

DEI in the Built Environment of Schools

by

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Abstract

The integration of Diversity, Equity, and Inclusion (DEI) principles beyond employee training into the physical and cultural design of school environments has the potential to enhance campus well-being, foster a sense of belonging among students, and create equitable, high-quality educational experiences accessible to all. This study examines strategies for incorporating DEI initiatives into the built environment of educational institutions, emphasizing areas such as fostering belonging, understanding user diversity, designing for well-being, programming DEI-centric spaces, and integrating inclusive textiles and furnishings. The research aims to develop foundational guidelines for designing DEI in educational settings by analyzing shared experiences among diverse student groups.

Using a mixed-methods approach, this research combines quantitative and qualitative data collection to explore the relationship between DEI-integrated environments, student belonging, and educational quality. The methodology includes interviews with higher education students reflecting on their secondary school experiences. This approach captures both statistical patterns and personal narratives, providing a well-rounded understanding of the impact of DEI on student outcomes.

The framework of DEI in Interior architecture and design can improve marginalized group's educational experience in America's educational system. Initial findings suggest that DEI-informed design can significantly enhance students' sense of belonging and overall educational experience. However, limitations include potential challenges in recruiting diverse participants, addressing gaps in public understanding of DEI and interior design, and the restricted sample size. Despite these challenges, this study provides insights into DEI's

significance in learning environments. This study offers a framework for integrating DEI into the built environment to suggest improvements for educational experiences.

I. Introduction

New educational institutions are reimagining the school environment by looking to the framework of Diversity, Equity, and Inclusion (DEI). Diversity, Equity, and Inclusion is a framework that “encompasses the symbiotic relationship, philosophy and culture of acknowledging, embracing, supporting, and accepting those of all racial, sexual, gender, religious and socioeconomic backgrounds, among other differentiators.” (Dunn). The built environment has a big impact on our physical and mental health; it is worth investigating a typology that society heavily values. Can integrating the framework of DEI into the built environment of educational spaces through thoughtful design create a quality learning experience for students? The United States K-12 educational standard has students going to school 5 days a week and spending their mornings to late afternoons in the same environment. In addition, there is more time spent on extra-curricular activities that schools offer. Students have a lot of consistency and time spent with their community at school because of this time standard. Interior designers specialize in creating shared spaces that accommodate users from diverse backgrounds and needs. Student’s differences in diversity, race, ethnicity, age, neurodiversity, abilities, and socioeconomic background should all be understood to create an environment that promotes a quality educational experience. Students should have equal opportunity for access to spaces, materials, and resources, along with necessary accommodations to support their academic success. Currently, the most effective guidance for incorporating this concept into the built environment is following the principles of universal design and American with Disabilities Act (ADA) standards for accessible design.

The current role of DEI in schools is in flux. In President Trump's new term, one of the first actions he took was to remove DEI initiatives in schools. DEI programs, training, and jobs are rapidly changing in schools as the opposition to DEI in schools believes this is "...harmful...it will end illegal discrimination and wasteful spending across the federal government..." (*U.S. Department of Education*). A publication that suggests DEI has no place in American classrooms says, "The ideology behind DEI teaches that American society is a rigged system in which the "oppressors"—white people and/or men—use law, culture, and institutions to subjugate the "oppressed"—"minoritized" persons and/or women. The only way to fix this fundamentally unjust system, according to DEI advocates, is to discriminate against the "oppressors" to topple them from the summit of the social hierarchy. DEI thus rejects the deeply American principle that people should be judged on their character and merit, not on their race or sex." (Minella, T.). This statement claims that although DEI initiatives support marginalized groups, it still discriminates against white people and/or men and goes against traditional American ideologies. This article uses some strong words that DEI initiatives in schools promote "hatred and division" not inclusion.

With the word inclusive itself, this means all, everyone in mind. Whether DEI is being incorporated in schools or not, there is always going to be division between identities. But what this argument lacks are that since America's birth, white people and/or men have always been raised up and looked to first, forgetting the lives and opportunities of those who have also built American principles. This problem carries into today's school environment and if the design in the built environment does not accommodate to the feelings and belongingness of marginalized groups our society has been and will continue to fail the health, well-being, safety, and lives our so beloved Americans.

The framework of DEI supports the development and well-being of students, faculty, and other roles involved in the school. Representation and learning to work together with people of different needs is beneficial for personal worldviews and social settings outside the classroom. Schools should be a safe and inclusive environment for everyone. There is a lot of negative media and current events that surround American schools, where American students are starting to build an unhealthy relationship between themselves and their education. The school environment needs transformation and DEI initiatives can help build a stronger sense of community and connection between students and their schools. An important initiative of DEI is providing training for educators to help create a welcoming and respectful environment for students. If the framework of DEI extends beyond employee training and is integrated into the design of the school environment, campus well-being would improve, fostering a stronger sense of belonging among students and ultimately creating a high-quality educational experience accessible to all.

II. Literature Review

a. Fostering Belonging

Students should feel a sense of belonging within their school regardless of the diversity present in the community. This desired sense of belonging in all schools is accompanied by the need to make schools feel welcoming, community-oriented, and accepting. All of these feelings can lead to increased academic performance within a school. Integrating DEI principals into the interior design of educational spaces can foster a sense of belonging, inclusivity, and acceptance that minority groups need. The idea of DEI is relatively new and the framework being incorporated into the education setting has America politically divided on whether this is best for their students or hindering their school experience. An

article from *Campus Safety* advocated DEI is needed in higher education schools and K-12 schools. From *Campus Safety*, “feelings of belonging are linked to increased academic attainment, retention, and improved mental health among undergraduate students.” They found a similar experience in K-12 schools of the relationship between belonging and academic success. In addition to this, having a diverse student population is not enough to stop prejudice, discrimination, and bullying. There needs to be DEI support further than relying on the students to understand and create a safe environment (Authors, 2024). Historically marginalized groups face challenges related to their race, gender, sexual orientation, disabilities, and income. These disparities, and the biases they generate, often carry over into the school environment, affecting students’ experiences and opportunities.

