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TEACHING STRATEGIES FOR DIVERSE LEARNING STYLES

By
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requirements for the
Bachelor of Integrated Studies Degree

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Abstract

Students tend to perform best when they are taught, at least in part, with the learning style that they favor. There are three major learning styles: visual, auditory, and kinesthetic. Students that favor a visual learning style prefer to have content delivered in a way that contains many visual elements. If a student prefers an auditory style, they respond best with a style that's delivery is given in a lecture or discussion format. Kinesthetic learners need to have movement incorporated within the content. Teachers need to explore a variety of teaching strategies to best accommodate these broad learning styles. Teachers need to be willing to incorporate multiple strategies in their classroom to effectively meet the diverse needs of their students.

Keywords: Auditory learners, Visual learners, Kinesthetic learners Teaching strategies

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Introduction

"Every student can learn, just not on the same day or in the same way" (Evans, n.d., section 1). The meaning behind this statement is that every student does not have the same learning style. Teachers today must be prepared to adapt their teaching styles and come up with new teaching strategies to meet the needs of an ever-changing, diverse student population. Teachers may have students that do not speak English as their first language. They will most likely face students that have a variety of different learning disabilities, and students that simply just learn better through different learning styles. Not to mention that teachers are still trying to close the educational gap that was brought about by the COVID-19 pandemic.

The United States has a rapidly growing population of non-English speaking citizens. According to Pratt-Johnson (2006), if trends continue as they are, forty percent of the students will have a language other than English as their first language. Teachers must be able to adapt and adjust to different cultures and develop ways to navigate through language barriers to ensure that every child receives an equitable educational experience and has the opportunity to advance and thrive. Teachers will need to become educated in the cultures of their students to understand how best to meet the needs of this student population.

Another challenge that teachers face are students that are diagnosed with some type of learning disability. According to the National Center for Education Statistics (2022), fifteen percent of all public-school aged children received services under the Individuals with Disabilities Education Act (IDEA). Among this number, thirty three percent of the students were categorized as having specific learning disabilities. Students with learning disabilities often struggle when teachers focus mainly on lecture as their method of delivery. Teachers will have to modify instruction for these students with learning disabilities in order to help them be successful despite their challenges.

Teachers will need to develop strategies to meet the needs of students that have different learning styles. Csapo and Hayen (2006) explain what is meant by learning styles by stating, "An

individual's learning style is the way he or she concentrates on, processes, internalizes, and remembers new and difficult academic information or skills." (p. 129) They continue on in saying that individuals will approach learning differently based upon what learning style they identify best with. They performed a study to make teachers aware of how differing learning styles related to how students were best able to learn, and therefore make teachers aware of way that they might need to alter their teaching styles to best meet the needs of their students. They focused on three main classifications of learners: auditory, visual, and tactile/kinesthetic. They studied children of various races, genders, and geographical locations and discovered that children adjusted their learning styles over time to suite the styles of the teachers. As they aged, they moved toward auditory learning because the teachers tended to lecture more, and they were forced to adapt to this learning style. This hampered the development of other learning styles in students. In the workplace, many occupations focus on visual and kinesthetic learning styles, so these styles should continue to be developed throughout a child's education.

When the COVID-19 pandemic hit, the education system word wide was affected. Teachers were first to adapt their teaching style with very little preparation time. Suddenly students were learning remotely, and teachers needed to come up with various strategies in order to continue to meet students' educational needs in a new way. Zhao and Watterson (2021) suggested that education approach changes made to adapt to the pandemic resulted in changes that should be encouraged to continue. Schools began utilizing digital learning on a large scale out of necessity, and teachers were forced to come up with creative ways to keep students engaged at a distance. Teachers were forced to implement technology into their classrooms in ways that they never had before. However, the authors suggest that these changes are necessary

ones, and that the pandemic should be viewed as an opportunity to continue along this track of exploring learning styles and strategies that will better meet the needs of students.

The focus of this paper is to first define different learning styles, and then explore various teaching strategies that have been developed over time to benefit students. By using different teaching strategies such as flexible seating, flipped classrooms, turn-and-talk methodologies, differentiation, makerspaces, and blended learning, teachers can create learning environments that can meet the needs of a diverse student population.

Learning Styles

Pourhosein (2012) states that there are many different definitions of learning styles. It can be defined as the way that people perceives and processes information in learning situations. In an educational setting, it can be best defined as the manner that the student understands, interacts with, and responds to the learning environment. He states that there are three main learning styles, visual, auditory, and kinesthetic.

Visual learners learn best when educators use visual images into their instruction. These learners think in pictures and visual images. They will rely on the instructor's cues and body language to help them with understanding the lesson.

