and Inclusion

The impact of ageism in higher education institutions remains invisible (Whitbourne & Montepare, 2017). Changing age demographics is an institutional challenge; therefore, innovative age-inclusive strategies are required. Such innovation encourages older adults to actively participate in core campus activities for more intergenerational exchange and significant community conversations (Montepare, 2019; O'Kelly, 2015). The recent campus is more age-diverse, with nontraditional students and adult learners. More older adults look to higher education for skill development and professional growth (Modenos, 2020; National Center for Education Statistics [NCES], 2015; Parks et al., 2013). Therefore, institutional age-inclusivity should be considered when designing institutional policies and teaching approaches. Age inclusivity in higher education provides all institution members with better mental and physical health by counteracting social isolation and improving the quality of life through interpersonal exchange, mentoring, and leadership. Younger students could benefit from the generativity of older adults if the institutions constructed proper channels throughout the entire campus (Yamashita et al., 2017). Some barriers to age inclusivity triggered by age biases could be reflected in the campus practices, such as the absence of older individuals in the recruitment images. Such subtle age biases may obstruct teaching and learning on campus (Lyons et al., 2018: Villar et al., 2010). Therefore, nontraditional- age students may feel marginalized when they experience prejudice from their classmates and professors. The lack of age inclusivity

creates a disparity in teaching and learning as younger students prefer younger faculty rather than older ones to evaluate and monitor them in the field of their study (Javornik et al., 2019; Opertti et al., 2014; Parks et al., 2013; Whitbourne & Montepare, 2017).

Purpose of This Research

Considering all of the above, the main objective of this research is to identify the impact of variables such as communicating with different races and ethnicities, interacting with different socioeconomic backgrounds, immigration status, international education, political affiliation, age, gender, sexual orientation, English language learners, religious, disability, technology, institutional policies on the institutional diversity and inclusion. Giving priority to diversity, equity, and inclusion in institutions is often a strategic choice.

The researcher, therefore, attempts to answer the following question:

RQ: What factors influence students' perceptions of their diversity and inclusion in a higher education institution?

Methodology

Participants

This study was conducted during the academic year 2023-2024. The study's population was undergraduate students registered in one of the State of New Jersey's healthcare institutions. All active students were invited to complete the survey during Spring 2023. The researcher used a validated survey to collect the data. The survey was shared through students' official emails with a short description of the study and its importance.

Research Site

This study used the college platform at a New Jersey public health institution. During the 2022-2023 academic year, the college had 500 active students distributed among all college-

offered programs. One hundred eighty-nine students completed the survey, and there were 186 usable surveys.

Instrumentation

This study used a quantitative, non-experimental correlation approach. The survey includes 50 groups that capture students' lives on campus. However, the researcher used six groups to answer the current study research question and related hypotheses. First, Student Satisfaction included four items, answered using a five-point Likert scale ranging from "very dissatisfied" 1, to "very satisfied" 5. Second, Campus Indicators of Diversity and Inclusion included five items, answered using a five-point Likert scale ranging from "strongly disagree" 1, to "strongly agree" 5. Third, Communication included 10 items, answered using a five-point Likert scale from "daily", "weekly", "monthly", "a few times", to " not at all". Fourth, Comfortable Interacting with others included 11 items, answered on a five-point Likert scale ranging from "very discomfortable" 1 to " very comfortable" 5. Fifth, Insensitive Disparaging Remark "Groups 10 and 11" included 11 items, answered using a five-point Likert scale ranging from "never" 1 to "very often" 5. Groups from 21 to 35 addressed participants' demographics. "Gender, Sexual Orientation, Age, Religious Affiliation, Political Affiliation, Physical Impairment, Citizenship, Ethnicity, Education, Institutional Role, Address, and Academic Classification."

The reliability of the disseminated survey is strong ($\alpha = .82$). The researcher disseminated the survey link to the entire student population using their school's official emails. Three email reminders were sent to the research subjects between mid-March and mid-April 2023. The research participants followed the link to share their anonymous responses. The researcher then used the data to answer the research question and attest the related hypotheses.

Results

Data Analysis

The Statistical Package for the Social Sciences (SPSS .27) was used to analyze the results of this quantitative study. The researcher followed the following steps to apply the analysis: First, check the participation rate and responses' biases. Second, calculate the inferential statistics at the .05 significance level answer the overarching research question and their related hypotheses. Therefore, the researcher ran Regression, Pearson Correlation, One-way ANOVA, and T-test statistical analyses to examine the influence of each predictor variable on the dependent variable (See Table 1).

Table 1

Dependent and Predictor variables

Dependent variables	Predictor variables
Diversity and Inclusion	● Racial and Ethnic Differences ● Socioeconomic Background ● Sexual Orientation ● Gender ● Second Language learners ● Religious Background ● Physical Disability ● Communicating with Undocumented Immigrants ● Interacting With Foreigners ● Political Affiliations ● Age

Characteristics of Participants

The participants varied to some extent in their demographic descriptors, such as gender and ethnicity. One hundred eighty-nine completed the survey, yet one hundred eighty-six responses were usable. In response to gender, 26% classified themselves as males, 68% as female, and 6% as unconfirmed sex. In response to the age, 60% are 18-24 years, 30% are 25-30

years, and 10% are 30+ years. In response to ethnicity, 24 % classified themselves as Hispanic, 25.5% classified themselves as Asian, 19 % classified themselves as African American, 14% classified themselves as White, 14% classified themselves as two or more races, and 3 % classified themselves as Hawaiian (See Table 2).

Table 2

Participants Distributions based on gender and Ethnicity (n=186)

	(n= 186)	
Gender	Female	136
	Male	43
	Unconfirmed Sex	7
Ethnicity	Hispanic	24
	American Indian or Alaska Native	3
	Asian	25
	Black or African American	19
	White	14
	Two or More Races	14
	Nonresident Alien	6
	Native Hawaiian or Other Pacific Islander	3

Hypotheses

RQ: What factors influence students' perceptions of their diversity and inclusion in higher education institutions?

The researcher used the available literature to form 11 hypotheses to answer this research question. Survey related items were used to accept or reject the hypotheses.

H (1): A significant statistical relationship exists between students' perception of inclusion and diversity and their interaction with racially and ethnically different people.

The researcher used survey items "1" and "3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a 5-point Likert scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied". For item "3", students were asked to rate their perceptions on a five- point Likert scale, with "1" equaling "not at all" to "5" equaling "daily". The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of communication with racially and ethnically different students. There is no statistically significant correlation between students' overall climate satisfaction and their interaction with students who are diverse racially and ethnically, R (186)= 039, p=.601 (See Table 3).

Table 3

Correlation Between Students' Campus Overall Satisfaction and Their Interaction with Students From Racially and Ethnically Different Backgrounds

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
	.039[a]	.001	-.004	.824	.001	.274	1	184	.601	1.861

a. Predictors: (Constant), How often have you interacted with - People who have a racial and ethnic identity other than your own?
b. Dependent Variable: Climate satisfaction level - Overall campus climate

H (2): A significant statistical relationship exists between students' perceptions of inclusion and diversity and their interaction with people from a different socioeconomic background**.**

The researcher used survey items "1" and "3" of the questionnaire to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling "very dissatisfied" and "5" equaling " very satisfied." For Item "3", students

were asked to rate their perceptions on a 5-point Likert scale, with "1" equaling "not at all" to "5" equaling "daily". The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of communication with other students from different socioeconomic backgrounds. There was no statistically significant correlation between students' overall climate satisfaction and interaction with students from different socioeconomic backgrounds, R (182) = .035, p= .639 (see Table 4).

Table 4

Correlation Between Students' Campus Overall Satisfaction and Their Interaction with Students from Racially and Ethnically Different Backgrounds

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin - Watson
					R Square Change	F Change	df 1	df2	Sig. F Change	
1	.035[a]	.001	-.004	.828	.001	.221	1	181	.639	1.866

a. Predictors: (Constant), How often have you interacted with - People from a socioeconomic background other than your own?
b. Dependent Variable: Climate satisfaction level - Overall campus climate

H (3): There is a significant statistical relationship between students' perceptions of inclusion and diversity and their interaction with people who are from different sexual orientations

The researcher used survey items "1" and "3" of the questionnaire to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied." For Item "3", students were asked to rate their perceptions on a 5-point Likert scale, with "1" equaling "not at all" to "5" equaling "daily." The researcher calculated the aggregated score for each section. Linear

regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of communication with other students from a different sexual orientation. No statistically significant correlation exists between students' overall climate satisfaction and communication with students from different sexual orientations, R (181)=. 070, p=.345 (see Table 5).