The architecture and design firm, Perkins and Will, wrote an issue about belongingness on school campuses and their importance to a quality educational experience. From the magazine *Current*, to support diversity on campus, “...many college campuses are investing in identity spaces. These spaces foster a sense of belonging and provide platforms for individuals with shared identities, experiences, or interests to find community and thrive.” (Hines, 2024). The student center that Perkins and Will reimagined for East Carolina University is supporting the students on campus with a feeling of welcomeness. Dean Smith, senior director of student centers said in the report, “you're doing well if your group feels comfortable in your space...you're doing extraordinarily well when other people are using the space...” (Hines, 2024). This quote is powerful because it shows the goal to not only have a space for the marginalized group, but also

welcome other people and groups into that space as well, to create this support and community. The example of this student center is understanding the needs of their students on campus, and then reflecting the environment to allow them to be seen by everyone else on campus. This center exemplifies the importance of students visibility on campus. When a campus fosters community within its diversity, it creates a healthier environment for students and enhances their educational experience. This Perkins and Will article examined if students on campus have a quality and positive environment that supports their identity, they'll carry this positive lasting impact on themselves and share that with other communities they belong to. Ultimately, integrating this experience and spreading belongingness in other areas.

b. Outcomes for Historically Marginalized Groups

The framework of DEI supports all people who belong to historically marginalized groups. This can be viewed racially, by gender, and people who live with a disability. In terms of DEI in an educational environment, an article by Mel Ainscow suggests, "What is common to highly inclusive schools... is that they are welcoming and supportive places for all of their students, not least those with disabilities and others who sometimes find learning difficult." (Ainscow, 2020). From these words, I question what does welcoming and supportive look like in interior spaces to make a school inclusive?

A school environment that does not have inclusivity built in risks discouraging and hindering their student's academic performance and experience. This can lead to a decreased rate in attendance, less participation around the campus, not being considered for future leadership positions, overlooked as award

recipients, and other positions that show a high level of recognition and achievement. The lack of support in the design ultimately leaves the school unwelcoming and inaccessible to marginalized student groups. Students who lack a support system from the school are not being fully encouraged or supported in their academic and personal development. From, *Inclusive Education: A Systematic Perspective*, “In terms of racial disparities, the U.S Government Accountability Office released a report stating that the number of Black and Latino students enrolled in low-income K-12 public schools has increased since the 2000-01 school year. Compared to middle- and high-income families, students from low-income families are more likely to drop out before graduating from high school, less likely to attend college...” (Brannan & Kaufman, 2020). This leads me to consider whether designing K-12 schools with resources tailored to the needs of low-income students could positively impact these statistics and outcomes. In addition to this, “For students with disabilities aged 14-21 years, the 2014-2015 school year dropout rate was 17.8% ...Furthermore, students with disabilities accounted for only 19.4% of students enrolled in postsecondary education for an undergraduate degree in the 2015-2016 school year.” (Brannan & Kaufman, 2020). The educational experiences students have from K-12 and into Higher Education spaces can risk future outcomes if they’re not being welcomed or supported in the environment. A sense of belonging and a users relationship with the space is important for the well-being of marginalized students in learning spaces.

c. Translating Well-Being in Interior Architecture & Design

In interior architecture & design, there are principles, standards, and codes to achieve both the desired aesthetics and functionality of a space, while also ensuring the safety and well-being of its occupants. There are various design approaches that can be used to create effective solutions, depending on the specific design problem at hand. Unlike other well defined design theories, there is not any accessible list for how to design for diversity, equity, and inclusion in an education space. Incorporating the principles of universal design and American with Disabilities Act (ADA) standards for accessible design can begin to support the framework of diversity, equity, and inclusivity in the built environment. The American Society of Interior Designers (ASID) has a statement of DEI as of 2021, but it is more centered around promoting and following DEI throughout the organization and their services, not necessarily supporting the built environment. Architecture and design firms are starting to change educational spaces by focusing on design motivators like inclusivity, and accessibility. We are seeing more innovation in schools that support different sensory needs for students and designing for neurodiversity across the student body. There are parts of K-12 and Higher Education design that focus on supporting marginalized groups. However, I have not found any precedents or case studies that fully integrate DEI principles into the campus design.

Designers can support the needs of historically marginalized students through a combination of design theories and principles to support their well-being on campus. But there should be a more direct and defined “how to” for achieving a space for diversity, equity, and inclusion. DEI should not be viewed as an optional addition to a school environment but as a fundamental design

element, integrated into both the built environment and the overall student experience. The framework of DEI is currently an umbrella term that could involve many different aspects of interior architecture and design. Underneath this umbrella, supporting design principles like biophilia, Universal Design, and ADA, can help define more of what DEI looks like in interior architecture and design for education. Given the typical outcomes and the feelings associated with being part of a marginalized group, students need a school environment that addresses healing and affirms their value through thoughtful design. We can also consider trauma-informed design, which encompasses various design factors that can help support students within educational spaces. From *Trauma-informed Design Society*, “Trauma-informed design (TiD) is about integrating the principles of trauma-informed care, as originally established by the Substance Abuse and Mental Health Services Administration (SAMHSA) and continually evolving, into design. The goal is to create physical spaces that promote safety, well-being, and healing....it is important to cultivate an understanding of the people who will use the space, their identities, culture, and what is important to them, as well as the surrounding community. That understanding can then be used to anticipate and mitigate potential triggers, maximize choice, and create a safe, comfortable environment. As the users of the space develop a sense of safety, they can build resilience, strengthen their ability to emotionally regulate, and better access new opportunities.” The term trauma-informed design is similar to what I imagine DEI to look in an interior space to address the well-being of its users. Some examples include; The principles of biophilia like using natural light in the interiors, and having accessible views to nature. Areas that are more

intimate and allow users to retreat are considered areas of refuge and respite.

