

TEACHERS' INSTRUCTIONAL DECISIONS AND STUDENT AGENCY IN NEW PURPOSEFULLY DESIGNED LEARNING SPACES





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Dear Reader,

The manuscript that follows, *Teachers' Instructional Decisions and Student Agency in New Purposefully Designed Learning Spaces*, is the second scholarly study from the broader research conducted at a high school of choice in Houston Independent School District in Houston, Texas in partnership with The University of Texas at Tyler. The authors designed this study to further understand how student agency and active student engagement might have an impact on learning in purposefully designed spaces. Below you'll find an abstract of our current manuscript. With enthusiasm, VLK Architects is again influenced by the voices of students as they perceive the learning environment, and the way instruction is designed by their teachers.

Abstract

Learning that promotes student agency and active, cognitive student engagement has a positive impact on students' self-efficacy, learning, and achievement. When designing lessons that foster student agency and active engagement, educators must consider multiple variables, including the space where learning will take place. In order to understand how students perceive the impact of spaces in learning and how designed areas are being used by teachers, a qualitative study was conducted at a newly designed energy industry-focused high school. This manuscript presents the students' perspectives related to student agency, the value of learning, students' role in their learning, and how cognitively challenging lessons influence their engagement in learning. The authors argue that the teachers' instructional decisions and their use of purposefully designed spaces have an impact on students' engagement and their ownership of learning.

Sincerely,

VLK Architects, Inc.

A handwritten signature in black ink that reads "Dalane E. Bouillion". The signature is written in a cursive, flowing style.

Dalane E. Bouillion, Ed.D.
Principal of Educational Planning

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Teachers' Instructional Decisions and Student Agency in New Purposefully Designed Learning Spaces

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The ultimate goal of an education system is to prepare students to be successful, contributing citizens. In order to do so, educators must facilitate the acquisition of the knowledge and skills students need to be successful in whatever path they choose in life, while developing the students' self-efficacy. To engage students in learning that efficiently prepares them for life, teachers have the responsibility to design opportunities where students are cognitively, actively engaged. By continuously and successfully engaging students in learning, teachers facilitate the development of self-efficacy: having the confidence and motivation to plan, regulate their behaviors, and reflect on their skills and learning (Bandura, 1990, 2018). Immersing students in activities where they take an active role in their own learning has been shown to increase their sense of efficacy, as well as learning and achievement. Hence, it is critical to the development of their self-efficacy, soft skills, and their future success that teachers allow for student agency – giving students voice and choice in how they learn – and allow for learning to be driven by their curiosity and interests (Williams, 2017). Educators must embrace the idea that students' self-efficacy – their beliefs about their capacity – is central to student agency (Bandura, 1990).

When designing lessons, educators must consider multiple variables, including the space where learning will take place. Educators working in purposefully designed, flexible spaces must

understand the implications space has on their instructional decisions and student interactions (Charteris & Smardon, 2019). With the understanding that space impacts teaching and learning, the architects who designed the school where this study was conducted diligently worked with educators to purposefully design learning spaces to promote student-driven learning. The educational design architects espouse the idea that learning that promotes student agency and active, cognitive student engagement has a positive impact on students' self-efficacy, learning, and achievement.

To understand how the designed spaces are being used by teachers, a qualitative study was conducted at a newly designed career-inspired high school. The findings reported in this manuscript are part of a larger study focused on the impact purposefully designed spaces have on student engagement in learning. In the first manuscript written based on the findings of this study, it was reported that “the students recognized the instructional importance and the impact of their new spaces” (Oliveras-Ortiz, Bouillion, & Asbury, 2019, p. 19). Students expressed the importance of (1) the ease of use and easy access to resources and spaces, (2) learning preferences, and (3) spaces for collaboration (Oliveras-Ortiz, Bouillion, & Asbury, 2019). In order to delve deeper into the findings of this study, the researchers purposefully decided to analyze student quotes and themes related to the use of spaces separately from students' opinions about the teachers' instructional decisions in the new purposefully designed spaces, and how those decisions impacted them and their learning. The themes discussed in this manuscript explore issues related to student agency, the students' perceptions of the value of learning, their role in learning, and how cognitively challenging lessons influence their engagement in learning.