Table 5

Correlation between Students' Campus Overall Satisfaction and Their Interaction with Students from Different Sexual Orientations.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Change	
	.070[a]	.005	-.001	.773	.005	.898	1	180	.345	2.044

a. Predictors: (Constant), How often have you interacted with - People who have a sexual orientation other than your own?

b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

H (4): There is a significant statistical relationship between Students' perceptions of inclusion and diversity and their interaction with people of different genders.

The researcher used survey items "1" and "3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied." For Item "3", students were asked to rate their perceptions on a 5-point Likert scale, with "1" equaling "not at all" to "5" equaling "daily". The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of interacting with other students whose gender is different. There is a statistically

significant correlation between students' overall climate satisfaction and interaction with students from different genders R (182) =. 169, p < . 05 (see Table 6).

Table 6

Correlation Between Students' Campus Overall Satisfaction and Their Interaction with Students Whose Gender is Different

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
	.169[a]	.028	.023	.764	.028	5.279	1	180	.023	2.021

a. Predictors: (Constant), How often have you interacted with - People whose gender differs from yours?

b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

H (5): A significant statistical relationship exists between students' perception of inclusion and diversity and their interaction with people whose English is not their native language**.**

The researcher used survey items "1" and " 3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a 5-point Likert scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied." For Item "3", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling "not at all" to "5" equaling "daily". The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of interacting with other students whose first language is not English. No statistically significant correlation exists between students' overall climate satisfaction and communication with students whose first language is not English, R (181) =. 090, p=.225 (see Table 7).

Table 7

Correlation between Students' Campus Overall Satisfaction and their interaction with students for whom English is not their native language.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
	.090[a]	.008	.003	.772	.008	1.480	1	180	.225	2.050

a. Predictors: (Constant), How often have you interacted with - People for whom English is not their native language?
b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

H (6): A significant statistical relationship exists between students' perception of inclusion and diversity and their interaction with people from different religious backgrounds.

The researcher used survey items "1" and " 3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a 5-point Likert scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied." For Item "3", students were asked to rate their perceptions on a 5- point Likert scale, with "1" equaling "not at all" to "5" equaling "daily.". The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of communication with other students from a different religious background. There is a statistically significant correlation between students' overall climate satisfaction and their interaction with students from different religious backgrounds R (180) =. 192, $p<.05$. An increase in students' perceptions of diversity and inclusion on their campus is associated with the increase in their perceptions of interacting with people from different religious backgrounds ".095" (The slope coefficient represents the change in the dependent variable for a one-unit

change in the independent variable), 95.0% Confidence Interval (CI) is between .023 and .167.

This slope coefficient is statistically significant, $p < .05$ (see Table 8- Figure 2).

Table 8

Correlation Between Students' Campus Overall Satisfaction and Their Interaction with Students from Different Religious Backgrounds

Model Summary[b]

Model	R	Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
	.192[a]	.037	.031	.762	.037	6.853	1	179	.010	2.094

a. Predictors: (Constant), How often have you interacted with - People from a religious background other than your own?

b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

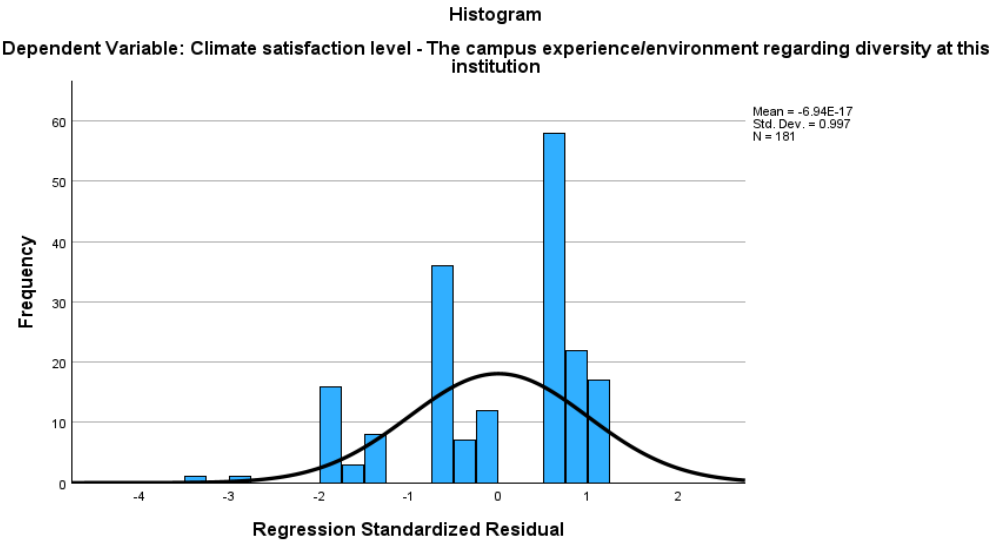
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	4.002	.150		26.732	<.001	3.706	4.297
	How often have you interacted with - People from a religious background other than your own	.095	.036	.192	2.618	.010	.023	.167

a. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

Figure 2

Students' Perceptions of Diversity and Their Interaction with People from a Different Religious Background



H (7): A significant statistical relationship exists between students' perception of inclusion and diversity and their interaction with people with disabilities.

The researcher used survey items "1" and "3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a five-point Likert Scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied". For Item "3", students were asked to rate their perceptions on a 5-point Likert scale, with "1" equaling "not at all" to "5" equaling "daily." The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of communication with other students with disabilities. There is a statistically significant correlation between students' overall climate satisfaction and their interaction with students with disabilities, R (182)=. 204, p<.05. An increase in students' perceptions of diversity and inclusion on their campus is associated with the increase in their perceptions of interacting with people with disabilities ".108" (The slope coefficient represents the change in the dependent

variable for a one-unit change in the independent variable.). 95% Confidence Interval (CI) is between .031 and .184. This slope coefficient is statistically significant, $p < .05$ (see Table 9-Figure 3).

Table 9

Correlation Between Students' Campus Overall Satisfaction and Their Interaction with People with Disabilities

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
	.204[a]	.041	.036	.759	.041	7.785	1	180	.006	2.061

a. Predictors: (Constant), How often have you interacted with - People with a disability

b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

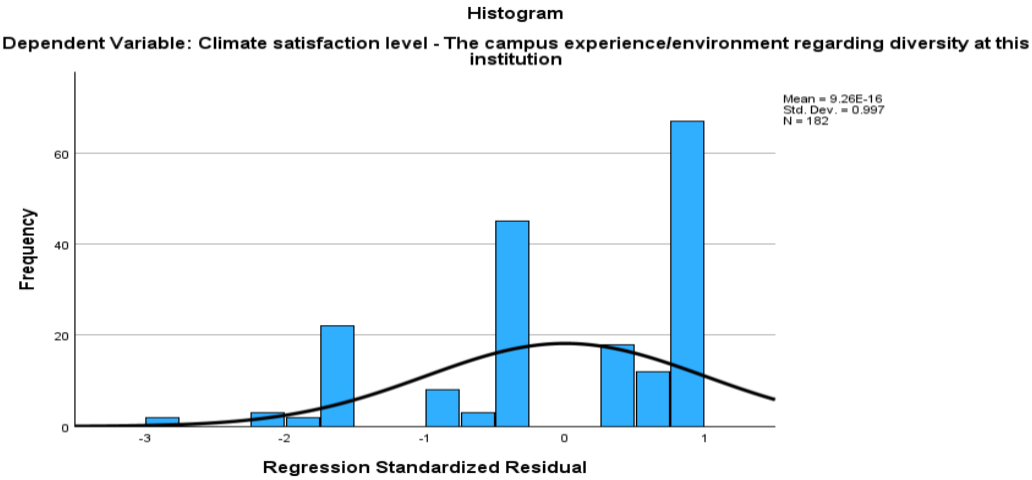
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	4.147	.096		43.369	<.001	3.958	4.336
	How often have you interacted with - People with a disability	.108	.039	.204	2.790	.006	.031	.184

a. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

Figure 3

Students' Perceptions of Diversity and Their Interaction with People with Disabilities



H (8): There is a significant statistical relationship between students' perceptions of inclusion and diversity and their interaction with undocumented immigrants.