These different ways to address trauma in a space support diversity of students on campus and the health of their mind, body, and spirit on campus.

d. Programming DEI into the Interior Architecture & Design

An educator reflects and shares their ideal classroom environment, “I see an inclusive classroom with the students as the focus...Then we weave in the course resources needed for student learning and growth. When I envision inclusion, I see technology; I see very dynamic groupings of students for learning...” (Brannan & Kaufman, 2020). A good first step when designing for any space and for any purpose is to listen to the users and their needs. First designers should learn to understand the barriers marginalized students face and the reason DEI is needed in the school environment as it supports their academic performance, future outcomes, and overall well-being. Then designers should learn from the roles and different perspectives and dynamics in a classroom to create a stronger diverse, equitable, and inclusive environment.

An example for planning equity across the school, is programming the same spaces in each organizational part of the school. The Benjamin Banneker Academic High School in Washington DC was designed by Perkins Eastman DC in July 2021. The size of this project is 175,000 square feet. Their users will be first-generation students to attend college. Some of the design firms goals were designing for a high-achieving environment and mitigating student stress levels. One of the planning strategies that Perkins Eastman implemented into the design is “Learning Commons” that support studying, socialization, and collaboration on every floor. No matter what the floor the student is on, they all have access to

achieve these three basic behaviors, creating an overall balance in the design of the school.

Another example of programming for DEI in any learning environment is addressing the restrooms on campus. This space on campus is not a classroom however studies are reporting that having gender-specific restrooms on campus is a problem to transgender people, intersex people, and disabled people. (Schoellkopf, 2012). Not having gender neutral restrooms can make an easy task a daunting one in any public space. Planning or converting campus restrooms to be gender neutral will support the diversity on campus, make campus equal for all groups, and show proactive measures for inclusivity. Planning gender neutral restrooms is an example of understanding the needs of your students. It is a way to combat discrimination and avoids any harm these students must risk if they were forced to use gender specific rooms.

In design, this would look like floor to ceiling walls instead of stalls. There will be secure locks on each door for safety and comfort. In each restroom, the height and knee clearance, toilet height, and a 60” diameter in the floor space for wheelchair turning needs to abide by the ADA codes. Vertical and horizontal grab bars and sanitary disposable cans should also be accommodated to achieve an all-inclusive restroom. In professional practice, if there’s multiple restrooms in a row, the opening corridor to the restroom will not include a door. The restroom corridor can afford this because privacy and safety are already insured with floor to ceiling walls and locks at each restroom. This also mitigates any confusion and hesitation from the users as they can be confident and see this is an all-inclusive restroom.

e. Planning DEI into Textiles and Furniture, Fixtures, and Equipment (FF&E)

The Smithfield Elementary School in North Richland Texas was designed by HKS Architects in August 2021. They took the program and the students into the design considerations to create a “holistic interior design solution and ‘ethos’ of the school”. (Smithfield, 2022). HKS Architects created an education experience of sanctuary for a neurodiverse population and inclusive of all abilities. From this elementary school, I learned the importance of flexibility in FF&E so it can accommodate students of all ages and abilities such as using “digital displays, flexible seating, and adaptable lighting for different activities” (Smithfield, 2022). Inclusion is using flexible seating in the classroom to support different modes of learning. Equity is offering the students the extra tools needed to help support them in the learning environment. I also want to explore the materials used in this elementary school to support a neurodiverse population of students. The materials Smithfield Elementary used address both sensory and acoustical needs for their diverse population. For example, the material cork can be used for tactile needs, and it can bring down the noise levels. Looking at materials that are both sustainable and good for “cognitive restoration” that this group of students need in the learning environment.

Certain textures and patterns can help support students diversity and needs on campus. A precedent from Perkins and Will is their design of the Carter School, which was specifically created with neurodiversity in mind. The solution they developed was, “to address glare and noise, they designed the building with glare-blocking exterior louvers, acoustic dampening panels, and white noise systems. They also kept red and yellow-the colors that are easiest to see because

they are the longest wavelength on the color spectrum-limited to entrances, exits, and the elevator lobby. Those areas also have textured surfaces to help students with visual disabilities. These design techniques help students find their way around safely and comfortably.” (Perkins and Will). Using research on color of materials, and materials designed for blocking unwanted glare, and bothersome noise can all support the diversity among students on campus.

Drawing from these two schools, it appears that architecture and design firms have utilized textiles and FF&E (furniture, fixtures, and equipment) to support neurodiversity in educational settings, minimizing distractions and addressing the sensory needs-both hyper- and hypo-sensory-of students. This leads me to further wonder whether this specific aspect of interior architecture and design can be expanded to support a wider range of demographics, addressing the needs of various identities on campus.

III. Research Design

My thesis suggests that the incorporation of DEI into the design of the space would improve the student’s sense of belonging, ultimately creating a quality educational experience for any student. From a quantitative study in 2019, the sense of belonging was measured across institution type and different student characteristics. Associations that comes with a sense of belonging and academic achievement like, "GPA and persistence (continued enrollment), self-reported mental health, and self-reported use of campus services. The results, Dr. Gopalan explained, were striking: underrepresented racial and ethnic minority students (URMs) and first-generation/low-income students (FGLIs) reported a lower sense of belonging in four-year colleges than their non-URM and non-FGLI counterparts.¹ Importantly, they also found that having a greater sense of belonging

is associated with higher academic performance, persistence, and is protective for mental health in year three of students' undergraduate trajectory, suggesting that belonging might have a longitudinal effect.” (Gopalan & Brady, 2019). In addition to this, another study on the relationship between a sense of belonging and socially disadvantaged students were studied using research methods of intervention and qualitative data. The intervention had a class of students read and write an assignment about social and academic belonging. Then were instructed to reflect on their own educational experience and its challenges. Another sub-group also kept a daily diary where it “assessed students' daily positive and negative academic and social experiences (students were asked to report and describe three negative and three positive events that they faced daily and to rate how positive and negative the events were), as well as their daily sense of social and academic belonging.” (Murphy et al., 2020). Both studies of quantitative and qualitative data have been shown to explore the relationship between marginalized groups and sense of belonging with educational experience.

Integrating the framework of DEI into the design of schools instead of only utilizing it as employee training/seminars would improve students' sense of belonging and campus well-being. Ultimately striving to provide a high-quality educational experience accessible to all. Analyzing different strategies of incorporating DEI initiatives like understanding fostering belonging, understanding the diversity within the end users, following protocols for designing well-being, programming DEI spaces, and planning DEI into textiles and FF&Es, suggests insights and guidelines to research shared experiences among a diverse group of students and start to create a basic guideline of designing DEI in the built environment for education purposes.