Student Agency: Not Just Student Voice and Choice

Allowing students to choose the process used during learning or the product they generate at the end of a unit only scratches the surface of the design of learning that promotes effective student agency. Student agency requires students not only to have choice and voice in their learning, it requires teachers to design lessons closely aligned to expected academic standards and to set parameters while creating a learning environment where students feel comfortable to take risks and drive their own learning (Williams, 2017). Student agency is not something educators can promote once a week or in one particular lesson. “Enabling student agency requires that it pervade every aspect of each student’s experience” (Williams, 2017, p. 12). Students who are enabled to exercise agency develop self-efficacy by making plans to achieve a goal, self-regulating, and reflecting on their skills (Bandura, 1990). When students are required and able to set their own goals and expectations for learning, they are given the opportunity to exercise agency by forethought, one of the three critical elements of agency (Bandura, 1986). Once students develop goal-setting skills, they must learn to self-regulate their behaviors and actions to achieve their goals. Bandura (2018) expanded and refined the concept of self-regulation by putting forward the idea that a person’s moral standards influence self-regulation and resulting actions. The third element of agency is one’s reflection about self-efficacy. Bandura (1997) explained that a person’s beliefs about one’s ability to accomplish a goal impact the person’s aspiration, motivation, and ultimately the person’s accomplishments. While other factors impact a person’s goals and expectations, the person’s belief in the capacity to achieve those goals significantly impact the person’s actions (Bandura, 2018).

Charteris & Smardon (2019) argue that in newly designed learning spaces, agency is developed through specialized instructional practices. These specialized practices are influenced

by the spaces where teaching and learning take place. They argue that teachers can enable authentic student-driven learning by allowing for flexible use of learning spaces (Charteris & Smardon, 2019). Furthermore, “students can exert an authentic influence on the taught and learned curriculum in the flexibility of these spaces” (Charteris & Smardon, 2019, p. 2). When enabled to exercise agency in purposefully designed learning spaces, students are able to be creative in the ways they use the spaces to support their learning and their classmates’ learning (Charteris & Smardon, 2019).

Utility Value

Dewey (1954) described the role of ideas as they contribute to “human interest and purpose” (p. 7). As individuals, “ideas belong to human beings who have bodies, and there is no separation between the structures and processes of the part of the body that entertains the ideas and the part that performs acts” (Dewey, 1954, p. 8). He also warns that “the young shall themselves learn to judge, purpose and choose from the standpoint of associated behavior and its consequences” (Dewey, 1954, p. 24-25). Consequently, relevance is critical since it can boost interest and positively impact behavior (Hulleman, 2007). Similarly, utility value is linked to outcomes that are characterized by intrinsically motivated behavior (Hulleman, 2007). In his study, the researcher emphasized the importance of utility value which validates the relationships between performance and interest (Hulleman, 2007).

Wilson and Sperber (2004) discuss the meaning of relevance as “a potential property not only of utterances and other observable phenomena, but of thoughts, memories and conclusions of inferences” (p. 250). Theoretically, “any external stimulus or internal representation which provides an input to cognitive processes may be relevant to an individual at some time” (Wilson & Sperber, 2004, p. 250). Hence, educators and researchers interested in adolescent learning and

development ought to focus on the contexts in which the students learn and develop (Anderman & Midgley, 1997). As students transition to higher grade levels and begin to doubt their academic efficacy and competence, particular attention should be paid to the changing contexts as the students are also developing and changing (Anderman & Midgley, 1997).

