The Perceived Effect of Learner-Centered Pedagogy in Secondary Active Learning Spaces and Impact on Student Engagement

Jennifer R. Gracyalny
Pulaski Community School
District, Wisconsin

Laura E. Hurtienne
Concordia University
Wisconsin

This study collects perceptions from educators about how pedagogical practices could be transformed for a learner-centered concentration in active learning spaces to support student engagement. Seven participants provide data through a focus group, interviews, and observations. Four main themes are identified: (1) Collaboration and Engagement, (2) Learner-Centered Pedagogy, (3) Professional Development, and (4) Positive Classroom Behaviors. Professional development focused on best practices helps to build teacher capacity and collective efficacy. With an investment in professional development for educators focused on learner-centered pedagogy, there are opportunities to realize a return on this investment in increased student engagement and collaboration. The researcher recommends a tiered-pyramid representation of an integrated active-learning system, with a solid foundation of learner-centered pedagogy.

Introduction

Student engagement and the joy of learning continue to decline as students move to the secondary level (Gallup, 2016; Hodges, 2018). Gallup conducted surveys with Grades 5-12 students and found that about "Half of the students who responded to the survey are engaged with school (47%) with approximately one-fourth 'not engaged' (29%) and the remainder 'actively disengaged' (24%)" (Hodges, 2018). Educators require training and development on best practices for student engagement and collaboration in classrooms in order to make improvements.

At the center of the transformation to learning-centered approaches in changing classroom environments and design is the powerful professional development for educators on learner-centered approaches that lead to improved student outcomes (Barrett et al., 2012; Akey, 2006; Kariippanon et al., 2019; Connor & Pope, 2013; Voelkel & Chrispeels, 2017). When the pedagogy is centered around students' learning, they are empowered to direct their own learning, and solve real-world problems (Nair, 2017). To improve a love of learning while empowering learners, we need to provide quality professional development to our educators on learner-centered pedagogy.

Jennifer R. Gracyalny is Assistant Superintendent of Teaching and Learning in the Pulaski Community School District, Wisconsin.

Laura E. Hurtienne is an Assistant Professor at Concordia University Wisconsin.

It is the actions inside those learning spaces that bring authentic learning, engagement, and progress (Hare & Dillon, 2020). When an educator brings together learner-centered pedagogy, integrated technology, and flexible learning spaces, an integrated active learning ecosystem can be achieved. In Figure 1, we can connect technology and space with learner-centered pedagogy for a more robust learning environment for all students (Steelcase Education Solutions, 2013).

The integration of flexible seating, technology integration, and active learning, coupled with high-quality professional development for educators, can help improve student learning outcomes and engagement (Gebre et al., 2015; Voelkel & Chrispeels, 2017; Hattie, 2021; Kariippanon et al., 2019). Blackmore et al. (2011) clearly stated:

> The critical role of teacher professional learning and pedagogy as key mediating factors. Unless teachers are prepared and provided with the necessary professional skills, tools, and resources to change their practices, then newly built spaces will not move them to innovative pedagogies (p. 38).

Learner-centered pedagogy in active learning spaces and its impact on student engagement has been understudied and not deeply reported as qualitative research. More research was needed to address this gap. The purpose of this study was to collect perceptions and evidence from middle and high school suburban educators about how professional development with learner-centered pedagogy in flexible

Figure 1. Active Learning Ecosystem
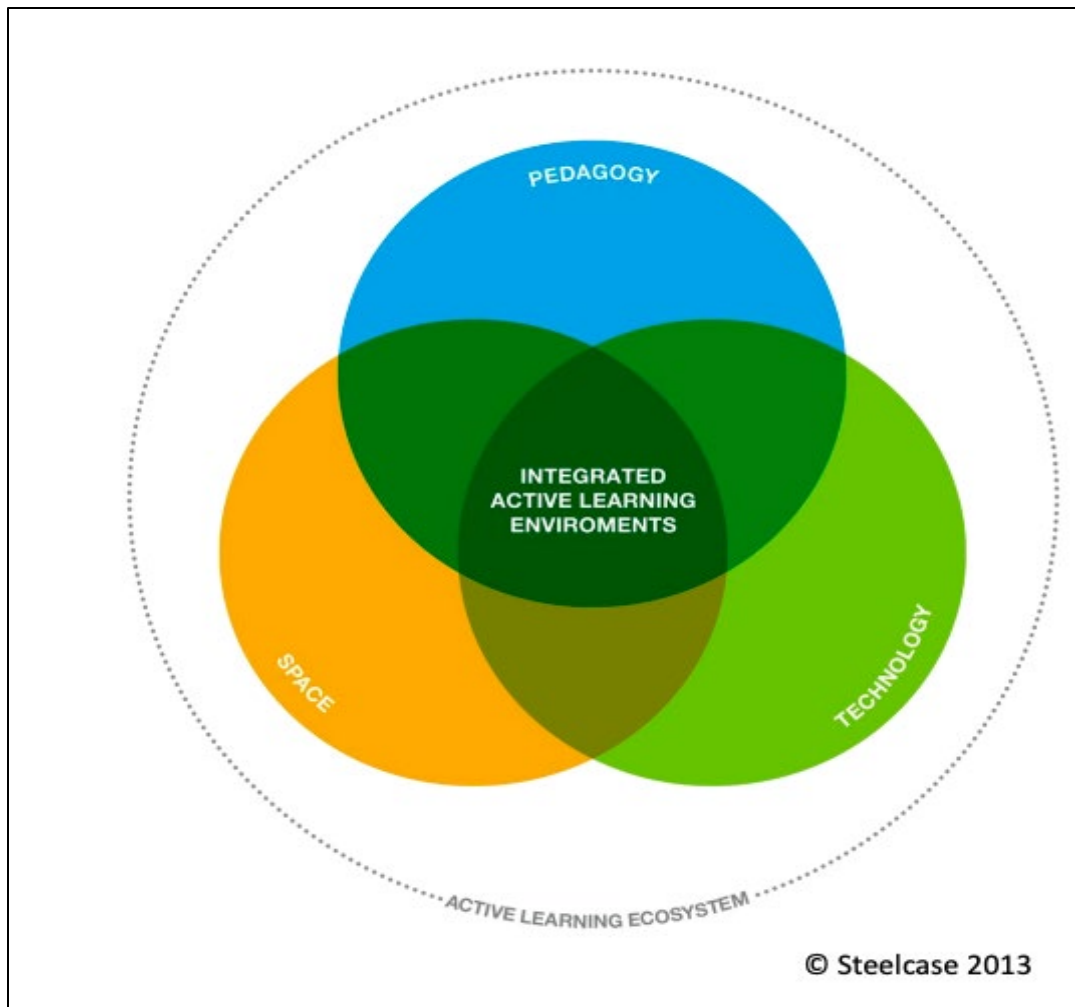
Note: Integrated Active Learning Environments require that pedagogy, technology, and space be considered equally in classroom planning (Steelcase, 2013).

learning spaces impacts student engagement. Therefore, the study helped to fill the gap in research by addressing and making recommendations of how professional development for educators in flexible learning spaces supports student engagement. Another gap in the research included how the pedagogical approaches used in the classroom need to support the transformation to a learner-centered focus in flexible learning spaces that support student engagement.