IV. Methodology and Research Design

Using qualitative data is most appropriate for answering my research question. The research question seeks personal experiences and relationships of belonging and quality educational experiences. Gathering qualitative data supports the personal preferences that this research is investigating. Using a Needs assessment, a collection of information from a group or population for the purpose of guiding a specific project or to improve service delivery, I interviewed theoretical stakeholders concerning design preferences. Conducting this research with interviews helped generate different and shared preferences of belonging on campus and how DEI incorporated in the learning environment can improve campus well-being and belonging.

The research instruments I used included conducting interviews that dig into the diverse student preferences of secondary school interiors. After gathering data on American public schools and their demographics it lead me to question how interior design could improve their needs, for example, better attendance and test scores. A series of 12 interview questions used to gather design preferences, focus on different topics of representation and cultural sensitivity, gender inclusivity, design of the learning environment, feelings about belonging and quality of their educational experience, and future environment of high schools. All questions target and relate to my thesis on student's feelings about belonging and the quality of their educational experience.

Based on the background information, the targeted sample for conducting interviews are students currently enrolled in higher education, preferably within the first two years of their studies. The volunteers are students in higher education ages 17-20 years of age that identifies as a member of a marginalized group, and interviews were held virtually over video calls. The reason for this specific age of student's is because they most recently went through the transition

between secondary school to higher education and have most recently been exposed to different quality of campuses and their needs and wants in an academic environment.

From the information gathered from the interviews, I conducted; the preferences and create a start of annotated sketches, plans, and renderings addressing how to design DEI initiatives in the built environment of secondary schools. Using the qualitative data from the conducted interviews, I found commonalities and uncovered the differences of the relationship between belongingness in association with DEI and the built environment from the discussions.

A potential research limitation that occurred was not being able to conduct research on students currently in secondary school. However, to keep my previous research appropriate for the study I shifted to conducting research with students within their first two years of higher education and discussing their secondary school preferences related to interior design. Another potential research limitation is the general population not fully understanding what DEI is, or what interior design encompasses. When I ask specific questions that may use vocabulary or when the topics of materials, furniture, or anything architectural, there may be feedback not exactly targeting what the research is looking for within learning environments and school experiences due to vocabulary boundary of these subjects. Another potential research limitation is the total amount of interviews I am able to conduct and then pull data from. Further, the amount of diversity within the pool of interviews I conduct. I want to make sure the interviews touch on diversity for all students and what that looks like for them.

V. Discussion

a. Representation and Culture Sensitivity

i. “What elements in a school do you find culturally inclusive?”

Almost everyone talked about the importance for having designated spaces for different clubs and groups. After talking with the volunteer participants, many participants shared a lot of representation and cultural inclusivity comes from clubs and extracurricular outlets. From my fourth interview, they mentioned having a shared thing to look forward to, and having a dedicated space that everyone in school can be together. From my fifth interview they said elements in a school that represent community and appreciation feels culturally inclusive. From the findings, we can support a diverse student body by planning dedicated spaces in school for discussions about culture and identity and the need for club and extracurricular outlets to support the diversity of the student body.

Investing in these identity spaces like the Student Center at East Carolina University from Perkins and Will can help promote visibility on campus as this university center focused on fostering belonging and a healthy community. The precedent study of the Benjamin Banneker Academic High School by Perkins Eastman also planned support spaces for studying, socialization throughout the school.

- ii. The second question I asked was, **“Would you like to have dedicated spaces in a school environment for discussions about culture and identity?”**

The consensus from this question was that everyone believes it’s valuable to hold dedicated spaces to talk about culture and inclusion. My third and fifth interview mentioned they felt like today, they felt like their culture and history is easily disregarded, and having these spaces allow people to

connect with others with a shared mindset and openness. From my second interview, they stressed it's important to have these physical spaces because social media is not enough to fulfill themselves.