Moreover, given that high school students have demonstrated an awareness of how utility value elicit their interest as they experienced their coursework (Anderman & Midgley, 1997), it is critical to understand their intrinsic motivation. Intrinsic motivation may be best understood by listening to learners to identify the conditions in which they are compelled to engage in learning (Bishop & Pflaum, 2005). Bishop and Pflaum (2005) posit that students tend to be more invested in their learning when the learning is grounded in meaningful pondering and is relevant to life outside the classroom. Their study conclusions indicate that allowing students to have choice while collaborating and using technology throughout learning in meaningful relevant ways boost student engagement (Bishop & Pflaum, 2005). Furthermore, Pintrich and De Groot (1990) found that students' efficacy about classroom tasks is closely tied to self-regulated learning, which is tied to students' interest and their beliefs about the worth of learning.

Covington (2000) reviews various theories contributing to the intersection of motivation and achievement to remind us that archaic instructional approaches no longer support children, who psychological research has shown to be active, resourceful, and willful human beings. The best learning experiences occur when students have a clear understanding of the value of the tasks and have the opportunity to be cognitively engaged (Floyd, Harrington, & Santiago, 2009). When students have the opportunity to be sufficiently engaged in learning and understanding the value of the content, they experience meaningful involvement in learning (Floyd, Harrington, & Santiago, 2009). More importantly, the use of deep learning strategies is more likely to increase

when students are engaged in learning content they perceive as valuable (Floyd, Harrington, and Santiago, 2009).

Challenge-Seeking Behaviors

The purpose of public education is to enable people to develop the competencies needed to be productive citizens in a democracy (Kuhn, 1999). Additionally, the qualifying measure for democracy is education, requiring critical thinking (Dewey, 1954). Kuhn (1999) posits three further classifications of metacognition as they relate to critical thinking: “metastrategic, metacognitive, and epistemological” (p. 18). In all categories, the stratification further defines the stage and the levels to which human beings become aware of themselves as they acquire understanding (Kuhn, 1999).

Metastrategic knowing differs from metacognitive knowing via the “widely employed dichotomy in cognitive psychology (as well as in philosophy) between procedural knowing (knowing how) and declarative knowing (knowing that)” (Kuhn, 1999, p.18). Metacognitive knowing is vital for critical thinking (Kuhn, 1999). Through metacognitive thinking, people including children, are cognitively aware that thinking is an activity in which humans engage (Kuhn, 1999). Metastrategic knowing is the deliberate selection of available strategies from an individual’s repertoire of available strategies (Kuhn, 1999). Finally, the epistemological meta-knowing classification provides the person the critical role of constructing knowledge (Kuhn, 1999). This level of knowing is grounded in the belief of the humans are capable of constructing knowledge and generating multiple valid portraits of reality (Kuhn, 1999).

Critical thinking skills embedded within academic content makes identifying them more challenging (Kuhn, 1999). Furthermore, it is important to recognize that metacognition and critical thinking are not effortless habits one maintains. Students do not think critically and

reflectively out of habit, but rather they engage because they believe there is value in engaging that level of thinking (Kuhn, 1999). Hence, it is imperative for the development of students that they have ownership of their learning in a way that promotes control of the creation of knowledge through metacognitive and metastrategic knowing (Kuhn, 1999). Higher order thinking – a compilation of critical and creative thinking, problem solving and decision making (Lewis & Smith, 1993) – takes place when a person takes prior and new knowledge and connects, extends and/or reorganizes the information to find solutions to a puzzling situation (Lewis & Smith, 1993). Teachers have the responsibility to provide students with the opportunities to develop the skills needed to engage in metacognition and critical thinking.

Furthermore, teachers must continuously work with students to develop a growth mindset. People who believe abilities and skills are acquired will seek challenges when they are required to think critically and have the opportunity to expand their capacity and knowledge (Bandura, 1990). A large body of literature provides evidence to support the idea that seeking challenging goals increases and sustains motivation (Locke & Latham, 1990). A person's self-efficacy and beliefs about one's ability to solve problems and think critically contribute to motivation in multiple ways, including the person's willingness to seek and undertake challenges, and one's perseverance in an attempt to master the challenges (Bandura, 1990). Students who have a strong sense of efficacy will seek new challenges as they are motivated to think critically and further their accomplishments (Bandura, 1990).