The researcher used the survey's items "1" and "3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied." For Item "3", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling "not At all" to "5" equaling "daily." The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of interacting with undocumented immigrants. A statistically significant correlation exists between students' overall climate satisfaction and their communication with undocumented immigrants, R (181) =. 151, $p<.05$. An increase in students' perceptions of diversity and inclusion on their campus is associated with the increase in their perceptions of interacting with undocumented immigrants ".078" (The slope coefficient represents the change in the dependent variable for a one-unit change in the independent

variable.). 95% Confidence Interval (CI) is between .002 and.153. This slope coefficient is statistically significant, $p < .05$ (see Table 10- Figure 4).

Table 10

Correlation between Students' Campus Overall Satisfaction and Their Interaction with Undocumented Immigrants

Model Summary[b]

					Change Statistics					
	R	Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df 1	df 2	Sig. F Change	Durbin-Watson
	.151[a]	.023	.017	.767	.023	4.152	1	179	.043	2.020

a. Predictors: (Constant), How often have you interacted with - People who are undocumented immigrants?
b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

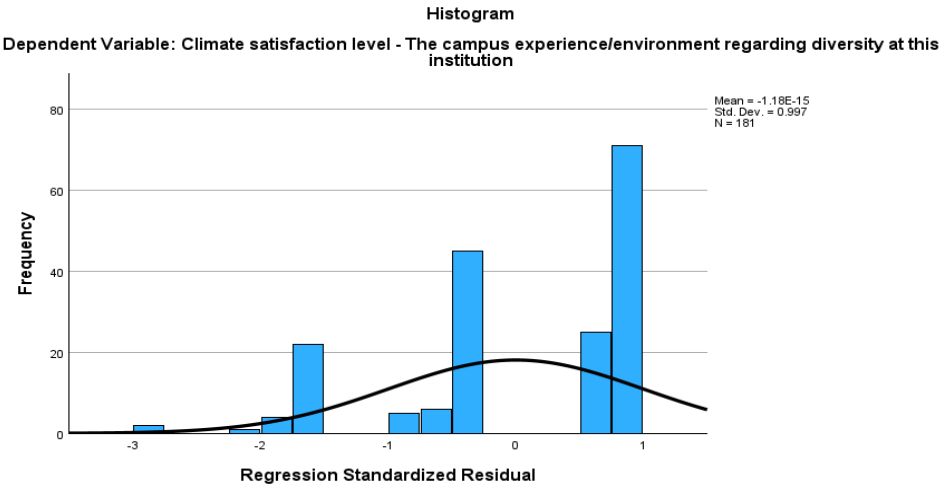
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	4.216	.090		46.651	<.001	4.038	4.395
	How often have you interacted with - People who are undocumented immigrants	.078	.038	.151	2.038	.043	.002	.153

a. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

Figure 4

Students' Perceptions of Diversity and Their Interaction with Undocumented Immigrants



H (9): A significant statistical relationship exists between students' perception of inclusion and diversity and their communication with international students.

The researcher used the survey's items "1" and " 3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a five-point Likert Scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied." For Item "3", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling "not at all" to "5" equaling "daily". The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of communication with international students. No statistically significant correlation exists between students' overall climate satisfaction and communication with International Students R (183) =. 118, p=.111. (see Table 10).

Table 11:

Correlation Between Students' Campus Overall Satisfaction and Interaction with Foreign Students

Model Summary[b]

Model	R	Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
	.118[a]	.014	.009	.769	.014	2.562	1	181	.111	2.036

a. Predictors: (Constant), How often have you interacted with - People from a country other than your own?
b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

H (10): There is a significant statistical relationship between students' perceptions of inclusion and diversity and their interaction with people from different political affiliations.

The researcher used the survey's items "1" and "3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling "very dissatisfied" and "5" equaling "very satisfied." For Item "3", students were asked to rate their perceptions on a five-point Likert Scale, with "1" equaling "not at all" to "5" equaling "daily." The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of communication with people from different political affiliations. No statistically significant correlation exists between students' overall climate satisfaction and interaction with people from different political affiliations R (181) =. 140, p=.058 (see Table 12-Figure 5).

Table 12

Correlation between Students' Campus Overall Satisfaction and Their Interaction with People Who Hold a Different Political Affiliation, Philosophy, or View

Model Summary[b]

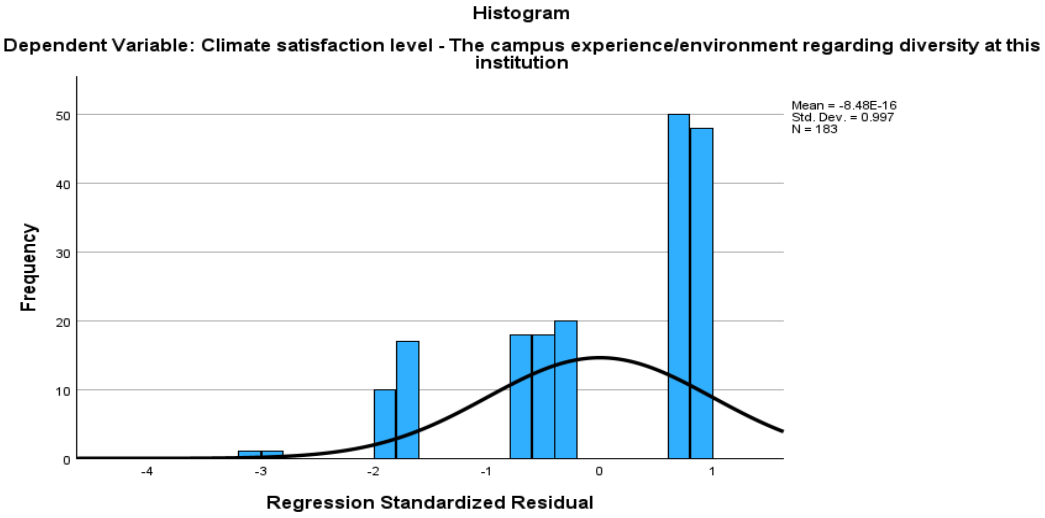
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df 1	df 2	Sig. F Change	Durbin-Watson
1	.140[a]	.020	.014	.766	.020	3.628	1	181	.058	2.029

a. Predictors: (Constant), How often have you interacted with - People who hold a political affiliation, philosophy, or view that differs from yours?

b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

Figure 5

Students' perceptions of Diversity and Their Interaction with People Who Hold a Different Political Affiliation, Philosophy, or View



H (11): *There is a significant statistical relationship between students' perceptions of inclusion and diversity and their communication with people from different age groups*

The researcher used survey items "1" and "3" to accept or reject the hypothesis. In item "1", students were asked to rate their perceptions on a five-point Likert scale, with "1" equaling

"very dissatisfied" and "5" equaling "very satisfied." For Item "3", students were asked to rate their perceptions on five-point Likert scale, with "1" equaling "not at all" to "5" equaling "Daily". The researcher calculated the aggregated score for each section. Linear regression was run to assess the relationship between students' perceptions of inclusion and diversity and their perception of interacting with people from different age groups. There is a statistically significant correlation between students' overall climate satisfaction and their communication with people from different age groups, R (182) =. 167, p<.05. An increase in students' perceptions of diversity and inclusion on their campus is associated with the increase in their perceptions of interacting with people from different age groups ".089" (The slope coefficient represents the change in the dependent variable for a one-unit change in the independent variable.). 95% Confidence Interval (CI) is between .012 and .165. This slope coefficient is statistically significant, p < .05 (see Table 13- Figure 6).