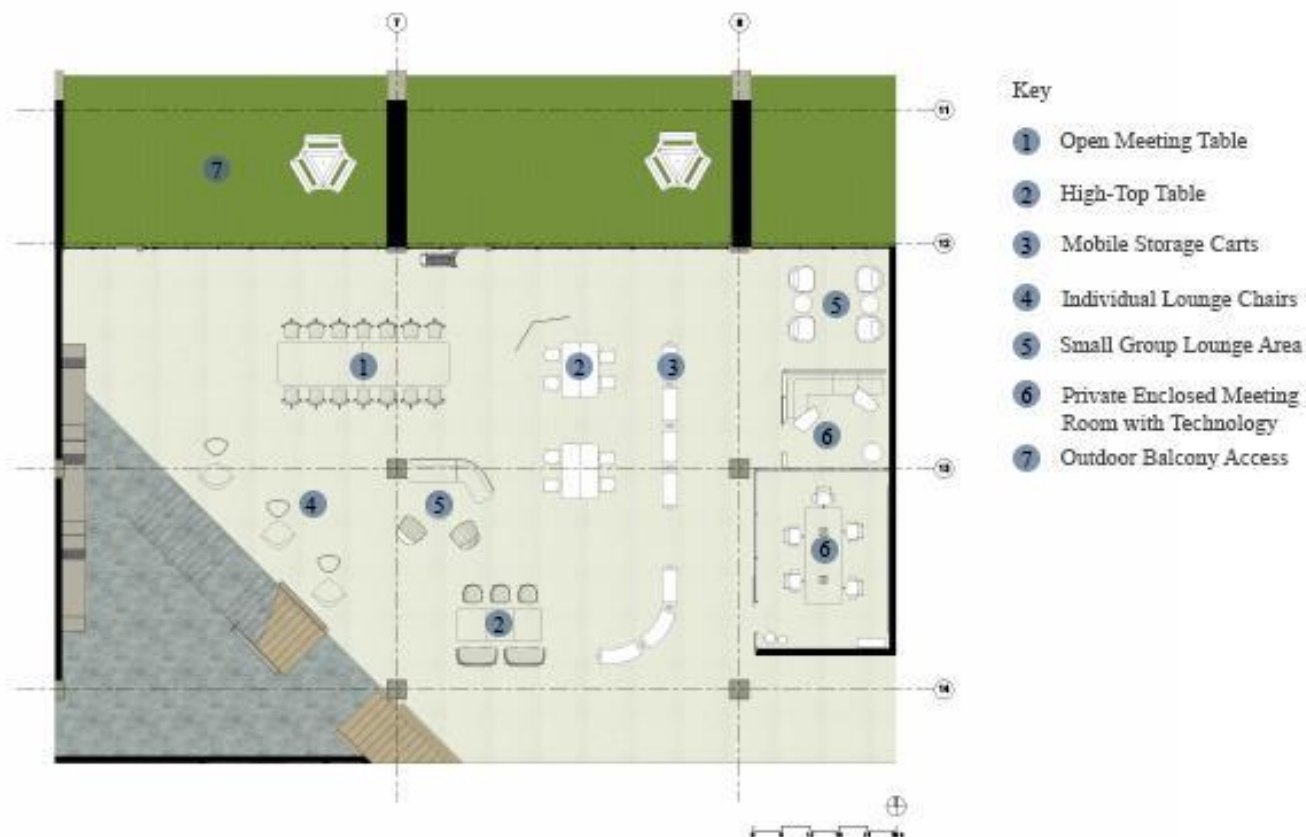


Image 1 The floor plan above showcases a student center designed for meaningful conversations around culture and identity. A mix of meeting and lounge seating ranging from individual spots to group setups for up to 14 people, supports quiet reflection and large shared conversations. The balance between open and closed seating areas creates a variety of visible and private spaces depending on what is most appropriate for the moment.

- iii. My last question under this topic was, **“What types of displays in a school would make you feel that your culture is represented and included?”**

This question had a different preference in answers. For example, from my first interview they said they preferred displays that weren't obvious and felt like a literal stand out thing. They were looking for more conceptual

and integrated displays. However, from my third interview, they felt represented by literal interpretations for example, flags and the culture behind their symbolism. My fifth interview brought up a different answer of displays that related to women's health for example, period products. Overall, from my five interviews, the displays should highlight identity and support of different cultures.

b. Gender Inclusivity

- i. The first question I asked the participants was, **“Do you think high school students would feel more comfortable and safe with the inclusion of gender-neutral restrooms or changing areas?”**

A majority of the responses believe that high school students would feel more comfortable and safe with the inclusion of gender-neutral restrooms or changing areas. The fourth interview also believed this could contribute to feelings of comfort and safety however, was also worried about conflict between other students, and possibly their guardians. Something that I found interesting from this question was this is not only about gender identity and transitional phases, but this can be beneficial for anyone because high schoolers are at a sensitive age and having gender-neutral restrooms and changing areas can help mitigate fear and stress throughout the day for anyone. From my third and fifth interview they also looked at having this type restroom as a place for privacy and respite. Because these restrooms are more isolated than a typical row of bathroom stalls, they feel it could also be beneficial for students to take a moment for themselves and recharge. Some students were connecting with trauma informed

design to improve their well-being during the school day and suggested having more places of privacy and respite through the school for healing and taking a moment for themselves. Planning in gender neutral restrooms can also be tied into trauma informed design as students agreed the space can create a sense of safety and mitigate potential triggers through the school day.