Methodology

The investigators designed a phenomenological qualitative study examining the impact purposefully designed learning spaces have on high school students' engagement in learning using a constructivist approach. As pragmatists, the researchers trust their research and findings

are impacted by the environment in which the study was conducted (Creswell, 2014). Consequently, the researchers utilized semi-structured interviews to guarantee flexibility with the focus groups (Creswell, 2014) to investigate student perceptions of the impact new learning spaces have on their engagement in learning. Due to the nature of the phenomenological study, the researchers supplied students the prospect of reflection in order to explain their practices and experiences in the new learning areas, and how the spaces influence their learning and engagement. Additionally, the researchers collected the data using focus groups to encourage contributing high school students to reflect and expand on comments made by other students (Carter et al., 2014). Utilizing focus group interviews, the students were able to relate with others who have experienced the same phenomenon, and communicate their personal reflections of similar or dissimilar experiences within the same learning spaces. The communication between the students involved in the dialogue about their encounters in both the old and the new learning spaces were vital to the achievement of the research (Carter et al., 2014). “Phenomenological research culminates in the essence of the experiences for several individuals who have all experienced the phenomenon” (Creswell, 2014, p. 14). In this study, which is a component of a larger study, the student interviews produced insight of high school students’ assessments of their learning experiences and engagement while attending school in purposefully designed learning spaces.

The phenomenological study was conducted at an energy industry-focused high school in Texas, at one of the largest urban public school districts in the United States. The students involved in the study all selected this high school due to its energy industry focus. The school, learning areas, and curricula were created to help prepare and support high school students for an energy-related career via learning exploration utilizing a Project-Based Learning model. All

participants were experiencing their first year in a newly designed campus. Prior, they all attended the same high school program, which was housed in multiple repurposed buildings. The researchers conducted two rounds of semi-structured interviews, the first during the spring of 2017, while students were attending high school in a repurposed elementary school building, where the academic program had been located since 2013. Eleven students (freshmen through juniors) participated in the focus group interviews. All communicated their intent to adhere to continual enrollment in the program through graduation. The researchers conducted the second round of focus group interviews in the fall of 2018 and spring of 2019, during the first school year at the new building. Two groups of sophomores, juniors, and seniors were interviewed utilizing a semi-structured open-ended protocol. Twenty-two students participated in the focus group interviews; all were both enrolled and attended the school while it was housed in the old building, as well as in the newly designed building.

To ensure purposeful sampling, school administration recommended students for both pre- and post- focus group interviews. The school administration safeguarded all student participants had attended both facilities, and could distinguish their experiences in both old and new buildings. Moreover, school administrators ensured all participants gained parent authorization, and a signed consent form to participate in the interviews. Due to the researchers' belief in student voice, and because student participants ranged in age from 15 to 18, once parent authorization was secured, the researchers also required that each student verbally agree to be part of the research study prior to the interviews. In order to facilitate data source triangulation, focus group interviews were chosen as the data collection method (Carter et al., 2014). Three separate focus groups were facilitated to guarantee reliability and data source triangulation.

Furthermore, to safeguard investigator triangulation, each researcher coded the data independently, then met to debrief and evaluate the identified themes.

Data Analysis

All focus group interviews were audio-recorded, then transcribed. First, using NVivo 11, the transcripts were both analyzed and organized, then all data were hand coded. Three appropriate coding methods were employed to analyze the students' interview data: open, axial, and selective coding (Creswell, 2014). Open coding allowed the researchers to identify broad classifications of data (Creswell, 2014). Subsequent to open coding, axial coding yielded the detection of themes within the conceptual framework of the study. Finally, selective coding allowed the researchers to clarify the relationship and interconnectedness of the themes (Creswell, 2014). The focus group interviews conducted prior to and after the relocation of the high school were evaluated and coded by each researcher independently. The researchers' independent data analyses were then compared to discern both similarities and discrepancies in the identified interview themes conducted prior to the relocation (pre-move focus groups) and those conducted after relocation to the new campus (post-move focus groups). The primary investigator kept notes after each coding round and facilitated debriefing meetings with the two other researchers.