Table 13

Correlation Between Students' Campus Overall Satisfaction and Their Interaction with People from Different Age Groups

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df2	Sig. F Change	
	.167[a]	.028	.023	.764	.028	5.190	1	180	.024	2.067

a. Predictors: (Constant), How often have you interacted with - People who are significantly older or younger than you?
b. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

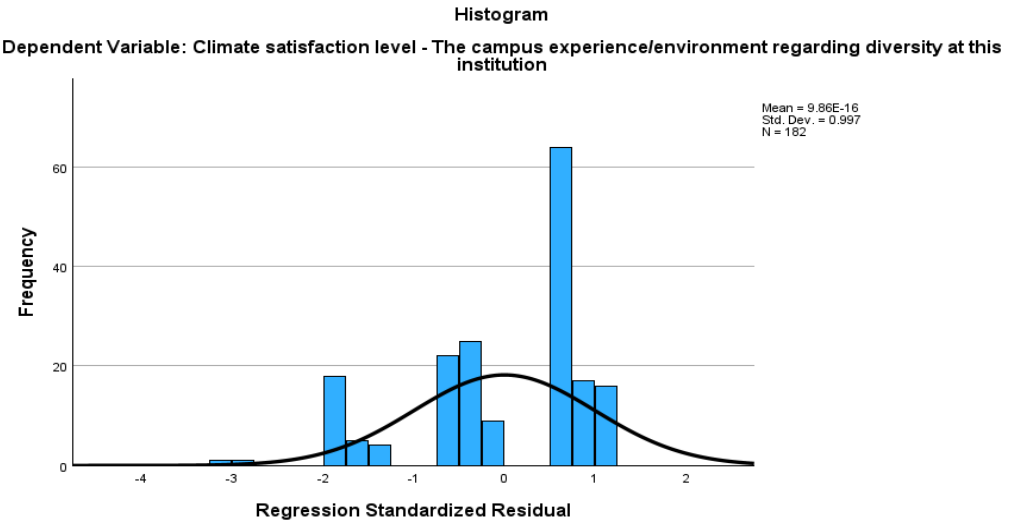
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	4.016	.162		24.760	<.001	3.696	4.336
	How often have you interacted with - People who are significantly older or younger than you	.089	.039	.167	2.278	.024	.012	.165

a. Dependent Variable: Climate satisfaction level - The campus experience/environment regarding diversity at this institution

Figure 6

Students' Perceptions of Diversity and Their Interaction with People from Different Age Groups



Discussion

The researcher used a validated survey designed by the Higher Education Data Sharing Consortium (HEDS) to collect data from one healthcare institution in the State of New Jersey. The college had 500 active students during Spring 2023. One hundred eighty-nine completed the survey, yet 186 surveys were usable. The participants varied based on their demographic descriptors, such as gender and ethnicity. In response to gender, 26% classified themselves as males, 68% as females, and 6% as unconfirmed sex. In response to age, 60 % are 18-24 years, and 30% are 25-30 years. Regarding ethnicity, 24% are Hispanic, 25.5% are Asian, 19% are African American, 14% are White, 14 % are two or more races, and 3 % are Hawaiian.

Inferential Statistics

This quantitative study brought some exciting findings about diversity, equity, and inclusion. The research question sought to determine the factors that might influence students' perceptions of diversity and inclusion in their institution and, consequently, their overall campus satisfaction. First, a statistically significant correlation exists between students' overall campus satisfaction regarding diversity and inclusion and their interaction with people from different religious backgrounds. The finding adds to the available literature on institutional diversity and inclusion. A statistically significant relationship exists between students' perceptions of their overall campus satisfaction and their interaction with other students with disabilities. The findings agree with the research conducted by Anastasiou and colleagues in 2016. The research revealed the positive impact of engaging people with disabilities in the institutional mainstream. A statistically significant correlation exists between students' overall campus satisfaction and their communication with undocumented immigrants. These data reveal a new research contribution to diversity and inclusion in higher education. A statistically significant correlation

exists between students' overall campus satisfaction and their communication with other genders. This finding reveals a new research contribution. A statistically significant relationship exists between students 'overall campus satisfaction and their interaction with people of different ages. The results present a new finding regarding the available literature. However, the results show no statistically significant correlation between students' overall campus satisfaction and their interaction with students from different ethnic and racial backgrounds, socioeconomic backgrounds, sexual backgrounds, or political affiliations.

Pedagogical and Institutional Recommendations

The statistical findings of this research indicate that students' overall campus satisfaction and their perceptions of diversity and inclusion in their institution are driven by various interactions and communication on their campus: Interaction with people from different religious backgrounds, people with disabilities, undocumented immigrants, different genders, and students from different age groups. Therefore, the following institutional practice could address these findings for higher student satisfaction.

Strategies for Inclusive Teaching

Kotzee (2017) argued that compassion and empathy are necessary to ensure educational practices and curriculum effectiveness. Compassion and empathy are two fundamental principles of social justice in education. They are the core values engraving inclusivity institutionally (Darling et al., 2019). Therefore, educators and administrators need to consider empathy and compassion while communicating with students across the institutions. The following strategies and procedures address these two fundamental concepts.

Strategies and Procedures

Environmental Proactive Learning: Inclusive Pedagogy Research reveals that students appreciate having their identities and experiences acknowledged by their professors. Therefore, the professor could survey their students before the term starts. Students could share information like nationality, language, preferred gender pronouns etc. The professor could allow students to share their knowledge before starting class activities or practice. It signals that professors know their students' diverse backgrounds (Erin, 2015; Van Kestern et al., 2014; Maryellen, 2013; Nicolla et al., 2018).

The following strategies help leverage information about students' backgrounds to enhance their academic growth and overall campus satisfaction:

- **Meeting Students**: Professors meet their students individually to ask about their transition to college and prior educational experiences. Considering the mandatory office hours for first-year college students is necessary. However, with the large class size, considering the group office hours will foster the practice of diversity.
- **Survey and Participation**: The professors administer an anonymous survey or reflective writing activity to better understand the students' prior knowledge. The professors from their side can share the results anonymously with students. This activity increases students' awareness of their colleagues' backgrounds.
- **Relevant Experience**: Institutions must provide students with opportunities to share their relevant personal information in a classroom setting within the teaching activities and institutional blogs and newsletters.
- **Signal confidence in students' learning abilities**: Recalling the research about the Growth Mindset by Carol Dweck, Paul O'Keefe, and Greg Walton, who emphasize the benefit of

challenging normality in the learning realm, professors could share some of their academic challenges and struggles with their students and how they manage setbacks and times of uncertainty. They need to model that it is OK to be uncertain. It is also essential to ensure that learning is a process that includes many opportunities for developing individual competencies. Professors need to stress the importance of exerting effort in the learning process. Through verbal or written communication, educators need to address this reality. Therefore, during the assignment submission, it is recommended that students embody the process they took to reach the responses.

- **Clear and concise instructions**: Professors and institutions should provide clear and concise instructions and policies. Adopting the TILT (Transparency in Learning and Teaching) framework benefits professors. This framework informs students about the task, its purpose, the process, and the evaluation criteria. Such clarity and concision in instructions help students understand the task better and increase their interest and intrinsic motivation (Linda & Suskie, 2018).
- **Use varied Teaching Techniques and Formats**: Professors need to use a variety of learning activities to reduce inadvertent bias and provide students with opportunities to cultivate the in-class learning experience. Various formats can be integrated into the teaching, such as lectures with visual aids, lecturing with interactive learning tools, and formal discussions with debating.
- **Peer-to-Peer Learning:** Encouraging student-to-student learning opportunities is a powerful tool in creating a diverse classroom environment. Class-time activities and assignments facilitating peer collaboration can harness each participant's unique talents, leading to shared success. Research has shown that peer support plays a crucial role in students' emotional and

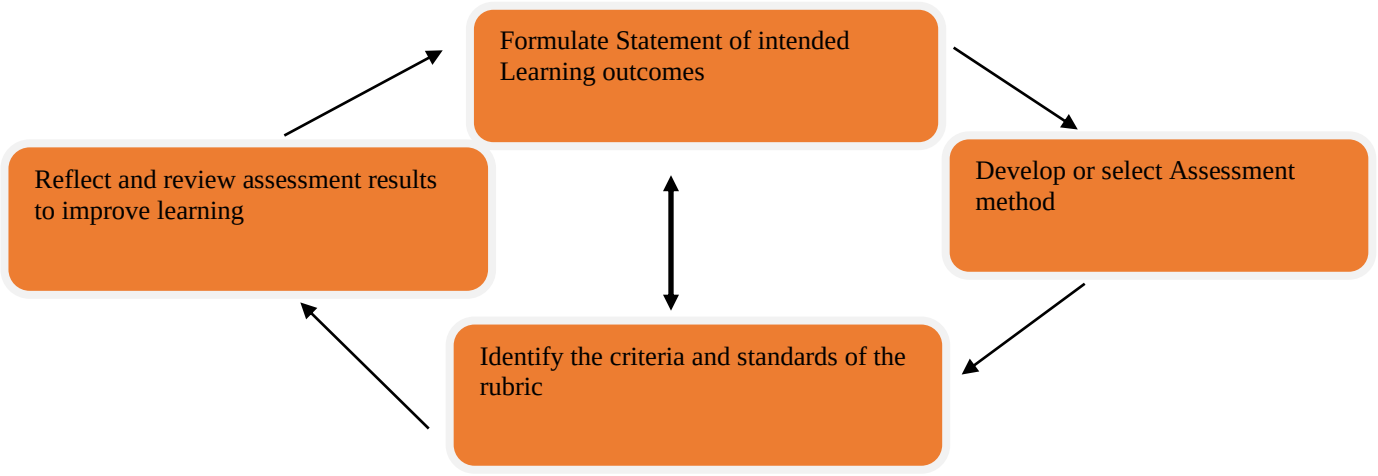
social transition to college, thereby fostering their academic success (Jessica et al., 2005; Zhao & Kuh, 2004;).