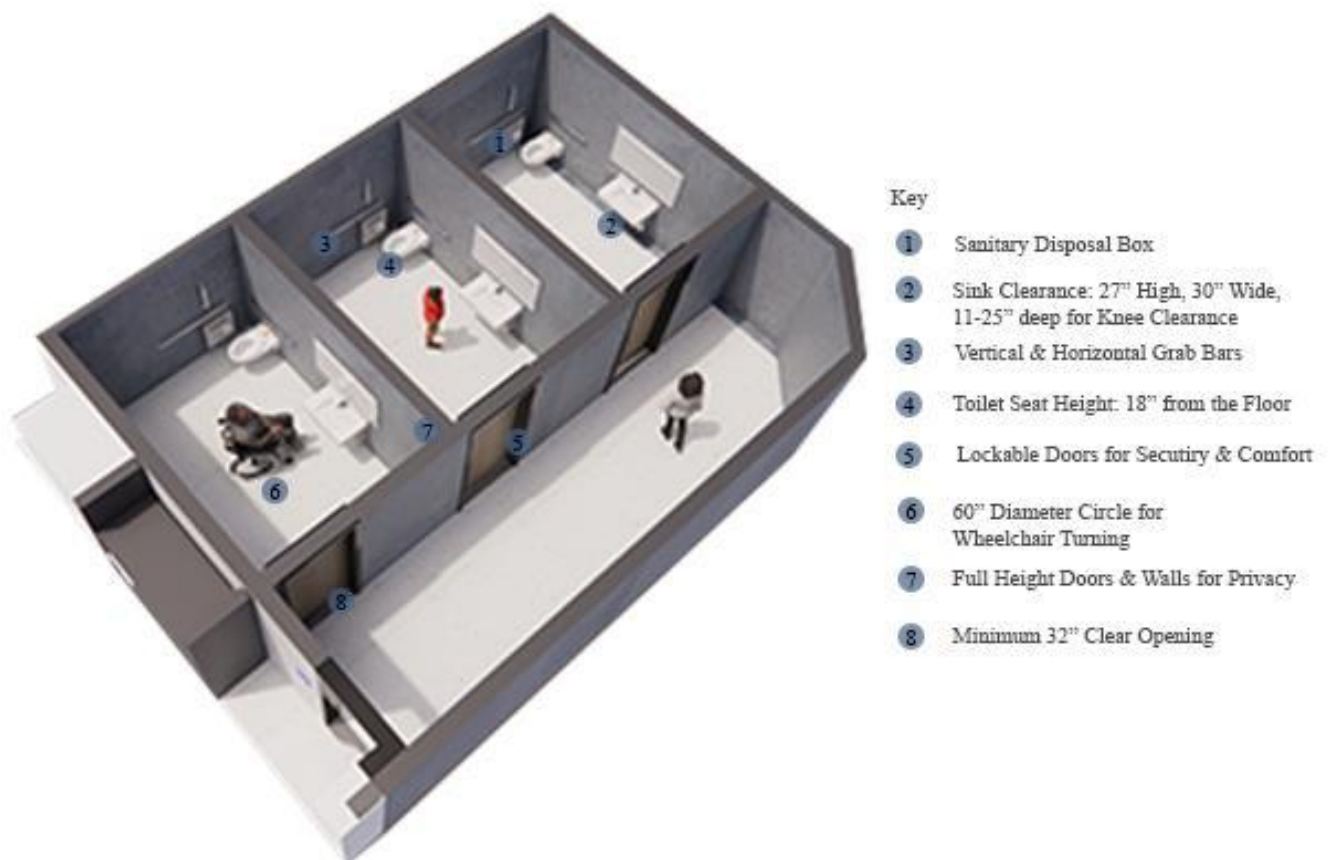


Image 2 The axonometric above complies with the ADA and gender-neutral design codes and guidelines, ensuring accessibility for individuals with physical disabilities and addressing privacy needs within a school.

- ii. The second question under this topic asked, **“Do you think that design features in the school environment can help foster a sense of inclusion or, conversely, contribute to feelings of alienation for individuals of different gender identities?”**

I had a lot of varying views on this question. The first interview answered this question as, what could be beneficial for one culture/identity, may not align with the other. The second person said having support spaces like a transgender restroom can help foster inclusivity however, labeling it as a transgender restroom can contribute to feelings of alienation. The third interview found that design features that align with societal norms for example the color blue for boys and the color pink for girls, implemented in schools is stressful and can cause feelings of alienation. The fourth interview was comparing the words inclusive to invading and how design features in a school fall into either of those categories. And the last interview said how design features are capable of inclusion, and they often find that in artwork and other forms of self expression across the school.

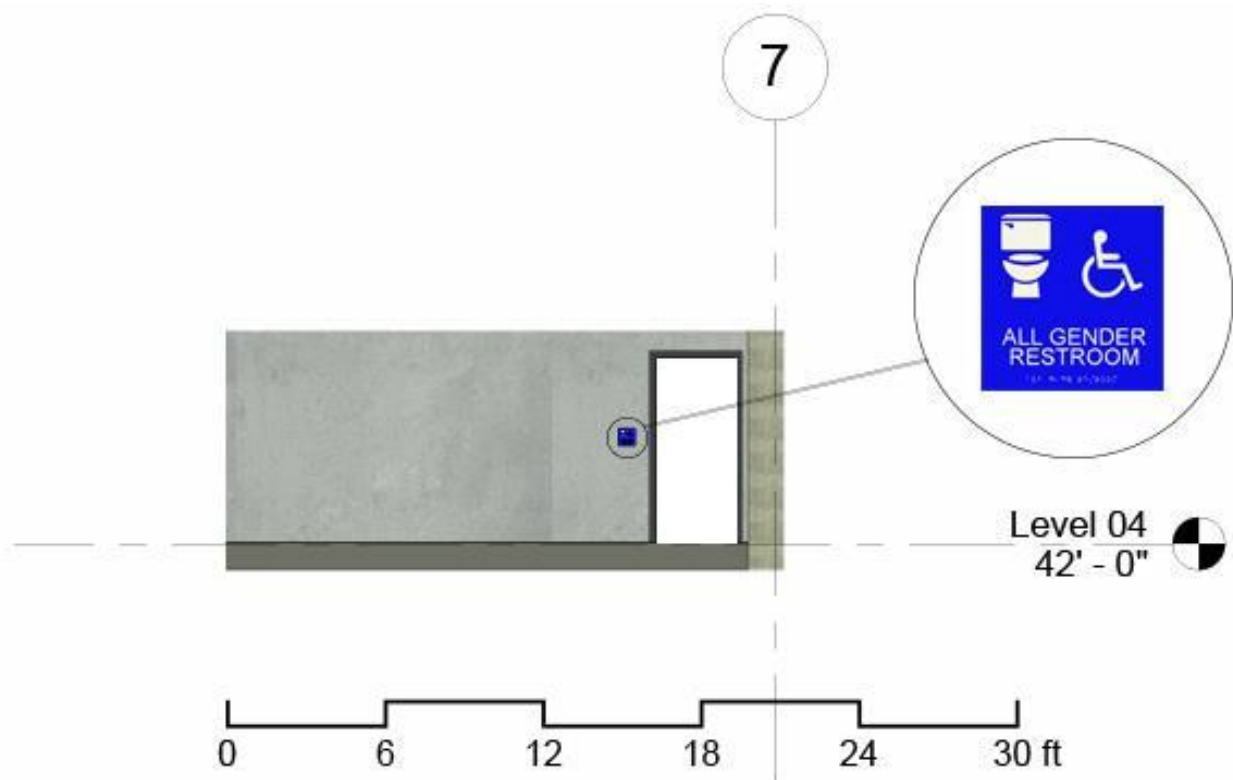


Image 3 The elevation of the outside of a restroom highlights inclusive signage that welcomes all users, avoiding

labels tied to a specific group. In addition, the entrance/exit has no door, allowing clear visibility into the corridor to reduce confusion and emphasize the space is open and accessible to all.

c. Design of the Learning Environment

- i. The first question I asked was, **“Do you believe that incorporating elements such as thoughtful space planning, appropriate lighting, and equitable access to technology and resources in classroom design can enhance students' ability to learn and engage?”**

From the second, fourth, and fifth interview, they all mentioned the importance of lighting and natural light in the learning environment. Fluorescent lighting can be harsh to work in, a lot of students prefer classrooms with windows where it also allows ventilation. The second interview also mentioned furniture that can easily adjust and roll. It gives a better sense of control to help learn and engage. From the third interview they also mentioned good space planning, lighting, and technology also makes learning and engaging more enjoyable for both students and teachers. It's hard to sit in a chair for eight hours a day and different options to learn help students engage more throughout the day. The fifth interview also mentioned technology incorporated into the classroom designs also make students experience better because again you can control and personalize it. From the literature review, I researched the Smithfield Elementary School as an example of their FF&E selection and how that accommodated their students of all ages and abilities. A number of students mentioned the importance of having control over the fixtures and environment, personalizing it to their needs and abilities. They preferred having ergonomic and flexible furniture, adaptable lighting, and

innovative technology planned into the learning environment to better support their ability to learn and engage.