Utilizing open coding of the pre-move focus group data, two categories were discovered. Within the two categories, 14 themes became apparent. By employing axial coding, the 14 themes were reduced to four interconnected themes. A separate round of open coding, post-move focus groups data were coded; this analysis yielded four general categories. The student participants' quotes within each category were categorized and analyzed to safeguard accuracy of the first round of open coding. The authors hand-coded the identified data after open coding.

Once the four categories were established, the researchers organized the data into two broad themes: learning spaces and commitment to learning. Using a round of axial coding, the researchers coded the data to detect all the themes connected to learning spaces, pedagogy, and learning in general within the selected quotes. Thirty themes emerged. Next, a round of selective coding was employed to distinguish relationships amongst the identified themes. Five sets of interrelated themes emerged. Nevertheless, only three are represented in this manuscript, as those were the three themes directly associated with learning areas.

Findings

The findings reported in this manuscript represent the second set of themes identified in a larger project designed to give students the opportunity to voice their perspectives about the impact the design of schools has on the students' engagement in learning. The first manuscript focused on "the impact purposefully designed learning spaces have on their engagement in learning" (Oliveras-Ortiz, Bouillion, Asbury, 2019, p. 1). This second manuscript focuses on themes related to the students' perceptions of the impact the teachers' use of space and instructional decisions have on student learning, and how student agency is promoted and facilitated through the use of purposefully designed learning spaces. The research team aimed to expand the pragmatic understanding of the impact purposefully designed spaces have on teachers' instructional decisions, on student engagement, and how students perceive their learning experiences in these spaces.

While attending high school at an old, repurposed elementary building where the district housed the energy-focused magnet program, 11 high school students were interviewed. When asked about their learning experiences in the old building, students indicated that they did not anticipate new learning spaces having an impact on their learning (Oliveras-Ortiz, Bouillion,

Asbury, 2019). A student said, “It’s more about the teachers; the building doesn’t matter that much” (Oliveras-Ortiz, Bouillion, Asbury, 2019, p. 9). Another student indicated that, “The space doesn’t put any limitations” [on us] (Oliveras-Ortiz, Bouillion, Asbury, 2019, p. 9).

Furthermore, referring to the built environment, a student stated, “I don’t really think it changes the way I learn or how hard I work.” However, once the students moved to the new campus, their perceptions and the experiences shared during the focus groups indicated that the new spaces did impact their learning (Oliveras-Ortiz, Bouillion, Asbury, 2019). In addition to the themes identified and reported in the first manuscript about this project directly related to learning spaces and student engagement – the ease of use and access, learning preferences, and space for collaboration (Oliveras-Ortiz, Bouillion, Asbury, 2019) – three separate salient themes were identified. The themes in this manuscript are reported separately given that these are themes related to instructional decisions and the teachers’ use of the learning spaces, and how these two factors impact student agency. The three themes identified are: student agency, meaning student-driven opportunities to share the learning responsibilities; the importance of the perceived value and relevance of the learning experiences; and the students’ challenge-seeking behaviors. Table 1 provides each theme with related student quotes.

Table 1. Post-Move Focus Groups

Themes	Student Quotes
Student Agency: Student-Driven, Shared Responsibility	<p>Despite all of the engagement that we get in classes, I wish that there more opportunities to do projects that we generate ourselves.</p> <p>The extra space that we get from having flipping walls helps out a lot because generally the way we organize is, we have a bunch of sub teams...working on different prototypes or whatever. Having all of the space of two giant classrooms...makes it so much easier for the sub</p>