This study addressed one research question focused on pedagogy, professional development, student engagement, and collaboration:

1. How do educators' classroom practices and pedagogical approaches need to be transformed to support student engagement in learner-centered, flexible, active learning spaces?

Relevant Literature

The origin of Constructivism Theory has its roots in John Dewey's work, and other theorists provided further extensions by Jerome Bruner and Jean Piaget. The Constructivism Theory focuses on the learner (both student and adult learners) being able to construct meaning through knowledge and experience (Elliott, et al., 2000). The [adult] learner is an active creator of their own knowledge. Within learning opportunities such as professional development and classrooms, the paradigm shift encourages the learner to experiment, solve real-world problems, and use inquiry-based learning as well as other active techniques. There is a parallel connection to the Experiential Learning Theory or "learning by doing" for both student and adult learners. Kolb (1984) defined Experiential Learning Theory as "the process whereby knowledge is created through the

transformation of experience. Knowledge results from the combination of grasping and transforming experience" (p. 41).

Our schools and traditional classroom environments are becoming museums, while educators seem to be becoming the curators of American education. We need to make changes from these traditional classrooms to support our students for their tomorrow. We need to question whether our school facilities and learning spaces meet the needs of today's students and teachers as well as their future needs (Cleveland & Soccio, 2015). At the forefront of the transition from traditional classrooms to flexible learning spaces are the pedagogical practices to help support student learning outcomes and meet the needs of the 21st-century learner (Kariippanon et al, 2019; Blackmore et al., 2012). The Department of Education and Early Childhood Development (2009) stated that "The design of new learning environments should enable teachers to work together differently, to learn and practice new skills together, and to readily access resources to support the teaching and learning relationship" (p. 1).

Student engagement is the degree to which the student is attentive, curious, and passionate about their learning (Martin, 2018). The more engaged a student is in their learning, the more interested or inspired they are to learn and unleash geniuses (Martin, 2018). Learners are engaged when they act on tasks that are interesting, challenging, and important to them (Rickabaugh, 2016). Engagement is energy in action or a "flow" — the connection between the person and activity (Rickabaugh, 2016). There are many positive outcomes related to student learning and associated with the engagement of students, which further make the case for designing classroom environments that have flexible and active learning spaces. Students who are fully engaged report better mental and physical health, in addition to improved grades and achievement scores (Connor & Pope, 2013). On the other hand, there is evidence that school dropouts, problem behavior, and health conditions increase when students are not engaged in school (Kariippanon et al., 2019). The research also found that when schools incorporate active learning spaces, the opportunity to enhance skills such as critical thinking, problem-solving, creativity, and communication are evident (Kariippanon et al., 2019).

Kariippanon et al. (2019), found that students in flexible learning classrooms had more active engagement than students in traditional classrooms. Positive interaction between students improved from a traditional classroom to a flexible learning space. In terms of lesson time spent in different learning settings, whole-class instruction was found less in flexible learning spaces than in traditional classrooms. Also in flexible learning spaces, students working in groups of less than six increased while individual student work time decreased compared to students in traditional classrooms. Finally, when looking at lesson time spent in different learning modes, it was found that teacher-led instruction decreased in flexible learning spaces, and collaboration drastically increased in active learning spaces (Kariippanon et al., 2019).

For flexible learning spaces to be successfully implemented in K-12 classrooms, quality professional development for educators should be focused on student-centered pedagogy. When the process of learning is focused on the targets and objectives rather than on the final product, learning is more likely to happen for students (Frontier & Rickabaugh, 2014). An emphasis on professional development, embedded support, and collaboration among teachers in regard to the pedagogical practices in active learning spaces can help support sustainability for the future (Kariippanon et al, 2019).

Professional development for all educators is the root of transforming teaching and learning. Moreover, professional development and pedagogical practices for flexible learning spaces are needed to bring out the best teaching practices focused on student-centered learning. Martin (2018) stated:

> When educators have opportunities to talk about how we learn best and what that looks like in the classroom rather than what curriculum or program we are using, it can help create a shared understanding and allow for opportunities for learner-centered innovation to create the desired experiences that we are striving for in schools. (p 113)

Also, when teachers have an opportunity to visit other classrooms to observe others' expertise, learning takes place for the educator. Teacher expertise, shared through observations and discussion, supports the art and science of teaching and can lead to the improvement of student learning (Frontier & Rickabaugh, 2014).

Professional learning communities and collective teacher efficacy have been linked together as a means to build teacher capacity, collective inquiry, shared vision, action research, a focus on learning, collaborative teams, and results-orientation (Voelkel & Chrispeels, 2017; Hattie, 2021; DuFour et al., 2016). CTE is highly correlated to student achievement. Hattie (2021), stated that "CTE is the collective belief of teachers in their ability to positively affect students. The message seems to be clear; together teachers can achieve more, especially if they collectively believe that they can do so!" According to Hattie's *Visible Learning Meta-analysis*, CTE has the highest effect size with a d = 1.57 on the barometer of influence. Teachers can collaborate and work differently, learning new pedagogy with new resources and flexible furniture, when classroom environments are redesigned for learner-centered approaches (The Department of Education and Early Childhood Development, 2009).

There has been extensive research studies and meta-analysis about designing learning experiences and active spaces through the integration of technology, the design of flexible learning spaces, and the connection of pedagogy, shifting the classroom from teacher-driven to student-focused and the approach from passive teaching to active learning (Neill & Etheridge, 2008; Rands & Gansemer-Topf, 2017; Kariippanon, 2019). Neill and Etheridge (2008) stated that "Learning that is active, participatory, experiential and cooperative requires a flexible learning space" (p.59). However, changes to the classroom environment require support for pedagogical changes (Kariippanon et al., 2019).

There continues to be work and research to align pedagogy and learning environments as well as to use diverse theoretical frameworks to guide the work in education (Fischer, 2016). Some research pointed out that thinking of learning spaces as a verb rather than a noun helps to put into perspective that within these learning spaces is something that "we do" rather than something "we have" (Mulcahy et al., 2015). When thinking in this way of learning space, it helps educators to realize how important the pedagogical practices focused on student-centered learning should be at the forefront of our planning and delivering of teaching and learning for students. Blackmore et al. (2011) stated that:

> A critical role of teacher professional learning and pedagogy is key mediating factors. Unless teachers are prepared and are provided with the necessary professional skills, tools, and resources to change their practices, then newly built spaces will not move them to innovative pedagogies. (p. 38)

A qualitative case study research design allowed the researcher to analyze data gathered from educators in active learning ecosystems who incorporated pedagogical best practices, integrated technology, and redesigned learning spaces. Data collection is an important feature of case studies and includes multiple sources of information, such as observations, interviews, focus groups, documents, and reports (Cresswell & Poth, 2018).

Methods

Participants

The sampling or subset population were teachers in recently redesigned classrooms in Grades 6-12 at the study site. Purposeful or selective sampling was used to pre-select the group participants for the research study. Although there are also model classrooms at the elementary level, the researcher limited the sampling and participants to the secondary level. As student engagement and joy in learning decreases from elementary school into middle and high school, the researcher wanted the sampling to be of the

secondary teachers teaching in the active learning spaces (Hare & Dillon, 2020; Hodges, 2018). Table 1 describes the demographics of the participants.