Image 4 The axonometric above illustrates thoughtful space planning, adaptable lighting, and integrated technology to enhance student learning and engagement in the design. Ergonomic height-adjustable desks support sitting and standing work, and can easily be rearranged for group activities. Adaptable lighting like the Lutron RA2 Select, can adjust based on the time of day and classroom activity. A curtain wall opens to an outdoor balcony maximizing natural light in the classroom and offers a support learning environment to the classroom. A mobile interactive screen for both structure and student use also serves as an efficient and accommodating tool to all users in the design.

- ii. The next question in this topic asked, **“Do you think that, given students' diverse learning styles, they would benefit from school spaces designed for both quiet, individual work and social, collaborative activities?”**

From all five responses, each person believes it would benefit students to have both quiet/individual and social/collaborative activity spaces. The first interview mentioned how there are introverted learners and extroverted learners, where each has their own needs in order to learn and it's important to accommodate for both instead of just putting everyone in a generic traditional classroom. The second interview also mentioned how having these spaces makes school feel more inviting and comfortable to students to spend their day in. And in the end, it benefits all students and allows everyone to be involved in some area throughout the day. From the analysis of findings from the interviews, all of the participants agreed that having spaces for both quiet individual work, and social collaborative activities to benefit the student's diverse learning styles. Like how this high school used their learning commons to support a high achieving environment for all. Offering these different spaces allows for multiple paths of achievement for diversity within the school. Like how we learned from the interviews that there's introverted and extroverted learners, and there's different needs that comes with the type of learner to better their learning and engaging throughout the school day.

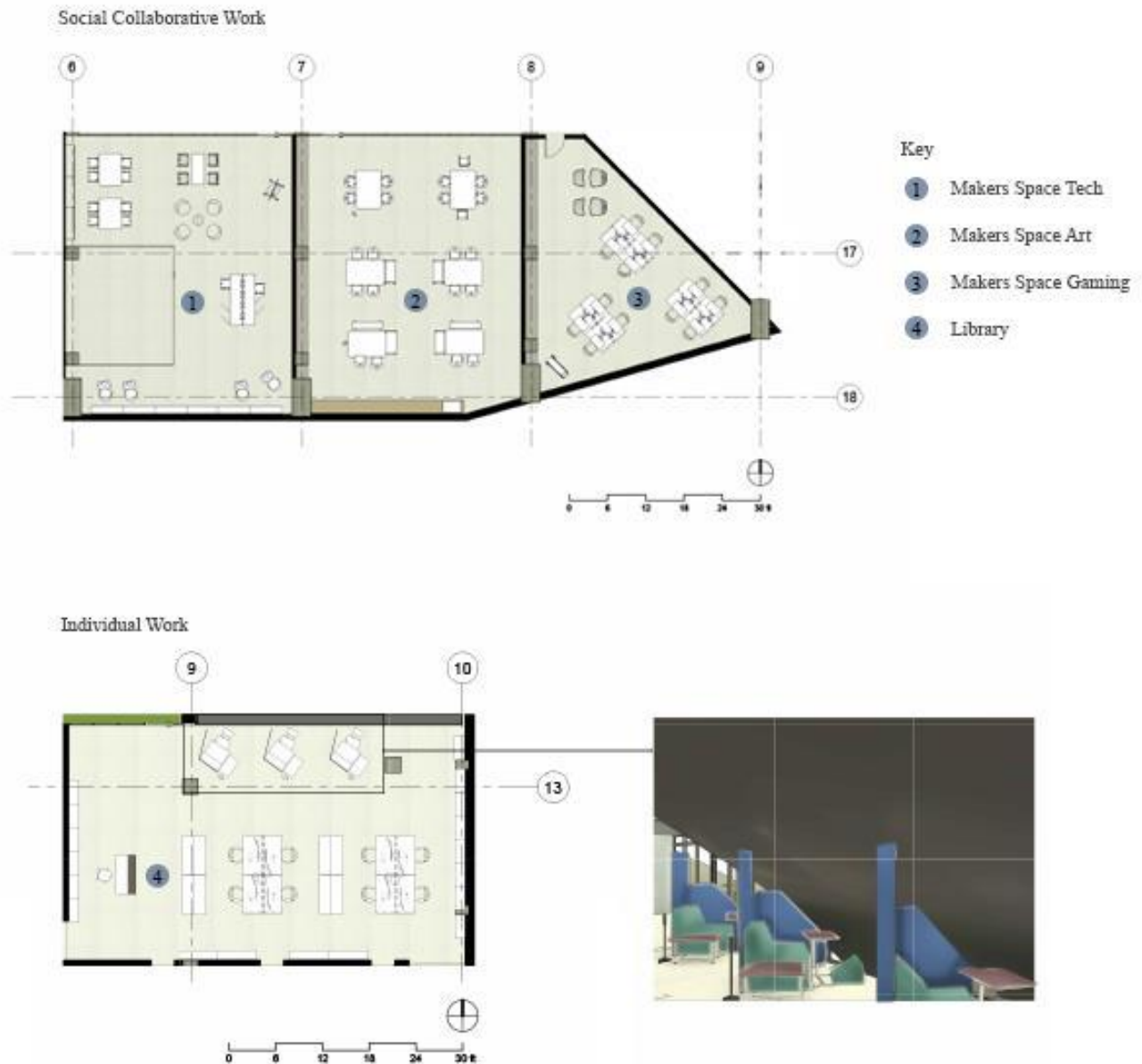


Image 5 The two floor plans above display a contrast of spaces designed for collaborative and individual work. The top floor plan features a makers space with dedicated zones for tech, art, and gaming, each designed for social interaction through group seating and shared activities. The curtain wall north of the rooms allows people to see in and watch the social activities. Compared to the lower floorplan where the library is designed for quiet and individual work. The callout of seatings in the floor plan shows individual seats with laptop desks and privacy screens that also contribute to acoustic control.

d. Feelings about Belonging and Quality of Educational Experience

- i. The first question I asked participants was, **“Do you prefer certain design elements in school that make you feel more included in the**

school community? Have you noticed any design features that might make students feel excluded?”