	<p>teams to collaborate with each other and to go find someone that can help you.</p> <p>My friends know I tend to procrastinate a lot, but I find people counting on me, I feel like it helps, and I don't know what it is about it. It's a conundrum. It's almost like I'm more okay with myself when it comes to not letting people fail, and I know that sounds bad but then again, it's true. I don't want other people to fail because of me because I'm working with these other people. I want to strive for something better than what I can do and do well.</p>
Utility Value	<p>Right now, we are reading Lord of the Flies, so like World War II, obviously none of us were alive then, so then after reading a long monologue... she (the teacher) will relate it to something we could understand, things we could comprehend.</p> <p>Honestly, it's pretty interesting and the teacher helps us realize it's really important because I mean, these are things that are going to affect us later on in life, and it affects the whole world.</p> <p>We are doing a lot of problem solving in environmental sciences because a lot of it is focused on like environmental things and issues. Like global warming, problems with soil not being able to grow fruit, that sort of thing.</p>
Challenge-Seeking Behaviors	<p>We are focusing on, in English rhetoric, how to be argumentative. We combined classes to do history since its American History. We look at old documents that our forefathers made, stuff like that, and we analyze it and it helps keep opposing arguments, dealing with techniques they used way back when. So, when we can combine classes like that, it makes it a little bit more interesting than just reading books.</p> <p>You have a completely different learning experience here than another school I have been to...it depends on the lesson, sometimes when we have labs that's more hands-on, so they give us like an hour to speak, and hand us a sheet of</p>

	<p>instructions. We follow those instructions. Then, we just ask for help when we need it, but most of the times it's set up in group work. We can just ask our peers if we didn't understand anything.</p> <p>I never have taken a World History class. In U.S. history we learned about stuff before the United States so it's really intriguing, it kind of changes your perspective. That's what I like.</p>
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A student expressed the interconnectedness of the three themes by explaining:

The environment that we have here lends itself to be very easy for clubs to combine. For example, this year, we have a final week to climb up a box not anything else but the box (and all sort of things every single year). Whatever we have at the end... [it is usually] some kind of assembly. With any environment where we have all the tools at hand, we can easily bring up anything at any moment and finish anything, given the time. It has really lent itself, like I said, it helps us get through each part of the process.

In this quote, the student verbalized the value of having the opportunity to participate in student-driven activities that students find relevant, which allow them to share the responsibility for learning through challenging projects. The purposefully designed spaces and the teachers' decisions related to the use of these spaces provides students with the opportunity to engage in student-driven learning that is valuable, relevant, and challenging.

Implications

Three themes emerged when the researchers sought to explore students' perceptions of the impact the teachers' use of space and instructional decisions have on their learning, and how student agency is promoted and realized through the use of purposefully designed learning spaces in a replacement high school in an urban school district in Texas. Students were explicit with examples that supported the idea that the teachers' instructional decisions and their use of

purposefully designed spaces have an impact on students' engagement and their ownership of learning. They expressed thoughts about how they perceive their own learning experiences in the newly built environment. They particularly addressed the importance of learning opportunities that facilitate student agency through student-driven, shared responsibility, provide utility value, and reinforce challenge-seeking behaviors.

Student Agency

The idea that self-regulation is influenced by one's moral standards (Bandura, 2018) supports the findings that indicate students might be influenced by their sense of responsibility for others when engaging, or choosing to disengage from groupwork. Students accept individual responsibility within a team. They know when they procrastinate, they might disappoint their teammates. They understand the role of the team, and they appreciate intentional relevance in the content they explore and master. They lead, and they show comfort in moving the adaptable built environment to meet their needs. They are cognizant of the fact that they are a contributing member of a learning group, charged with an intended instructional outcome. They tackle their projects in a variety of shared spaces (Charteris & Smardon, 2019). Importantly, they desire more projects that they create themselves (Bandura, 1990). They appreciate the teachers' parameters but want to problem solve and extend their own creativity (Williams, 2017). They enjoy selecting the learning environment and the tools to demonstrate their understanding.

Teachers who have a deep understanding of instructional standards, and who can articulate the intended learning for each and every concept for which they are responsible, can best design lessons that will allow students to be the most autonomous. When guiding instruction, especially using Project-Based Learning, it is exceptionally challenging to not specify outcomes, but to ensure understanding of concepts. Teachers who allow for creativity in

both instructional response and workspace are most appreciated by students. Students enjoy the heavy responsibility for their own understanding (Bandura, 1990). The more educators can shape instruction and allow for constructivism, the more the students will thrive.