Procedures

The data collection allowed the researcher to gather observational data about learning, behavior, student engagement, and the integration of skills needed for the future of the educators in the study. Protocols to record notes and information from the interviews and observations were used in the data collection process (Creswell & Poth, 2018). The researcher engaged in these interrelated activities of data collection by building a rapport with staff members involved in the classroom redesigns, establishing routines for data collection, and developing a process of recording the information.

Focus Groups

A small focus group with 5 secondary level classroom teachers in the flexible learning classrooms, who specifically focus on learner-centered pedagogy and the resulting changes and impact on student engagement and collaboration, was at the forefront of the case study. The researcher began with a focus group of educators mixed between middle school and high school. Focus groups allow interaction and discussion between a group on a topic being researched, which, in turn, allows the researcher to gather perceptions, attitudes, behaviors, and opinions from a group of 6 to 12 participants for an interview period of 60-90 minutes (Billups, 2021).

For data collection of the focus groups, the researcher had a case study protocol that follows a line of inquiry with an unbiased structure of open-ended questions (Yin, 2018; Billups, 2021; Merriam & Tisdell, 2016). There were guidelines that helped to direct the discussions of focus groups that provided structure but also allowed the focus group to direct conversation on the research topic (Billup, 2021; Merriam & Tisdell, 2016). Protocols were used in the focus group for Grades 6-12 participants in the 75-minute session. Billups (2021) identified the typical sequence of a focus group process:

- Icebreaker/Opening Question (60 seconds per person)
- Introductory Question (60-90 seconds per person)
- Transition Question (1-2 minutes per person)
- Key or Content Questions (40-50 minutes of the session)
- Debriefing/Concluding Question (60-90 seconds per person)

The focus groups were recorded with the researcher's notes as well as an actual video recording with later transcription by uploading the video to the researcher's

Figure 2. Classroom Observations Evident in Lesson Observation
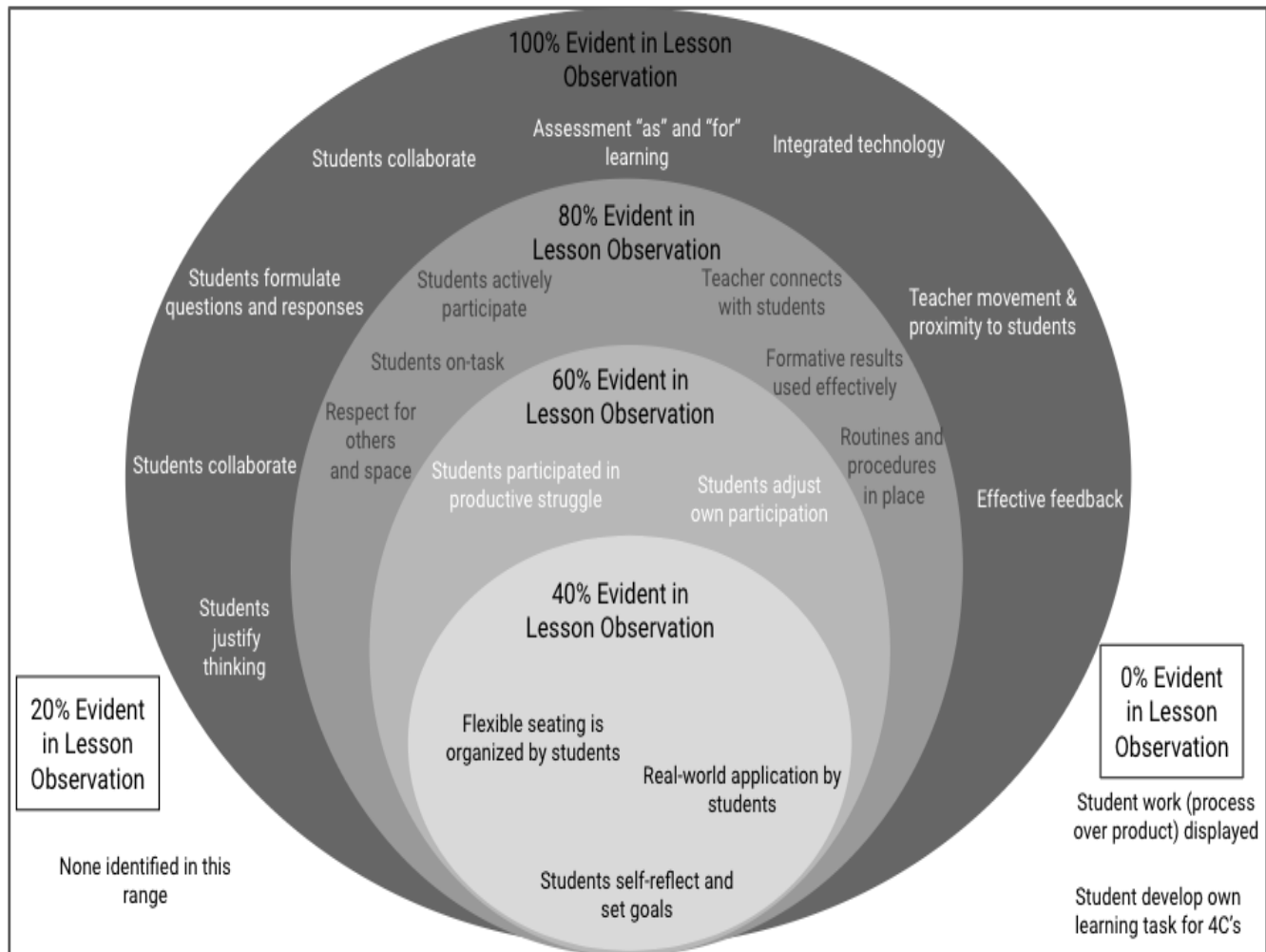
Note: Representation of the data collected from five high school and middle school classroom observations in terms of the percentage evident in the lesson

private YouTube site which automatically transcribed the video through the closed caption feature (Merriam & Tisdell, 2016). The researcher's note-taking template included the interviewer's notes and observations, nonverbal cues, and quotable contributions during the actual interview or focus group discussions (Billups, 2021).

Interviews

The second step of the process was interviews with the seven participating classroom teachers in the flexible learning classrooms. Interviews were used as a follow-up procedure to the focus groups to gather individual information from the educators by asking deeper, extensive open-ended questions. How and why questions used in the interviews help to explain the insights and perspectives of

the participants (Yin, 2018). Interviews also are "conversations with a purpose" (Billups, 2021, p. 38). The researcher determined the open-ended research questions to be answered as well as identified the interviewees based on the purposeful sampling process. For data collection of the interview process, the researcher used a case study protocol that followed a line of inquiry with an unbiased structure of open-ended questions (Yin, 2018; Billups, 2021; Merriam & Tisdell, 2016).

According to Billups (2021), "Transcripts are the essence of analysis for interview data; without a readable, understandable transcript of your interviews, you have nothing to analyze" (p. 82). As in the focus group procedures, interviews were recorded with the researcher's notes and later transcribed and uploaded to the researcher's

private YouTube site with closed captions (Merriam & Tisdell, 2016).

Observations

Observations of the flexible learning classrooms focused on learner-centered pedagogy, student engagement, and collaboration allowed the researcher to "cover actions in real-time" (Yin, 2018, p. 117). The triangulation of data with observations of the classroom yielded a wealth of information and complemented the other processes, including interviews of group members or whole groups (Yin, 2018).