- **Jigsaw activities**: Students are assigned to smaller groups A, B, and C, with each group given a different task for discussion (Initial grouping). After completing the discussion, a representative from each group reconfigured themselves so that the new groups were composed of at least one A, one B, and one C representative. Students then share what they learned in their initial groupings. This activity could be implemented within one class or multiple sessions (Arend & James, 2012).
- **Use Rubrics as Scaffolds for Assessment as learning**: Educators who use assessment as learning consider rubrics tools to evaluate and teach. Rubrics reflect students' performance and provide opportunities to identify students' mindlessness and powerlessness (Holmes & Silvestri, 2019; Judith & Jay, 2001;). Therefore, rubrics allow educators to align their assessment, instruction, and students' learning. In student-centered classrooms, learners can cocreate the rubrics, so they can use them to plan their assessment tasks, clarify targets, determine what is needed, identify what is missing, and regulate the process for a high-quality product (John & Catherine, 2007). To maximize students' performance through rubrics, educators need to go beyond the prescriptive approach, as not all students understand what is expected. Torrence argued that students are more likely to succeed if the assessment tasks are straightforward regarding the process, criteria, and how the tasks will be graded. Discussing the rubric content with students increases their understanding of the grading tools and engages them in the evaluation process that benefits them all (Ali & Michael, 2010; Sengupta et al., 2019). To involve students in the rubric creation, educators could follow the following steps:

First, discuss the weak and strong examples of students' work; Second, brainstorm criteria for their work; Third, use the discussed criteria to draft a rubric.

Figure 7

Rubric Development as Part of Course Design (adapted from Huba & Freed, 2000)



Rubrics allow teachers to summarize students' performance, trace students' accomplishments in terms of their learning outcomes, disaggregate students' scores by specific criteria and skills, identify patterns of weaknesses, and strengthen students' work. Thus, the rubric allows teachers to be reflective practitioners.

Authentic Assessment: Authentic assessment is an effective teaching tool to foster classroom inclusivity. It refers to the assessment and feedback tasks that mirror using students' knowledge beyond the academic environment (McArthur, 2022; Sokhanvar et al., 2021). For example, Sokhanvar and colleagues (2021) list class projects, exhibitions, portfolios, case studies, reflective journals, and interviews as authentic assessment tools. Therefore, the authentic assessment tool should be connected with the context and society in general (McArthur, 2022). Dawson and Bearman (2020) reported that "faithfully represents not just the current realities of the discipline in practice, but the likely future realities of that

discipline" (p. 292). To this point, authentic assessment not only shapes the future of learning but also redefines it. Therefore, accurate assessment is harnessed to create a more inclusive future in higher education settings.

Curriculum, Teaching, and Learning Committees: The Curriculum Committee plays a vital role in higher education institutions. The Committee addresses the academic programming in the institutions, including course reviewing, proposals, approving or rejecting program changes, and the addition or deletion of programs. Additionally, the curriculum committee develops policies related to teaching and learning assessment and institutional effectiveness. The members, therefore, need to master the curriculum procedures and evidence-based best practices training in course design or subject matter. The Curriculum Committee presents the strategic leadership that impacts the integration of diversity and inclusion of teaching and learning in the given institution. The Committee could review the programs at a macro level from top to bottom. Some of the questions guiding the Committee's research and work are as follows: Does a given program have diverse faculty teaching it? Does that program have broad regional representation in its courses, which is disciplinarily relevant? Does that program complement the diversity of programs already on offer, or is one area being over-emphasized relative to a marginalized population?

The Teaching and Learning Committee, on the other hand, addresses issues such as gender bias in students' evaluations, grading, and assessment; syllabus policies; and observation practices that might emphasize inclusivity in the given institution. The Committee can also weave inclusive teaching and pedagogy into the institution's academic agenda. Institutions could use the educational technology units to explore new software that enhances classroom inclusivity.

Inviting Diverse Perspectives: An inclusive environment is where all students feel heard and welcome to share their thoughts and reflections without restrictions. Educators and administrators need to consider working to ascertain that everyone at the institution feels comfortable sharing questions, knowledge, or opposing viewpoints. This communication approach requires educators and administrators to invite diverse perspectives and viewpoints explicitly. The institutions could use anonymous responses, timed reflection, and asking for different perspectives (Ginsberg, 2015). The following table includes each strategy and its procedures.

Table 14

Inviting Explicit and Implicit Perspectives and Viewpoints Across Institutions (Adapted from (Fink, 2013; Ginsberg, 2015; McArthur, 2022)

Strategy	Procedures	Outcomes
Anonymous Responses	Educators and Administrators could follow the following steps to collect diverse points of view: 1-Create concise and inclusive questions by asking for collaborative design from the related personals. 2-Disseminate the questions using Poll Everywhere, Slido, or Mentimeter to get instant responses or SurveyMonkey or Qualtrics to collect data over time. 3-The poll administrators could make the results visible so everyone can see that not all members have identical views. 4-The poll process could be facilitated either online or face-to-face.	Distributing the anonymous poll encourages the participants to share their views. Therefore, the results will reflect the institutional culture.
Allowing Time for Reflection	Practicing reflection is a powerful tool for articulating thoughts and identifying areas for improvement on an individual level, which impacts the institutional level. Educators and administrators could follow the following steps: 1-Design some related prompts to the source of reflection. For example, educators could create a prompt to ask learners for reflections on a specific course assignment or share feedback from their professors. 2-The reflection could be shared anonymously using some technologies such as Mentimeter or Google Forms 3-Admistrators could pose questions and ask students, staff, or faculty to reflect on their responses and rationale. 4-The shared questions could be shared during the meetings or online via email or the college website. 5-After sharing the results with the participants, the task administrator could ask the participants to keep their responses and progressively reflect on them.	Reflection is an effective strategy to ensure the rationality behind taking specific stands. It also motivates self-regulatory practice and supports the individual's development.
Asking for Different Perspectives	Motivating the participants, staff, faculty, students, administrators, or leaders to share any perspective, opinion, experiences, or views different from the	Asking for different perspectives motivates all participants to be active, as

	dominant one fosters the individual feeling of being a part of the community. The task administrator could follow the following steps: 1-Share the dominant or the most common perspectives in a discussion forum with the participants. The designer could ask questions such as "Who has something to add? / Who has a different viewpoint? / What might distractors think?/ Why won't this idea work?/ What would our students say?" 2-Invite the participants to share a related experience and /or a different perspective 3-Ask participants to share their answers to help avoid the challenges of being isolated and marginalized.	sharing their viewpoints regarding the standard and dominant practices increases their sense of belonging and supports their inclusivity awareness.

Conclusion

Institutional awareness of diversity, inclusion, and equity is the impetus for teaching and learning sustainability. Students, staff, and administrator contributions and inputs have been deemed the tools to foster those participants' sense of belonging and inclusion. Inclusion embraces diversity by integrating diverse individuals into the institution's fabric as well as fostering their success and promoting their voices. Therefore, monitoring the evolving thoughts about learning, teaching, and admissions-related issues is an institutional practice to deepen institutional diversity and inclusion across all units and departments.

Higher education institutions experience rapid discipline, department, institution, and societal changes. Therefore, they need to make room for different contributions from their members. Consequently, the mission, vision, and strategic goals should be reviewed progressively to address evolving thoughts and societal requirements. Curriculum and pedagogical approaches, therefore, are crucial areas for progressive development in instructions, assessment, and evaluation tools. Additionally, strategic leadership secures the institutional constituents' readiness for transformational learning and teaching to embrace differences and

provide room for all community members. In this context, teachers and administrators collaborate to develop inclusive institutions that acknowledge and integrate diversity and inclusion in their institutions. To this end, institutional awareness of diversity, inclusion, and equity shapes teaching and learning effectiveness for a healthier campus life.

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Exploring Case-Based 3D Animated Videos for Online Instructional Design Learning

Li-Wei Peng and Cheun-Yeong Lee

Abstract

Numerous educators, instructional designers, and technology specialists utilize case study methodologies to achieve various objectives, such as elevating the profession's status, bridging theory and practice, applying knowledge to real-world classroom and workplace scenarios, honing decision-making skills, and inspiring future professionals. This study focused on the application of case study methodology integrating creative 3D animated video creation, collaborative peer discussion and evaluation, and practical self-reflective exercises in an asynchronous online class environment. The goal was to foster students' comprehensive, in-depth understanding of the instructional design model – Triple E Framework.