Utility Value

Students make sense of multiple content areas and internalize relevance as teachers connect curricula beyond the scope of the course to additional topics, as well as concepts and events that are perceived as affecting students' lives (Bishop & Pflaum, 2005). By utilizing areas that support multiple classes, students partner and team in order to integrate content, producing complex responses (Wilson & Sperber, 2004). Walls that allow teams to think, write, and brainstorm produce ideas that reflect collaborative efforts. Allowing students to work together and design their response to evidence learning only increased their willingness to be part of a team (Floyd, Harrington, & Santiago, 2009).

By creating both breadth and depth with instructional content, teachers are seeking to help students make deeper connections (Anderman & Midgley, 1997). They allow students to utilize a variety of learning spaces in which to work. Projects, and/or learning styles that necessitate floor space are designed in classroom-adjacent collaboration areas in the hallways. Ideas that require outdoor spaces are taken outside of the classroom and into the courtyard, learning patios, or tiered environment.

Teacher behaviors, according to the students in this study, assist with making content more interesting with both historical and current examples, as well as the integration of subjects. The more students perceive their learning as useful, the more apt they are to engage in the lesson. Teachers are expected to facilitate instruction of a variety of standards, many of which are not naturally interesting to all students (Covington, 2000). The teachers in this study are exposing

students to natural events that make them want to engage in learning, and allowing them to use the most conducive learning environment for the process.

Challenge-Seeking Behaviors

Students' reflective thoughts provide evidence that they prefer, and are excelling with, difficult tasks that require their attention, concentration, and commitment to the learning process (Kuhn, 1999). They expressed gratitude for teachers who appreciate the space options provided, combine classes, and bridge topics that are relatable, requiring critical thinking (Lewis & Smith, 1993). Autonomous opportunities with challenging content make students accept the responsibility and the prospect of learning differently. They prefer to perform expected tasks based on the learning environment that best suits them (Oliveras-Ortiz, Bouillion, & Asbury, 2019). Students understand how debate assists with a new perspective. They welcome labs where little direct instruction occurs, but rather are provided tasks and expectations in order for them to construct their own knowledge with a team (Kuhn, 1999). Teachers who allow autonomy in provided workspaces are appreciated by the students.

Designing lessons is complex. It requires the teacher's own prior knowledge as well as the challenge of creating opportunities for students to make connections (which requires the teacher to know his/her students' interests, backgrounds, and motivations) in order to learn at deep levels. Teachers who research difficult content and who are able to help students construct their own understanding are most respected by the students in this study. Students excel at challenging tasks when allowed to respond creatively (Bandura, 1990). Shared small group collaboration areas provide students opportunities to meet with peers from other classes in order to integrate ideas and content, creating student-driven responses, and evidencing challenging processes (Locked & Latham, 1990).

Conclusions

Humans respond to the built environment. It evokes feelings of comfort and support if found to be appealing. This should always be the case with learning environments, as students must find their learning areas to be conducive to their needs. The built environment also has the potential to elicit negativity or frustration if not aligned with expectations or intended purpose. Design, as a concept, is problem seeking. For this particular replacement school, architects first sought to understand the shortcomings of the school where the academic program was housed. Additionally, they studied the anticipated space needs for Project-Based Learning methodologies, as well as the campus principal's goals for energy industry-related academic success.

The students in this study spoke of sufficient and conducive space that allowed them to have different experiences than those at other schools. They demonstrated their comfort with challenging content in spaces that allow them to learn with deep understanding due to the relationship between the teachers' instructional decisions and the students' willingness to accept both the challenge and the use of the built environment as an instructional support for facilitating instruction. They appreciated learning in teams, responding creatively, utilizing responsibility, and personal goal fulfillment. They comfortably utilized critical thinking skills to persevere both individually and within teams. They produced evidence of learning with creativity. They utilized spaces within their new school as designed and intended. They articulated that their new learning environment did assist with their learning experiences.