The researcher's role in the observation of the flexible learning classrooms was one of "nonparticipant or observer as participant" (Creswell & Poth, 2018; Billups, 2021; Merriam & Tisdell, 2016). Protocols used during observations of the classroom learning environment focused on descriptive notes (generally in a chronological scripted format of the flow of the classroom observation), reflective notes (used to capture reflections, summaries, and conclusions about the activities occurring in the classroom) as well as notes about what was heard in the observation and demographic details within the classroom (Merriam & Tisdell, 2016; Creswell & Poth, 2018; Billups, 2021). Table 2 along with Figure 2 identifies the components that were either evident or not evident during the classroom observations.

Data Analysis

The case study's most intensive phase is the data analysis process. Merriam and Tisdell (2016) explained that data analysis and data collection occur together in qualitative research. When analyzing the data, the researcher selected the most appropriate way to represent the data by using the Data Analysis Spiral.

The research question drove the researcher's process in finding the themes or patterns within the analysis of the data. Data analysis was employed to make sense of the researcher's data; consolidate and interpret the interviews, focus groups, surveys, and observations in order to answer the researcher's question(s) (Merriam & Tisdell, 2016). The researcher used the data analysis to interpret the interviews, focus groups, and classroom observation results to establish the common themes and patterns from the educators.

The researcher's first step was to organize the data into a Google Sheet. Next, reading and keeping written memos or records of the data for emergent themes was essential to the data analysis process. The process of memoing or playing with the data becomes important in this step to find key phrases, patterns, insights, concepts, or ideas (Creswell & Poth, 2018; Yin, 2018). The researcher analyzed the data to find the key patterns and themes.

Another step in the process was to describe and classify codes into themes, allowing for easier interpretation. The lynchpin of qualitative data analysis is considered to be coding or categorizing, which is simply using a form of shorthand to help with data retrieval later in the process (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Creswell and Poth (2018) stated that coding helps to make sense of data from case study research, including documents, observations, interviews, and questionnaires. The researcher established these codes, categories, and themes from the data collected in the interviews, focus groups, and observations from secondary educators in flexible learning spaces.

The final phase of data analysis included representing and visualizing the data through comparison tables, matrices, hierarchical tree diagrams, or other formats found suitable by the researcher (Creswell & Poth, 2018) to represent professional development, pedagogical practices, student engagement, and collaboration.

Results

Four themes emerged (Figure 3) from the observations, interviews, focus groups, and documents:

1. Collaboration and Engagement
2. Learner-Centered Pedagogy
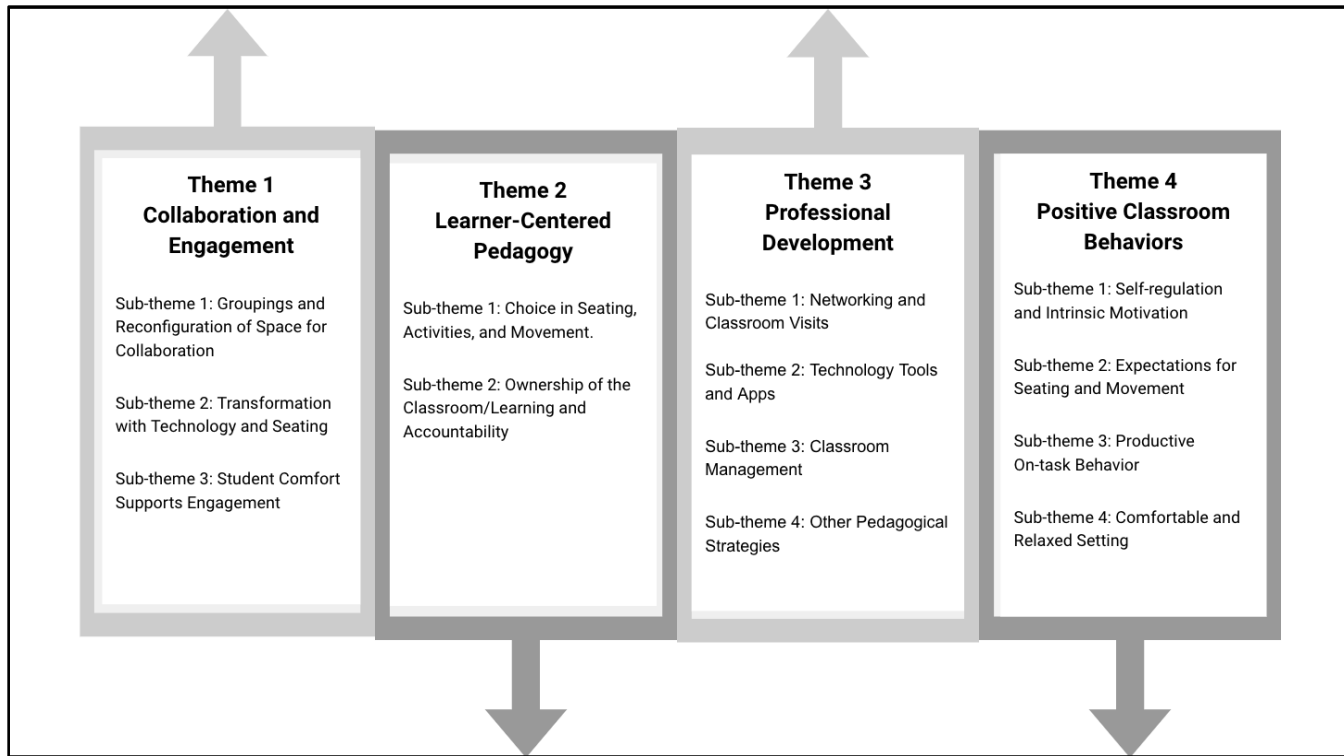3. Professional Development
4. Positive Classroom Behaviors

The two themes of Learner-Centered Pedagogy and Professional Development will be further described and interpreted in the research article.

Theme 2: Learner-Centered Pedagogy

Learner-centered pedagogy creates an engaging learning environment through dialogue, collaboration, reflection, and "learning by doing" that empowers students to solve real-world problems (Patel-Junankar, 2017). Within active learning spaces, teachers support students through practices and strategies to motivate student ownership, choice, and flexibility.

Sub-theme 1: Choice in Seating, Activities, and Movement

Student choice within the classroom helps to create an environment that engages students. Teacher 2 emphasized, "I love the flexibility of student choice. They [students] are so much more comfortable." Teacher 3 shared, "I love the ability of the students to choose. I think that it's been interesting to see which ones they like and don't like compared to what I perceived them to like or not like." Participants also pointed out that choice leads to student

Figure 3. Researcher's Themes and Sub-themes for Qualitative Case Study

Theme 1 Collaboration and Engagement	Theme 2 Learner-Centered Pedagogy	Theme 3 Professional Development	Theme 4 Positive Classroom Behaviors
Sub-theme 1: Groupings and Reconfiguration of Space for Collaboration	Sub-theme 1: Choice in Seating, Activities, and Movement.	Sub-theme 1: Networking and Classroom Visits	Sub-theme 1: Self-regulation and Intrinsic Motivation
Sub-theme 2: Transformation with Technology and Seating	Sub-theme 2: Ownership of the Classroom/Learning and Accountability	Sub-theme 2: Technology Tools and Apps	Sub-theme 2: Expectations for Seating and Movement
Sub-theme 3: Student Comfort Supports Engagement		Sub-theme 3: Classroom Management	Sub-theme 3: Productive On-task Behavior
		Sub-theme 4: Other Pedagogical Strategies	Sub-theme 4: Comfortable and Relaxed Setting

Note: The four themes identified by the researcher along with sub-themes.

ownership, accountability, and even a feeling of power for the students. Teacher 4 stated, "I would agree that student choice is awesome because it really gives kids some power."