***Keywords*:** Online Instruction, Instructional Design, Triple E Framework, 3D Animated Video Creation

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Introduction

Instructional designers must remain relevant and responsive to the evolving demands of education and emerging technological trends. As the need for instructional designers continues to grow, offering high-quality online courses in instructional design within educational technology programs can empower students with the necessary knowledge and skills to thrive in the future workforce. This paper explores how a case study framework was employed to develop and implement learning activities within the graduate course *CIMT 620 Instructional Design*. Specifically, it delves into students' viewpoints concerning the incorporation of 3D animated videos, asynchronous online small-group discussions, and self-reflection within the case study context, and how these elements influenced their understanding of the instructional design model – Triple E Framework. Additionally, it examined the implications of these learning experiences on their roles as instructional designers in practical settings.

Literature Review

Case-Based Pedagogies in Instructional Design Curriculum

Since real problems, analysis, and active learner involvement are the main components of the case-based teaching and learning method, research have shown that case-based approaches are effective strategies that help learners construct their knowledge through the study of design problems in real-world situations (Ertmer et al., 2009). Case-based pedagogies have been integrated into instructional design programs for over a century as a means of connecting the gap between theory and practice (Kasten & Ashbaugh, 1991), given that the field of instructional design often deals with solving ill-structured matters involving incomplete data and multiple resolutions. In 2000, Julian et al. indicated:

> In case analysis, instructional design students draw connections between their emerging knowledge of instructional design and the complex demands of actual practice. Cases can supplement student design projects, allowing further opportunity to reflect on relevant theory and methods as students explore a greater number of design issues in a broader array of environments. (p. 165)

Case-based instructions encompass variations in form and style. The four components of instructional design case studies typically include: (1) case reviews, (2) study questions, (3) individual case reports, and (4) small-group discussions (Wasserman, 1994). Implementing the four steps: (1) individual case analysis to identify the problem, (2) individual case investigation to explore and present feasible solutions, (3) small-group discussions to reason through the problem, and (4) individual summary and reflection on the learning process, can be helpful to achieve the objectives of problem-based case study instruction in instructional design courses (Jonassen, 2011). Novice instructional designers can emulate the performance of instructional design experts by adhering to analysis guidelines that "synthesize rather than summarize information, focus on principles rather than on surface features, identify relationships among identified issues, and make assumptions (i.e., to be reflective) based on what was stated in the case" (Ertmer et al., 2009, p. 121). Case-based instruction emphasizes instructional design as a process, not merely a product. Case studies can be more effective than traditional expository texts and teaching techniques in instructional design courses, as they facilitate thinking processes within meaningful contexts and foster the development of expert practitioners.

3D Animated Videos in Instructional Design Training

One of the most effective ways for pre-service instructional designers to learn is by applying their knowledge to case-based problems and classroom situations and by teaching

others. This approach is known as the "protégé effect, a psychological phenomenon where teaching, pretending to teach, or preparing to teach information to others helps a person learn that information" (Kariera Group Singapore, 2022). Moreover, teaching through 3D animated videos, as opposed to traditional didactic instruction, allows learners to engage deeply with virtual environments simulated by computer-based technology, providing an experience akin to the real world. Pre-service instructional designers can develop both critical thinking and technological skills by creating 3D animated videos to teach the findings and solutions of case studies. Leveraging the strong effects of 3D animated videos on the mind and senses, the audience can feel immersed in a virtual environment that seems remarkably real, enabling them to experience exact conditions and accumulate knowledge (Virgiawan et al., 2020). Furthermore, contemporary studies have highlighted the significance of incorporating 3D animated video in teaching, utilizing software like Plotagon, to augment communication and social presence among instructors and learners in distance environments (Alwasilah, 2019; Khurana & Sehrawat, 2021).

Asynchronous Online Small-Group Discussions in Instructional Designer Preparation Programs

The integration of small-group discussions in case studies can enhance asynchronous online instructional design education through several means. First, it allows for a unique contribution from each group member, fostering collaboration and diverse perspectives. Second, clear instructions about collaborative activities ensure effective engagement and participation. Last, providing spaces for collaboration among group members facilitates meaningful communication and teamwork (Lowes, 2014). Small-group discussions are student-centered approaches that promote active learning. Generating significant questions for productive small-group discussions requires domain knowledge and metacognitive skills (Choi et al., 2005). These

discussions enable learners to develop skills in communication, cooperation, and consensus-building, which are vital in instructional design practice. Additionally, idea exchanges and teamwork during small-group discussions cultivate essential skills for successful instructional designers. In instructional design courses, learners can develop listening, discussion, questioning, brainstorming, and perspective-taking skills through small-group discussions, thereby gaining a deeper understanding of instructional design principles (Roshni & Rahim, 2020). Compared to other discussion formats, online small-group discussions offer the best forum for learners to express their thoughts, resulting in the highest student satisfaction and the highest scores in critical thinking skills (Hamann et al., 2012).

Self-Reflection in Instructional Design Education

Instructional designers are reflective practitioners. Incorporating self-reflection instructions in introductory instructional design courses allows learners to engage in analytical reflection in response to prompts regarding design concepts, experiences, and identity attributes, rather than passively following models or processes (Tracey et al., 2014). For new instructional designers, opportunities to advance reflective thinking skills are crucial for professional development in alignment with design thinking skills. With reflective thinking skills, instructional designers can navigate the design space and recursively refine solutions to ill-structured problems encountered in their professional practice until innovative outcomes are achieved. The value of knowledge constructed through self-reflection assists learners in acquiring metacognitive tools to critically evaluate their actions after leaving the learning environment (Ada, 2010). Journal writing with scaffolded prompts that draw connections between case studies and learner experiences is one pedagogical tool for documenting reflection on knowledge. Self-reflection through journal writing serves as a bridge between metacognitive

knowledge and metacognitive regulation, enabling instructional designers to characterize problems, identify the nature of learning and task requirements, plan activities, determine available cognitive resources (e.g., strengths, weaknesses, abilities, motivation, and attitudes), employ appropriate strategies, and manage the progress of instructional design through a continuous process of planning, monitoring, evaluating, and revising (Shin, 1998).

The purpose of this paper is to examine the implementation of case studies integrating creative 3D animated video creation, collaborative peer discussion and evaluation, and practical self-reflective practice in an asynchronous online class setting. This investigation aimed to support the development of students' comprehensive understanding of the instructional design model – Triple E Framework.

Research Methodology

Participants

The participants in this mixed-methods study comprised 13 graduate students enrolled in an asynchronous online course, *CIMT 620 Instructional Design*, conducted in the Blackboard Learn virtual learning environment. This three-credit course was a required core course for the Master of Science Program in Educational Technology and also served as a required design and technology course for the Doctor of Philosophy Program in Curriculum and Instruction. The participant group consisted of four males and nine females, with nine participants residing in the United States and four living overseas (i.e., Chile, Morocco, Pakistan, Saudi Arabia). These participants came from diverse professional backgrounds:

- 1 full-time Master's student
- 2 elementary school teachers
- 2 middle school teachers
- 1 eighth grade English Language Arts teacher
- 1 instructor teaching Fundamentals of Electricity and Electrical Risks courses for a university
- 1 instructor teaching English for a community college
- 1 working for a university-wide Technology Support Center as a Blackboard Administrator
- 1 hired as a video coordinator for a university women's basketball team
- 1 serving as an Assistant Director for Education Abroad in a university
- 1 employed by a university Career Center as a Technology Assistant
- 1 functioning as an intern for a bank

Setting

The 16-week *Instructional Design* course content was organized into weekly segments, starting on Monday at 8:00 a.m. and concluding on the following Monday at 11:55 p.m. The course commenced with an interactive orientation session involving all participants to collaboratively establish a user-friendly and engaging online learning environment. During the

first week, the course orientation included: collaboratively establish a user-friendly and engaging online learning environment. During the first week, the course orientation included:

- overview of the course syllabus, objectives, learning modules, activities, and evaluations, accompanied by a 10-question formative assessment to ensure participants' understanding
- introduction to the Blackboard Learn learning management system, which hosted the course site
- self-introduction and networking activity utilizing Voki avatar animated videos

The required textbook for the course was Liz Kolb's (2017) *Learning First, Technology Second: The Educator's Guide to Designing Authentic Lessons*, published by the International Society for Technology in Education. This book comprised an introduction and seven chapters covering introductory concepts in the field of the Triple E Framework. During weeks two to nine, participants were tasked with completing theoretical-based reading assignments from their textbook, which detailed the instructional design model – Triple E Framework. Subsequently, they enegaged in instructor-guided book study sessions to collaboratively construct knowledge through peer conversations in asynchronous Blackboard discussion forums.