The purposefully designed areas are contributing to individual achievement as well as student teams' successes. Ample room, walls that allow for project brainstorming, and the opportunity to rearrange the space with some walls that "flip" are helping to produce

sophisticated students who articulate and demonstrate evidence of learning. Opportunities to work outside the classroom are both sought and experienced. Endless ideas exist, and students only crave more challenges with the autonomy to respond creatively.

It is recommended, as complex lesson design and the use of open spaces for collaboration are integrated, teachers' advanced skills in both interdependent and autonomous learning should be developed through purposeful professional learning (Charteris & Smardon, 2019). In order to fully comprehend and provide vision for optimal use of designed spaces, teachers' planning and instructional needs should be studied. This would provide insight as to specific skill sets possessed by individual teachers; thus, providing direction to build collective capacity.

References

- Anderman, E.M. & Midgley, C. (1997). Changes in achievement goal orientations, perceived academic competence, and grades across the transition to middle-level schools. *Contemporary Educational Psychology, 22*(3), 269-298.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1990) Perceived self-efficacy in the exercise of personal agency, *Journal of Applied Sport Psychology, 2*:2, 128-163,
<https://www.tandfonline.com/doi/abs/10.1080/10413209008406426>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.
- Bandura, A. (2018). Toward a psychology of human agency: Pathways and reflections. *Perspectives on Psychological Science, 13*(2), 130-136.
<https://doi.org/10.1177/1745691617699280>
- Bishop, P.A. & Pflaum, S.W. (2005). Student perceptions of action, relevance, and pace. *Middle School Journal, 36*(4), 4-12.
- Carter, N., Bryant-Lukosius, B., DiCenso, A., Blythe, B., Neville, A.J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forums, 41*(5), 545-547.
- Charteris, J., & Smardon, D. (2019). Dimensions of agency in new generation learning spaces: Developing assessment capability. *Australian Journal of Teacher Education, 44*(7).
<https://ro.ecu.edu.au/ajte/vol44/iss7/1/>
- Covington, M.V. (2000). Goal theory, motivation, and school achievement: An integrative review. *Annual Review Psychology, 51*, 171-200.

- Creswell, J.W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.) [Kindle Edition]. Retrieved from Amazon.com
- Dewey, J. (1954). *The public and its problems*. Swallow Press: Athens
- Floyd, K.S., Harrington, S.J., and Santiago, J. (2009). The effects of engagement and perceived course value on deep and surface learning strategies. *Informing Science: The International Journal of an Emerging Transdiscipline*, 12, 181-190.
<https://doi.org/10.28945/435>
- Hulleman, C.S. (2007). *The role of utility value in the development of interest and achievement*. [Doctoral Dissertation, University of Wisconsin - Madison]. ERIC.
<https://files.eric.ed.gov/fulltext/ED498264.pdf>
- Kuhn, D. (1999). A developmental model of critical thinking. *Educational Researcher*, 28(2), 16-46. <http://www.jstor.org/stable/1177186>
- Lewis, A. & Smith, D. (1993). Defining higher order thinking. *Theory into Practice*, 32(3), 131-137. <http://www.jstor.org/stable/1476693>
- Locke, E.A., & Latham, G.P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.
- Oliveras-Ortiz, Y., Bouillion, D., & Asbury, L. (2019). *Listening to high school students: Purposefully designed spaces and the impact on students' engagement in learning*. Manuscript submitted for publication.
- Pintrich, P.R. & De Groot, E.V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 2(1), 33-40.
- Williams, P. (2017). Student agency for powerful learning. *Knowledge Quest*, 45(4), 8-15.

Wilson, D. & Sperber, D. (2004) Relevance theory. In G. Ward & L. Horn (Eds.), *Handbook of Pragmatics* (pp. 249-287). Oxford: Blackwell.



{INSPIRE}

"Creative thinking inspires ideas. Ideas inspire change." - Barack Obama

FIG. 3a
Y
10
5b
FIG. 3b



VLK | ARCHITECTS

AUSTIN

DALLAS

EL PASO

FORT WORTH

HOUSTON