Teachers have changed the environment by not differentiating the front of the room and by including three flat panels and teaching from the iPad. Several participants commented on the changes in student-centered pedagogy because of the flexible configuration. Teacher 1 shared:

> You know with the ability to work with partners and also to choose your own seat, I have seen a lot more engagement especially if we have small group activities or we will turn and talk before we share out to the large group.

Teacher 2 described:

> The ability of kids to take that ownership of what furniture works for them and who they sit by, and what works for them. Now yes it took a little transition because they're middle schoolers but I've seen huge growth this quarter of them really embracing the choice of what works for them in terms of couches, pods of furniture, or wiggle chairs.

Through observations in the five classrooms, choice boards were incorporated into the daily lessons of the classroom. Choice boards provide students with different ways to demonstrate learning by empowering them to choose how they will show their learning. Teachers reflected on the effect that student choice had on the learning environment. Teacher 2 stated, "I added choice boards to my toolbox after our February PD. Those have been influential in my teaching plus I can share with my content team."

Sub-theme 2: Ownership of the Classroom/Learning and Accountability

As perceived by the participants, student ownership and investment in learning are evident when learner-centered pedagogy reflects choice and flexibility**.** The practices and strategies incorporated by the educator to create student ownership and investment in their learning lead to engagement as evidenced by Teacher 2:

> Kids are doing their own self-discovery by working in small groups to choose a topic that truly inspires and motivates them. If we had rows and one smart board that would never be possible. It was just amazing because they were having authentic discussions.

As a result of student ownership in the classroom, teachers have noticed an increase in student engagement. Teacher 4 indicated, "You know, I mean, it is all on them and they are taking ownership. I guess with the conglomeration of all these pieces, student engagement is at an all-time high right now which is awesome."

When learner-centered pedagogy is at the center of instructional design, students become more motivated and invested in their learning and also are able to self-regulate. With great passion, Teacher 2 shared:

I think cognitive engagement is huge because students take ownership. When kids are more independent, they are able to take care of themselves and they can regulate what they need. There is just so much more independence. For the first time in their educational career, they are so empowered and the excitement just overflows. As a teacher, I put it back on the student that they need to be in charge. They need to regulate this and they need as students to take that step to be a better version of themself.

Theme 3: Professional Development

Educators expressed the need for professional development in best practices within active learning spaces in order for their teaching and student learning to accelerate. Comments from the interviews and feedback from professional development sessions focused on the need to network with other educators, visit other active learning classrooms, and to receive support and training with technology tools and apps. Educators also indicated the need for discussions about room configurations, classroom management in flexible learning spaces, and other strategies such as process over product, vertical learning, etc.

Sub-theme 1: Networking and Classroom Visits

The teachers stated that the opportunity for educators to come together as well as visit other active learning classrooms was beneficial to their growth. It was evident that networking sessions were necessary for teachers to improve their practices and actions for learner-centered pedagogy. Teacher 5, shared that when coming together as a team there is "accountability that has really improved the teacher partnership and relationship and how we work together. This has not only been good for the students but has been good for improving us as teachers as well." Teacher 2 shared, "Active learning classrooms have made us better teachers together."

The ability to observe other teachers in action or "walkthroughs" to learn more from each other was shared as a consistent means of learning for the participants. Teacher 1 stated, "I kind of like getting into other teacher's classrooms to observe and see how the [active learning] classroom works." Another teacher who serves as a mentor for new teachers shared her experience after visiting a math teacher's classroom with her mentee:

I went and watched someone yesterday on a walkabout and he was really good with the iPad and walking around [the classroom]. That was really cool flexibility. When I walked into someone else's room it was cool to realize there wasn't the front of the room and we didn't know where to stand while we were observing because of that.

Sub-theme 2: Technology Tools and Apps

The participants shared the need for professional development with multiple flat-panel TVs, iPads, and various interactive apps and tools in order to stretch the integration of technology. Teacher 1 indicated, "Any kind of training on the technology like how to Airplay to the televisions using your iPad and rotating around the room. I think those are all important things for staff to be educated on." Teacher 7 wanted basic training, "I think just even basic level technology is like the biggest barrier to get through first. If a teacher has never taught mirroring their iPad in a math classroom before that they need to be trained on that."

Teachers shared different applications or tools that helped to support technology use and integration into their pedagogy. A variety of tools mentioned included Sketch Notes, Lumio, Canva, Mentimeter, Backchannel Chats, Jamboards, Book Creator, Adobe Express, Pic Collage, Spark Posts, Smart Notebook, Notability, Google Suite, and several others. These tools allow students to demonstrate their learning authentically. Based on the co-teaching experience in the Spanish room, Teacher 5 indicated the need for support with "technology like Smart Notebook, Lumio and there's Google."

Sub-theme 3: Classroom Management

Class management in active learning spaces was an essential topic for teachers. Setting solid expectations and community agreements for students in terms of furniture and technology is important for classroom management. The participants also shared that teachers needed to relinquish control and allow the classroom to truly become the students' classroom. Also in terms of classroom management, it meant learning together the ways to reconfigure the classroom efficiently and effectively depending on the activity. Teacher 1 shared, "I would like to know behavior management. I think it is definitely something for us to focus on since not having full control all the time [in the active learning space]."

Teachers shared that in the active learning classroom they aren't in control like they once were in the traditional classroom. Teacher 2 provided an example of teaching from her iPad and wandering the classroom rather than being in the front of the classroom: "I could also see letting go of the focus. I mean let's be honest some teachers like being the focus of the room. They like everybody watching them. They like being at the front." The participants reiterated the need for support in engaging students and monitoring the

classroom through movement. Teacher 2 shared that with the new flexibility in the active learning space:

> I love the ability that I don't have to be stuck in one place. I'm constantly wandering around and checking on kids. Proximity has a whole new meaning in this room because there are no more rows and no more rigidity. I think I'm a more effective better teacher of that ability to move around too.

Teacher 6 shared, "I'm always doing laps, always checking in [with students]." Teacher 7 also stated, "I get to be anywhere in the classroom. I'm not stuck or isolated to one spot. When I am presenting material I can be anywhere and for the kids, there is no way a kid can really hide from me."

The participants emphasized that the classroom is the students' space and that in order to embrace this mentality, teachers need to examine their "teacher footprint." The participants indicated that time was well spent on topics such as evaluating the teacher's footprint, listening to the noise, and looking at what is on the walls of the classroom space. Teacher 1 explained:

> Conversations about that teacher footprint are going to be very critical — making sure that we kind of relinquish our control a little bit with that space and definitely make sure students have access to a large majority of the classroom and to see that large majority of the classroom space as their space.