Additionally, this textbook included a chapter comprising 12 case studies primarily situated in K-12 environments. Each case study ranged from three to nine pages in length, providing clear and illustrated strategies and questions aimed at fostering appropriate technology integration for Triple E Framework practice, thereby assisting instructional designers in creating authentic learning experiences for students. Participants were entrusted with ownership of their case study analyses associated with the Triple E Framework. They had the opportunity to present the problems and solutions generated from the case studies in a creative 3D video format,

incorporating avatars, animations, and audiovisual elements. This activity allowed participants to not only gain experience in animated moviemaking with Plotagon, a tool widely used by schools, entrepreneurs, and businesses in the real world, but also to think critically in order to effectively communicate the concept of instructional design through 3D scenes and characters.

Participants were required to examine 12 case studies in a single video clip using Plotagon, incorporating audio comments and captions ranging from two to four minutes. Participants had to address the following main points in their Plotagon videos:

- identify the differences and similarities among the 12 case studies
- discuss the strategies of the Triple E Framework that most inspire them
- describe the approaches they had found from the case studies to help them apply the Triple E Framework in their own classroom or work settings and explain how they plan to implement them

In addition to the Plotagon video, each participant attached a description providing insight into his/her video, including:

- contextualizing information that the participant believed would be useful for other participants
- any particular questions or concerns about the video to which he/she would like feedback
- a 150-word self-reflection on his/her performance in the video

Afterwards, Plotagon videos and descriptions were shared in small groups of three members, randomly assigned as per Jonassen's recommendation (2011). The small-group

discussions focused on the quality and accuracy of each individual Plotagon video, addressing the following points:

- What aspects of this participant's Plotagon video do you like, and why?
- Identifying any problems or errors politely.

The individual analysis of the cases as experts and small-group discussions were assessed using the checklist developed by Ertmer et al. (2009). Following this, each participant facilitated a small-group discussion using his/her Plotagon video asynchronously in the Blackboard discussion forums. The discussions on the case studies using Plotagon aimed to bridge theory and practice, providing participants with higher forms of thinking experiences. They were mentored and challenged to condense the concept and application of the Triple E Framework into a readily understandable, comprehensive, and audiovisual method in an online environment. The course concluded with the application of the Triple E Framework through the creation of a practical and feasible instructional design project in each participant's professional field.

Research Questions, Data Collection, and Data Analysis

This study employed mixed methodologies for data collection and analysis to address the following research questions:

- RQ1 - What are students' perceptions of case-based Plotagon videos in relation to their learning of the instructional design model – Triple E Framework?
- RQ2 - How effective is individual student analysis of cases in instructional design through Plotagon videos when compared with small-group analysis?

Participants' Plotagon video descriptions, a 150-word self-reflection, and a questionnaire consisting of three 5-point Likert scale questions [Table 1: Strongly Agree (SA) – 5; Strongly Disagree (SDA) – 1], along with one open-ended item were the means to ascertain and ensure

the validity and reliability of participants' opinions regarding the correlation between case-based Plotagon videos and their learning of the Triple E Framework. For analyzing the open-ended responses, inductive coding, as described by Miles et al. (2014), was employed as the statistical technique. This approach allowed researchers to "primarily use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data" (Thomas, 2006, p. 238).

Table 1

Five-point Likert Scale Questions

Questions	SA	A	N	DA	SDA
1. Creating a Plotagon video individually improved my understanding of the Triple E Framework concept.	5	4	3	2	1
2. Plotagon videos enhanced my understanding of all 12 Triple E Framework cases.	5	4	3	2	1
3. Plotagon videos helped me analyze the Triple E Framework cases in depth.	5	4	3	2	1

Open-ended Question:

- How have the case-based Plotagon video creation, small-group discussion, and self-reflection contributed to your overall learning experience with the Triple E Framework?

The researchers utilized qualitative content analysis to examine the Plotagon videos from the 13 volunteer participants. This method allowed for "a systematic and objective means to make valid inferences from verbal, visual, or written data in order to describe and quantify specific phenomena" (Downe-Wamboldt, 1992, p. 314). In addition, as Hsieh and Shannon (2005) stated, "qualitative content analysis is defined as a research method for the subjective

interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (p. 1278), the small-group and self-reflection analyses were conducted to establish a coding scheme for content validity, as suggested by Potter and Levine-Donnerstein (1999). The core differences and similarities among the 12 case studies identified in individual participants' analyses of the Triple E Framework cases were compared with those from the small-group and self-reflection analyses using a manifest analysis approach. A four-scale ranking system (Table 2) was employed to determine the levels of coding scheme relationships between the differences and similarities identified by the individual participants and small groups.

Table 2

4-scale Ranking System for Coding Scheme between Individual Participants and Small Groups

Scales	Levels of Relations
3	Completely Matched
2	Strongly Related
1	Slightly Related
0	Not Matched

Results and Discussion

The results from the 3 5-point Likert scale questions reaffirmed the association between participants' perceptions of case-based Plotagon videos and their understanding of the instructional design model – Triple E Framework (Table 3). The participants concurred that individually creating a Plotagon video enhanced their comprehension of the Triple E Framework concept (mean = 4.17). Furthermore, they agreed that Plotagon videos contributed to their knowledge of all 12 Triple E Framework cases (mean = 4.02). Finally, the participants

acknowledged that Plotagon videos facilitated a thorough analysis of the Triple E Framework cases (mean = 4.73).

Table 3

Students' Perceptions of Case-Based Plotagon Videos

Questions	Means (n=13)
1. Creating a Plotagon video individually improved my understanding of the Triple E Framework concept.	4.17
2. Plotagon videos enhanced my understanding of all 12 Triple E Framework cases.	4.02
3. Plotagon videos helped me analyze the Triple E Framework cases in depth.	4.73

Note. 5 = strongly agree; 1 = strongly disagree

In addition, the responses from 13 participants to the Plotagon video description, a 150-word self-reflection, and one open-ended question in the questionnaire were subjected to inductive analysis. The aim was to identify the common patterns or central themes regarding

students' opinions on the correlation between case-based Plotagon videos and their learning of the Triple E Framework. Through this analysis, several key themes emerged:

- Conceptual Visualization: Participants noted that Plotagon videos allowed for the visual representation of Triple E Framework concepts, aiding in comprehension and retention.
- Critical Thinking Skills: Creating Plotagon videos required participants to think critically about how to effectively present information, leading to a deeper understanding of the Triple E Framework.
- Technological Proficiency: Engaging with Plotagon improved participants' technological proficiency as they navigated and utilized the software to create engaging videos.
- Learning Through Teaching: Teaching concepts of the Triple E Framework through Plotagon videos helped participants solidify their understanding and identify knowledge gaps.
- Reflective Learning: Reflecting on the Plotagon video creation process enabled participants to learn from their experiences and make adjustments for future projects, enhancing their overall learning outcomes.

Here are the quotes from the participants:

> "I enjoyed creating Plotagon videos and watching those made by my classmates. The 3D videos allowed us to convey complex information clearly and visually, making it more accessible. They can enhance understanding, communication, and problem-solving."
>
> "The Plotagon videos greatly improved my critical thinking skills. I had first to analyze and evaluate the case studies from multiple perspectives in the textbook. Then, I

brainstormed how to explain the problems and propose informed solutions in a 3D video format."

"Designing Plotagon videos was a challenge for me. I needed to learn how to properly set up my characters in the timeline. It was not easy to add interactive motions and narratives that reflect real-world situations. I had to explore different features and functions within Plotagon. I learned a lot from the process and now feel more conformable with the technology."

"Presenting my understanding of the Triple E Framework using Plotagon helped me learn more about the framework. Creating the contents of my Plotagon required a thorough understanding of the framework and the ability to explain it clearly to my classmates."

"When I wrote my self-reflection report, I noted what worked well and what could be improved. I learned from my experiences. Self-reflection helped me learn and make adjustments for my future projects."