The first and second interview feel that the more open a school feels, the more included they feel in the school community. The second interview also mentioned how design elements in school for example, color and lighting choices can make them feel more hyperaware which can contribute to a feeling of exclusion. The third interview was talking about the accessibility in a school and how if the structure and fixtures aren't accommodating, it can create feelings of exclusion for students. The fifth interview also felt really connected to color, graphics, and personalization can contribute to feelings of inclusion to the school community. And touched on if a classroom feels generic, it doesn't make the space feel special and that can create a feeling of exclusion.

- ii. The next question asked, **“Are there specific aspects of a school's physical environment that can affect your mental and emotional well-being?”**

The first interview talked about how small, long, and straight edged hallways, lack of natural light and no outlets to the outside can take a toll on their mental and emotional well-being. The second interview said furniture that isn't accommodating can bring out feelings of frustration and more advanced technology implemented in school can support their well-being. The third interview said if the school doesn't feel communal it can take a toll on their mental health. The fourth and fifth interview both

mentioned that the lighting in a school can make it feel very stressful. Having no privacy within the school and small hallways can also be stressful throughout the day on their mental and emotional well-being. A number of students from the findings were connecting their well-being to biophilic principles being planned into the interior of schools. For example, the number of windows or natural light in the classrooms and having a physical connection to the outside.

- iii. The last question asked was, **“Do you believe that the design of the school environment influences the quality of education you receive?”**

A handful of the responses were connecting a third piece to this question which was the relationship and quality of the teacher related to the design of the school environment and quality of education. From the fifth interview, they said if the design of the school environment doesn't reflect any character or personality and it's very plain, it makes you less interested in the subject of their learning. The first interview tied all three components relating to the quality of education as a sort of cycle or chain. If the design of the school environment is not well designed or well equipped, then it makes it more difficult for the teacher to teach in the environment, then making it also hard for the students to receive and process information. From the second interview they used harsh lighting as an example, as it could be disorienting, and you don't necessarily know the time of day. It can make it hard to focus and adjust to different times of the day during class and learning.

e. Imagining the Future Environment of High Schools

- i. The first question asked the participants, **“In your ideal school environment, what features or improvements would enhance the experience for all students?”**

The students from the fourth and fifth interview suggested prioritizing accessibility both physical and mental to enhance the experience for all students. Accommodation already planned into the environment for students makes the school day less stressful and overall easier. The first interview referred to Maslow's hierarchy of needs chart to help plan a school environment to enhance the experience for all students. This includes needs of self-actualization, esteem, love and belonging, safety needs, physiological needs. They also brought up that a big component of school is making friends and socializing. So features that prioritize socialization. The second interview brought up the importance of visibility within the school. Being able to be seen by others would benefit the student's experience. From my fourth interview, they brought up the importance of self-expression and being able to grow in the school environment. They also said features and improvements and providing an environment that cares. From the literature review, the current codes, theories, and principles outlined for interior design can be used to also help promote DEI in the plans of the school. A handful of students suggested making schools more accessible to improve the educational experience which refers back to ADA and how these mandatory codes

advocate the need for the interior to accommodate for users of all abilities mental and physical.

- ii. The ending question of the interview asked, **“Have you seen other school environments (e.g., on trips, in media) that you feel are better designed for inclusivity and belonging? What stood out about them?”**

Some of the buzz words the participants used to describe other school environments they felt were better designed for inclusivity and belonging was innovative, engaging, fun, abundance, expression, modern, appreciation.

VI. Conclusion

There is inequality within the students’ educational experience in the American educational system that depends on the identity of the student. From *Penn Foster*, “While access to public schools has made a basic education available to all students, there is still a distinct – and growing – inequality in education that can impact a person’s economic future.” Different factors like the student’s race/ethnicity, income, neurodiversity, and disabilities all impact the outcome of their experience. There is a lack of resources, support, and built environment designed for diversity within schools, and this creates educational disparities for students at any level of education they’re pursuing.

Each student may need special learning environments and methods to support them in school. Learning to understand the diversity and background of students within a school is crucial to their feelings of belonging. Learning the different demographics of the student population can help us better prepare and design a thoughtful learning environment for them.

The research explored qualitative data from volunteer students who shared their design preferences from my proposed research question. The outcomes of my research revealed a general understanding of campus belonging and well-being from the interviews conducted. This research promotes the beneficial outcomes of designing DEI initiatives into the built environment of schools and how DEI would improve student's sense of belonging. This study also brought out some of the emotional challenges during time spent in secondary school because of design factors. From the diversity within the volunteer participants, they each provided insight into their sense of belonging for themselves and thoughts about the general students on campus.

The role of DEI initiatives in the educational setting is a relevant topic and rapidly changing for American students in all phases of their education. Based on previous research and the research I conducted; I believe that DEI is a necessity in campus belonging and well-being and that it could be pushed even further into the language and process of interior architecture and design. The learning environment of any student should support them to their fullest making the school day feel easy, forgiving, and free. Without a proper learning environment that accommodates a diverse student population, it will start to create differences in students' educational experiences and continue the education disparities that exist in schools. Further, taking an emotional and academic toll in students' lives.

From my research, I've started to uncover how the framework of DEI can be analyzed through different stages of the design phase. This further opens investigation of the conversations of the relationship of DEI in the built environment and the students' sense of belonging on campus, and how that impacts their educational experience. This information could suggest the needs and wants from students to help improve the interior

architecture and design of learning environments. Whether it's creating new spaces or ideating existing interiors on campus.

The research implications could change the design of future school interiors for the overall betterment of students. This research suggests a needed innovation in the interior architecture and design of schools and a more permanent guideline for how to achieve a successful space that embodies DEI. On a larger scale, it is important to entertain all opportunities in designing the built environment for improving human performance that could positively impact the current consequences and outcomes.

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