In order to help support classroom management, teachers need support and training in ways to configure the learning space for different pedagogies and activities within the classroom. Regarding relevant training topics, Teacher 3 described the need to have "ideas of moving the furniture around and coming up with different places for learning." Teacher 1 stated the need to be "thinking about how to workspaces ahead of time. As far as professional development goes, that's something that I've kind of picked up on over the course of the year. There are definitely patterns that you use." Finally, Teacher 1 shared:

> I would say the ability to kind of reframe and rethink where students are looking has been big for me. Trying to let go of the fact that they are not all going to be looking in one direction was difficult at first and it is still sometimes difficult.

Sub-theme 4: Other Pedagogical Strategies

In reviewing documents from the various professional development sessions for the active learning classroom teachers, other topics emerged like the use of choice boards, process over product, listening to the noise, teacher footprint, student feedback, vertical learning, student agency, and formative assessment. The participants asked for further growth opportunities with pedagogical strategies and tools.

The teacher's footprint within the classroom space was also mentioned as something for teachers to reflect upon, ensuring that the classroom is designed for the students and their learning and not the teacher's desk and space. Teacher 1 shared the changes that she made:

> My footprint or space is definitely something that I changed so much from the beginning of the year. I've been teaching now for seven years and wouldn't say that I am very traditional but one thing I was very traditional about was having my space in front of my classroom. I had a very large area in the front of my room where students weren't necessarily welcome to go. Now I have a really just tiny little corner with my desk area. Even when I got the screens and the furniture, I still kind of held on to that [teacher space] until we had some PD. It took me a while to shift my mindset with that. I realized there truly should be almost no space that is just mine since it is the student's classroom as much as my own.

However, the teacher's footprint was discussed in a different context within the interviews and focus group. In these other contexts, teachers discussed how when using the iPad for teaching and movement around the classroom, they needed support with the organization of the classroom. Teacher 1 discussed his teacher footprint in terms of proximity to students:

> The proximity to students works better the closer I can get to them when I'm talking about whatever content we are going over that day. The ability to move as a teacher wherever it is that I need to go [during the lesson]. My teacher footprint has really expanded since I've gotten this furniture. You know I think they are more engaged especially if they know that I'm aware that they may be starting to disengage.

The student's process of learning is more important than the actual product. When students make mistakes or struggle, they are engaging in the learning process. The participants in the study shared that they need growth in their abilities to showcase "process over product." This lack was apparent within the five classroom observations when the researcher looked for evidence of student work (process over product) displayed on classroom walls and discovered it wasn't visible in all of the classrooms. Teacher 1 commented, "As I continue to incorporate this [process over product] more it really is about having students show their learning process throughout whatever the lesson may be." Teacher 7 also shared that the job of educators is to move away from teacher-led activities:

> This classroom has the least amount of teacher-led activities possible and has, you know, students working through problems to learn the material. I think this setup just makes that so much easier to happen, to get my kids to talk about math. It is a challenge, especially in my old

setup where I had traditional desks and rows and they were facing the front of the room.

Vertical learning to demonstrate, manipulate, interact or represent learning was also a need of teachers. Within these active learning spaces, portable vertical whiteboards have been incorporated. Teacher 6 explained that through professional development, his use of the portable whiteboards for vertical learning has become a best practice for instruction:

> As far as cognitive engagement with the addition of vertical learning and the whiteboard, I think back to [the course] social media marketing where we were analyzing content. I had one group on one side of these [portable whiteboards] and one group on the other side of these and they weren't bothering each other. They were just focused on what they were doing to show their learning process.

Discussion

Theme 2: Learner-Centered Pedagogy

Teachers creating flexible or active learning spaces require support with pedagogical changes (Kariippanon et al., 2019). The general findings in the study reveal that when students are provided with choice, especially with flexible furniture options, student ownership increases in the classroom. Also, the implementation of practices and actions that allow student choices with activities, movement, and learning provides students with an increased sense of ownership. Teacher 1 explained, "In a short few minutes, the students were able to help reconfigure the room for the three different lessons we were doing in the class period."

Sub-theme 1: Choice in Seating, Activities, and Movement. The participants described that when students are given choice within the classroom, an environment is created that engages students. Teacher 2 shared, "I love that students have choices for seating, groups, and activities because of the pods and furniture. It has been phenomenal for reading groups and book clubs." Rands and Gansemer-Topf's (2017) observation results showed that "Students felt that the classroom design 'erased the line' between instructors and students, which encouraged interaction and led students to feel closer personal connections with their instructor and their peers, creating a sense of community and enhancing student engagement" (p. 29).

The evidence revealed that in schools that have implemented flexible learning spaces with integrated technology, teaching and learning are supported and student work has become more collaborative (Kariippanon et al., 2017). Teachers commented that the active learning spaces allowed ownership and accountability to thrive because of the actions occurring in the classroom. Research pointed out that thinking of learning spaces as a verb rather than a noun helps to put into perspective that within these learning spaces is something that "we do" rather than something "we have" (Mulcahy et al., 2015).

Sub-theme 2: Ownership of the Classroom/Learning and Accountability. The educators in the study perceived that student ownership and investment in learning seem to be more productive when learner-centered pedagogy reflects choice and flexibility. Teacher 4 discussed, "The active learning spaces have moved us more towards personalized and self-paced learning in our classroom." What we do know is that when students have greater control over their learning, motivation improves, but not necessarily in subsequent learning" (Hattie, 2009).

Theme 3: Professional Development

Educators provided with ongoing support around flexible learning spaces can motivate substantial change, increased effect, and sustainability for long-term effects on student learning (Kariippanon et al., 2020). The participants in the research study provided feedback about professional development opportunities, such as the ability to network with other educators, visit other active learning classrooms, receive coaching support, and collaborate with colleagues. Teacher 1 shared, "The teacher workshops and classroom visits are all super beneficial." Supporting teacher growth through feedback and job-embedded professional development, as well as common planning time and collaboration with teams of teachers to support student learning, best practices in instructional practices, and a shared vision, certainly help to improve teacher efficacy (Battersby & Verdi, 2015).

Other PD areas requested regarding flexible learning spaces, included training with technology tools and apps, discussions about room configurations, and classroom management strategies. Finally, other pedagogical strategies such as vertical learning, choice boards, student agency, and process over product were identified by the educators as professional development topics and experiences. Blackmore et al. (2011) highlighted, "the critical role of teacher professional learning and pedagogy as key mediating factors. Unless teachers are prepared and are provided with the necessary professional skills, tools, and resources to change their practices, then newly built spaces will not move them to innovative pedagogies" (p. 38).

Sub-theme 1: Networking and Classroom Visits. The educator using quality pedagogical practices within the learning space is key to effective teaching (Kariippanon et al., 2017). The ability to observe other teachers in action in order to learn more from each other was shared as a consistent means of growth for the participants. Teacher 6 shared, "The PD provides us with an opportunity to learn from each other on best practices rather than hammering the

students with lectures." A variety of quality professional learning, both informal and formal, is essential through training, peer observations, networking with colleagues, conferences, online learning, book studies, visits to other classrooms and/or schools, and feedback loops (Kariippanon et al., 2020; Kumar & Vigil, 2011).