These themes underscored the multifaceted role of case-based Plotagon videos in facilitating learning of the Triple E Framework, encompassing aspects of visualization, critical thinking, technology, teaching, and reflection. These results validated the conclusions drawn in the existing literature that producing and crafting 3D animated videos to visually depict the findings and solutions derived from case studies promoted the acquisition of knowledge and the development of both critical thinking and technology skills (Nurilma et al., 2023). Teaching the concepts through the creation of 3D animated videos proved to be an effective method for enhancing comprehension of Triple E Framework cases. Furthermore, self-reflection enhanced

reflective learning by encouraging students to reflect upon their learning experiences and take action based on their reflections (Boud et al., 2013).

Table 4 presented the coding schemes delineating the distinctions and commonalities observed across the 12 case studies, derived from both individual participants' Plotagon videos

and the small group analyses. It encompassed descriptive data elucidating the degrees of correlation between the variations and resemblances as outlined by individual participants and each small group.

Table 4

Results for Coding Scheme between Individual Participants and Small Groups

Groups	Case 1	Case 2	Case 3	Case4	Case5	Case 6	Case 7	Case 8	Case9	Case10	Case 11	Case 12	Means
G 1 (n = 3)	2.6	1.5	2.3	2.3	2.0	2.0	1.3	2.0	2.3	1.5	2.3	2.3	2.03
G 2 (n = 3)	2.0	2.3	2.3	2.6	2.0	2.0	1.5	1.5	2.3	2.0	2.0	1.5	2.00
G 3 (n = 3)	1.5	2.3	2.0	1.3	1.5	2.0	2.0	2.6	2.3	2.3	2.0	2.0	1.98
G 4 (n = 4)	2.3	2.3	2.0	1.3	2.0	2.6	1.5	2.3	1.3	2.3	2.6	2.0	2.04
Means	2.1	2.1	2.15	1.88	1.88	2.15	1.58	2.1	2.05	2.03	2.23	1.95	2.01

Note. 3 = differences and similarities completely matched; 0 = no differences and similarities

matched

The comparison yielded a mean score of approximately two on the scale out of three. This content analysis finding suggested that the differences and similarities among the 12 case studies identified by individual participants closely aligned with those agreed upon by the small groups. The participants stated:

> "When I designed my Plotagon videos, I could focus on the case at my own pace. It allowed me for deeper and more thorough examination of the material".
>
> "Participating in group discussions provided me with a wider range of perspectives from my peers. I discovered that some classmates and I shared similar ideas, but I also learned from their different insights and experiences, which helped me deepen my understanding of the Triple E Framework".

These results substantiated the assertion that engaging in comparative analysis through small-group discussions, coupled with opportunities for novice instructional designers to produce 3D animated videos guided by scaffolding principles for examining instructional design case studies, proved advantageous for learners in discerning pertinent issues and solutions within the cases. As Flynn and Klein (2001) highlighted, individual development for 3D animated case analysis videos served as the cornerstone for subsequent work on cases and underpinned learning from cases. Moreover, small-group discussions could foster collaboration in case-based activities, aiding individuals in generating and sharing ideas, as well as honing their articulation skills (Kim & Hannafin, 2008). The integration of small discussion groups in a case-based learning environment could be an effective and motivating instructional approach, provided that students were adequately prepared, and sufficient time was allocated for both individual 3D animated case analysis video creation and small-group discussion (Flynn & Klein, 2001).

Conclusion

Instructional design education must embrace innovation to keep up with rapidly evolving, technology-driven learning styles in the 21st century. This study provided instructors and designers with valuable insights to enhance instructional designer preparation curricula through the integration of case study methodologies, creative 3D animated video creation, collaborative peer discussions and evaluations, and practical self-reflective exercises in an asynchronous online class environment. By implementing this approach, 13 students in the *Instructional Design* course engaged with 12 case studies over 16 weeks, utilizing Plotagon video case-based analysis creation, asynchronous online small-group discussions, and 150-word self-reflections to learn the Triple E Framework.

The findings indicated that students responded positively to the creation and integration of Plotagon animated videos as a support for case-based learning in the instructional design model, Triple E Framework, in an asynchronous online setting. One of the significant benefits of using case-based Plotagon videos for learning the Triple E Framework was the conceptual visualization it offered. Training novice instructional designers to present cast study problems and solutions using Plotagon could produce visually engaging content that captured their attention and portrayed scenarios realistically, helping them better understand the context and nuances of a case study. Plotagon videos provided visual representations of concepts or processes, making it easier for the audience to grasp complex ideas and relationships (Gámez &

Cuellar, 2019). By offering clear visual examples, Plotagon videos could illustrate key points and outcomes in a case study, thus reinforcing learning and retention. Plotagon videos catered to visual learners and complemented other teaching methods, such as auditory instruction, supporting a variety of learning styles (Yeh, 2018).

Fostering critical thinking skills and technological proficiency, as well as the ability to learn by teaching, positively influenced students' perceptions of learning the Triple E Framework through case-based Plotagon videos. These capabilities are essential in today's digital world. Case-based learning engaged students in problem-solving and decision-making within real-world scenarios. This practice required students to apply critical thinking to analyze situation and propose solutions (Popil, 2011). This study introduced students to Plotagon as a strategy and tool for presenting concepts related to the Triple E Framework, which helped them develop strong critical thinking skills for systematic communication, creativity, and innovation (Alwasilah, 2019).

Exposing students to 3D animated video creation tools like Plotagon could expand their technological skills and keep them updated on the latest trends and developments in technology. In this study, the instructor demonstrated effective use of Plotagon in teaching case-based studies, showing students how technology could be a valuable tool in instructional design. At the same time, students had to troubleshoot technical issues and find solutions to problems they encountered while creating case-based Plotagon videos. These experiences enhanced students' self-efficacy with technology (Pan, 2020).

In this study, students were tasked with researching case studies, creating case-based Plotagon videos, and teaching the concepts of the Triple E Framework to the class in their own words using the learning by teaching approach. As the data and analysis in this research

illustrated, students found that this method required them to think critically about presenting information effectively. This exercise helped students learn how to organize and communicate their knowledge (Cortese, 2005). Students realized that teaching through case-based Plotagon videos reinforced their understanding of the instructional design model – Triple E Framework – and highlighted gaps in their knowledge.

By engaging in case analysis, students could gain a comprehensive understanding of instructional design, including the Triple E Framework, and its application in diverse contexts. Case-based instruction using 3D video presentations supported the learning of instructional design models by offering a more immersive and engaging experience, helping students connect theoretical concepts to real-world applications (Khurana & Sehrawat, 2022). This study showed that while individual case analysis was beneficial, combining it with small-group discussions or collaborative projects could provide additional perspectives and insights, thereby enhancing the overall asynchronous online learning experience. Analyzing cases could also provide opportunities for students to receive feedback on their analysis and self-reflect on their thought processes, leading to further learning and growth (Nussbaumer et al., 2012).

Limitations and Recommendations

The current research study had three limitations. First, students were in the early stages of learning the case-analysis process for the Triple E Framework instructional design module while working at their own pace in an asynchronous online setting. Second, each Plotagon video product was restricted to a length of two to four minutes, which may have made it challenging for students to express their thoughts thoroughly within such a brief time frame. Finally, the study had a small sample size. Although participants were randomly selected, their prior in-class experiences may have influenced the collected results.

Instructional design education models are evolving. Dowd and Davidhizar (1999) discussed the strengths of the case study method in detail, including its ability to help students identify problems and develop professional thinking. Further research into the timing and nature of case studies, their sources, and the interaction between case study and student ability level could provide more insight into the role of case-based learning in fostering instructional design. This is particularly important for students who are less prepared or most accustomed to traditional methods.

Another area in need of research is the integration of emerging 3D animated videos in instructional design training for long-term educational outcomes. The use of 3D animated videos in teaching and learning can be successful when the digital resources are adequate and accessible. Most importantly, students need to gain an optimal understanding of why technology is integrated into instruction to stay motived and enjoy the learning process.

Future research can explore the instructional design case analysis process to identify when small-group discussions impact performance and affect final outcomes. Both individual and small-group preparation and work require dedicated time to maximize learning outcomes. Therefore, further research is needed to evaluate the structure of this pedagogy for efficient and effective time management, particularly in an asynchronous online setting.

Instructional designers embody reflective practice. Further investigation into methodologies that foster deeper self-reflection, such as the use of prompts, rubrics, and feedback, would be valuable. An imbalance in reflective prompts, whether deficient or excessive, can render the exercise meaningless or make students feel overly monitored, limiting their comfort with freely expressing their thoughts (Wear et al., 2012). A well-designed rubric that provides meaningful formative feedback is crucial for developing reflective skills and student

engagement (Tracey et al., 2014). Additionally, feedback may need to be tailored differently for novices compared to more experienced reflectors.

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