Participants emphasized that overall the experience of teaching in an active learning space had made them better teachers, especially when provided with the opportunity to work together. The educators indicated that the ability to see others in action helped to support them in implementing best practices and pedagogies for their own students. Hattie (2021) stated, "Collective teacher efficacy is the collective belief of teachers in their ability to positively affect students. The message seems to be clear; together teachers can achieve more, especially if they collectively believe that they can do so" (para. 1).

Sub-theme 2: Technology Tools and Apps. The participants shared the need for professional development regarding the technology in the classrooms: multiple flat-panel TVs, iPads used by teachers and students, and various interactive apps and tools to stretch the integration of technology in their lessons. Martin (2018) shared, **"**Technology and access to information aren't the important factors in creating 21st-century classrooms; teachers are. The power of the teacher comes not from the information she shares but from the opportunities she creates for students to learn how to learn, solve problems, and apply learning in meaningful ways" (p. 29). In the research study, teachers shared different applications or tools that helped to support technology use and integration into their learner-centered pedagogy.

Sub-theme 3: Classroom Management. The participants shared that setting solid expectations for students in using the furniture and technology was an important part of classroom management practices. However, the participants also shared the importance of teachers relinquishing control and allowing the classroom to become the students' classroom. Teacher 1 shared, "As I have looked at my teacher footprint in the classroom, I realized I kept some spaces traditional for me but now have looked at the whole classroom as the students." One of the professional development topics they wanted to engage was how to relinquish control while still maintaining classroom management.

Sub-theme 4: Other Pedagogical Strategies. From the data collection, other topics emerged for professional development like the use of choice boards, process over product, listening to the noise, teacher footprint, student feedback, vertical learning, student agency, and formative assessment. Teacher 6 said, "It [active learning spaces with the pedagogy] is a game changer for me and I hope other

teachers can experience it quicker than later." Martin (2018) stated, "When educators have opportunities to talk about how we learn best and what that looks like in the classroom rather than what curriculum or program we are using, it can help create a shared understanding and allow for opportunities for learner-centered innovation to create the desire experiences that we are striving for in schools" (p 113).

The participants shared that they need strategies to showcase "process over product". Hare and Dillon (2020) stated, "Learning is a process, but too often our learning spaces showcase the final product and undervalue the journey it took to get there. Mistakes, struggle, and hard work lead to great learning" (p. 70). When completing observations in five classroom observations and looking for evidence of student work (process over product) being displayed on classroom walls, it was not evident in 100% of the classrooms observed.

Other pedagogical practices and actions that teachers emphasized were tactics to increase student agency and integrate vertical learning. Teacher 6 indicated, "The portable whiteboards are awesome for vertical learning, and I wish I would have gotten one or two more for my active learning classroom."

Limitations

Potential limitations noted within the research study that may have had an impact on the findings or implications on the results, included (a) no direct student voice, (b) small sample size, (c) the role of the researcher within the school district.

The first limitation was that direct student voices and perspectives were absent from the research study. Based on the research methodology established as part of the Institutional Review Board (IRB), the researcher opted not to include the students' voices. Participants were educators and could only speculate about perceived student engagement through their eyes as the classroom teacher. Ultimately, only students can truly report their engagement and collaboration in the classroom.

While the scope of the study may have caused limitations, the researcher felt a saturation of results was reached with the data collected from the interviews, observations, and focus groups of these seven participants. Smith (2009) provided some direction on sample sizes for qualitative studies, indicating that doctoral dissertations are more difficult to quantify with respect to sample sizes and that "no right answer [exists] to the question of the sample size" (Smith et al., 2009, p. 52). Merriam and Tisdell (2016) stated, "Reaching a point of saturation or redundancy means that you begin hearing the same responses to your interview questions or seeing the same behaviors in observations; no new insights forthcoming" (p. 101). While the sample was

Figure 4. Researcher's Integrated Active Learning System with Investment and Return on Investment
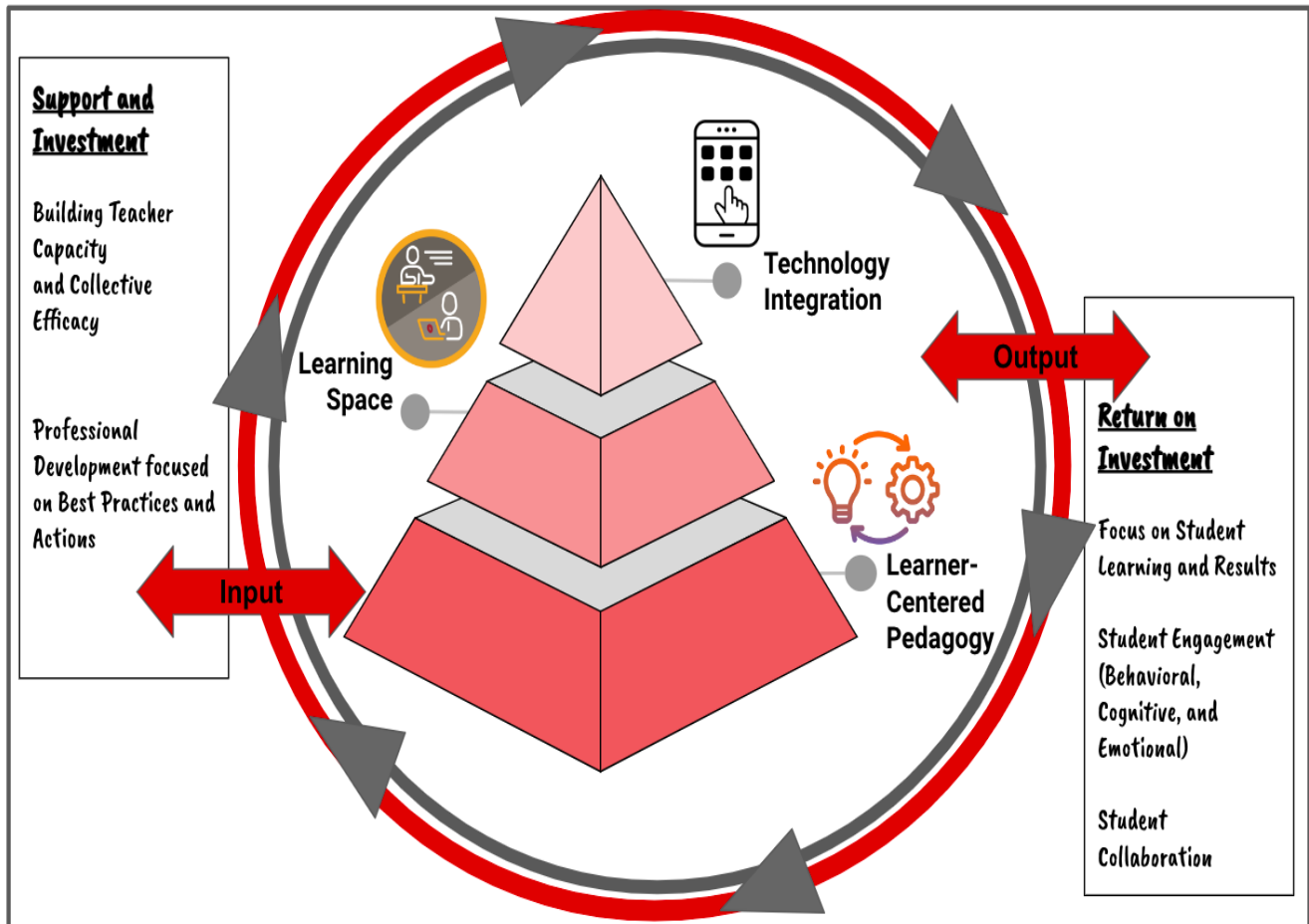
Note: The researcher found that when support and investment are applied to the active learning system of learner-centered pedagogy, learning space, and technology integration, there is a return on investment in terms of student collaboration and engagement.

small, the study reached the point of saturation and no new themes emerged from the data. The study with the seven teachers provided perspective and viewpoints on the professional development of pedagogical practices for learning-centered classrooms and whether the professional development of pedagogical practices supported an increase in student engagement and collaboration.

A third limitation was that the researcher works in the district in the study. Additionally, the researcher provided professional development for the teachers in flexible learning spaces. The Teaching and Learning Department, where the researcher serves as the Executive Director, provided funding for several of the active learning classrooms in the district. The data collected may not have included all pertinent information due to the working relationship between the participants and the researcher; however, research indicated that there are benefits to the researcher having "insider" knowledge and experiences

with the organization. Dwyer and Buckle (2009) described, "The issue of researcher membership in the group or area being studied is relevant to all approaches of qualitative methodology as the researcher plays such a direct and intimate role in both data collection and analysis" (p. 55). Therefore, research also indicated that insiders tend to build relationships and gain acceptance with the participants quicker and easier (Dwyer & Buckle, 2009). This "insider" status frequently allows researchers more rapid and complete acceptance by their participants; therefore, participants are typically more open with researchers providing a greater depth to the data gathered. The researcher, during the interviews and focus group, shared norms and expectations for the process and felt the participants didn't withhold perceptions or dialogue about active learning spaces.

Recommendations for Future Research

This research can be extended and strengthened to create new opportunities to learn about flexible and active learning spaces.

First, more extensive research in terms of length and scope could improve future studies around flexible learning spaces and student-centered pedagogy. For instance, a longer research period that covers the school year rather than three months might provide more data on the impact of practices and actions with the 4Cs. Although the secondary level was chosen because of the decrease in student engagement and joy of learning, there may be valuable evidence at the elementary level regarding student engagement. Also, even though the researcher felt that a level of saturation was reached with seven participants, the expansion of the study into multiple school districts with active learning spaces might provide more valuable findings and learnings about flexible learning spaces, integrated technology, and learner-centered pedagogy.

This researcher opted not to involve student voices in the study. However, the best way to gather data about student engagement is by collecting data from actual secondary-level students. Further research could include a more extensive quantitative, qualitative study, or mixed-method approach to capture the student perceptions and data about the integrated technology, flexible furniture, and learner-centered pedagogies.

Conclusion

For educators and administrators, the movement from traditional classroom environments and designs to flexible learning spaces requires job-embedded changes to the teaching pedagogy and quality professional development that focuses on learner-centered approaches in order to truly provide students with experiences that support the collaboration and student engagement (Groff, 2013; Fischer, 2016; Mulcahy et al., 2015). Educators' changes in attitudes, beliefs, and practices can help move towards the mindset, best practices, and evidence-based research of learner-centered pedagogy.

At the center of the transformation to pedagogy and learning-centered approaches in changing classroom environments and design (including flexible seating, technology integration, and active learning spaces) is powerful professional development for educators on learner-centered approaches (Barrett et al., 2012; Akey, 2006; Kariippanon et al., 2019; Connor & Pope, 2013; Voelkel & Chrispeels, 2017). When the teaching pedagogy is truly centered around students and their learning, students are allowed to direct their own learning, develop lifelong learning skills and solve real-world problems in the school setting and environment suited for their needs (Nair, 2017).

With an investment of support for educators, including professional development focused on learner-centered pedagogy, schools can realize a return on investment as student engagement and collaboration are increased. Key components between the investment of support and the return on investment are pedagogy, space, and technology. However, the researcher took a different approach when applying the integrated active learning ecosystem of Steelcase's research. According to Steelcase (2013), all three components of pedagogy, space, and technology are equal. In Figure 4, the researcher of the study shares that the important facets of the ecosystem are a tiered pyramid representation with learner-centered pedagogy followed by the learning space itself and finally the integration of technology.

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Appendix

Table 1. Active Learning Classroom Participant Demographics for Research Study			
Participant Identification	Number of Years Teaching	Content(s) Taught	Other Information
Teacher 1	7 years	English 9-12	• Graduate of school district • Only district taught in
Teacher 2	24 years	English 7	• 2nd year in district • Taught in other states
Teacher 3	9 years	Math 8	• 3rd year in district • Other subjects taught like social studies
Teacher 4	25 years	Spanish 6-8	• 23 years in district • Masters in Ed Tech
Teacher 5	26 years	Spanish 6-8	• 19 years in district • Grades 1-6 Certification • Masters in Ed Leadership
Teacher 6	29 years	Business 9-12	• Out of classroom 11 years as a Digital Learning Specialist • Previous Grade 6-8 Math teacher
Teacher 7	17 years	Math 9-12	• Completing Masters in Math • 14 years in district

Table 2. Classroom Observations: Evident in Lesson or Not Evident in a 50 to 60 Minute Lesson				
General Observation Task	Evident in Lesson		Not Evident in Lesson	
	n	%	n	%
The classroom has flexible seating that is organized by the students and teacher based on the learning activity	2	40	3	60
Technology (iPads, tv monitors, etc.) is integrated into the lesson by the teacher and utilized to demonstrate learning by the students	5	100	0	0
Students actively participate in meaningful learning experiences during the lesson	4	80	1	20

The teacher facilitates learning from different locations in the classroom with movement and proximity to students	5	100	0	0
Student work (process over product) is displayed on the classroom walls	0	0	5	100
Students have the opportunity to collaborate with other students during the lesson with partners, teams, or pods	5	100	0	0
Students are involved in the lesson through responses and formulating questions	5	100	0	0
Assessment as and for learning are evident in the lesson with frequent checks for understanding	5	100	0	0
A positive engaging learning environment is evident with the teacher connecting with students	4	80	1	20
Students develop their own learning tasks that stretch their creativity, critical thinking, communication, and collaboration	0	0	5	100
Students explain and justify their thinking when responding to questions	5	100	0	0
Students discover opportunities to apply content to their lives as well as real-world application	2	40	3	60
Students remain on-task and productively engaged throughout the lesson	4	80	1	20
The lesson achieved a focus on learner-centered engagement where the students monitor and adjust their own participation	3	60	2	40
Students are encouraged to take risks and persevere through productive struggle	3	60	2	40
Students are provided with effective feedback to guide them into their learning	5	100	0	0
Students demonstrate respect for peers, teacher and the active learning environment	4	80	1	20
Classroom learning procedures and routines are well established but remain flexible and fluid to adapt to the learning task as needed	4	80	1	20
Students demonstrate mastery of content through opportunities to self-reflect, set learning goals, and share responsibility of their learning	2	40	3	60
Results from formative processes and tools, along with effective feedback, are used to immediately adjust pacing, plan differentiated instruction, and monitor progress	4	80	1	20