Auditory learners will gain their information through listening. They will have more success in understanding when the material is read out loud to them, or when they read it out loud. Hearing the information helps them to retain it, more so than just reading written text.

Kinesthetic learners will learn best with a "hands on" approach. They need to be actively engaged with the lesson or they can easily lose focus. Kinesthetic learners will retain more when they are physically involved with a lesson, as opposed to just seeing or hearing the material.

When teachers are incorporating these learning styles into their teaching strategies, they need to keep in mind that students may not just favor one learning style for all subjects. Identifying a student's learning style/styles will help the student learn effectively, as well as helping the teacher to teach effectively. It is important for teachers to come up with different strategies that will accommodate multiple learning styles. For the remainder of this paper, the focus will be on the different teaching strategies that can be implemented to foster students regardless of which learning style they may favor (Pourhosein, 2012).

Teaching Strategies

Differentiation

According to The Glossary of Education Reform (2013), "Differentiation refers to a wide variety of teaching techniques and lesson adaptations that educators use to instruct a diverse group of students, with diverse learning needs, in the same course, classroom, or learning environment" (para 1). Differentiation typically involves grouping of various levels of students within the classroom to give more individualized instruction. The basic idea is for all the students to master the concept that is being taught, but the method for reaching that mastery varies from group to group.

Teachers will typically adjust elements of their lessons from group to group so that those that all students are given the opportunity to find success. This individualized approach to lesson planning results in more effective learning. Effective learning is achieved by determining the student's prior knowledge of the content and using pathways to either close gaps in knowledge, or to extend their current knowledge to more advanced levels. Students that need more time or a different teaching approach can get the individualized instruction that they need, while students that have already mastered the concept can be challenged with an additional activity or can be

moved onto a new concept. Differentiation is effective in diverse classrooms because teachers are able to plan their lessons around the needs of special education students, high achieving students, and English-language learners. Teachers can use formative assessments to evaluate how the students are progressing and adjust accordingly.

When implementing differentiated instruction into the classroom, teachers need to keep in mind what motivates students. In order to create intrinsic motivation among students, teachers need to create an environment that will satisfy a student's need for autonomy, competence and relatedness. Autonomy refers to the student's ability to have some choice in their learning. Students need to feel a level of competence in their abilities to complete the content. Finally, students need to be able to relate to others in their group. Successful strategies will be tailored to meet all of these needs. (Wong et al., 2022, p. 143).

Successful differentiation is achieved by following five principles. These consist of respectful tasks, quality curriculum, flexible groupings, continual assessment, and building communities. Each principle is equally important to the process.

Regarding respectful tasks, students need to understand why there are differing groups. They also need to understand that all groups will complete equally engaging activities. Teachers do not want students to feel signaled out by the group they are placed in.

When addressing quality curriculum, the teacher is focused on the students gaining true understanding of the lesson. Teachers are not teaching for recall alone. They want the students to be able to understand, retain, and build upon what they are being taught.

Flexible grouping can be based on several things. Groups can be determined by readiness for the lesson, but that does not have to be the only criteria. Groups can also be determined by interest or by learning preferences of the student.

Continual assessment is very important in successful differentiation. Students need to have a pre-assessment at the beginning of the lesson. There also needs to be ongoing assessments throughout the process to be sure that all students understand what is being taught.

Finally, building communities simply refers to creating a positive learning environment. When students feel that they are valued and understood, they are better able to thrive and succeed. It is important that all students understand that they are an integral part of the classroom community (Wong et al., 2022, p.140).

There can also be differentiation according to interest. The two types of interest are individual and situational. Individual interest refers to things that are developed over time, while situational interest is provoked by certain conditions such as group discussions. Implementing some aspects of individual interest into content enables students to better focus on task meanings and demands (Wong et al., 2022, p. 140).

However, it is difficult to insert an individual interest for every student into a task. This is when teachers can use situational interest. Situational interest generated through perceptions of conditions in the learning environment.

This is achieved by using the “catch” and “hold” philosophy. The “catch” philosophy is using something to grab the groups attention and gain their interest. In the “hold” stage, the students see them meaning in the content and are actively involved in the construction of knowledge (Wong et al., 2022, p. 140-141).

In the differentiation process, content can be delivered in a variety of ways. Students can travel through different depths of study based on what is most successful for them. They can be encouraged to problem solve use critical and creative thinking to express their ideas. Different groups can develop different ways of getting to the core message of the lesson. Not all groups

have to come to the same conclusions at the same time. The goal is that the fundamental message is received and understood by all students.

The rate of arrival does not have to be the same for all groups. Students do not all master skills at the same pace. Teachers will use the ongoing assessments to determine when to slow down for some students, or when to add additional enrichment material and accelerate the pace for other students.

Finally, preference and environment play important roles in successful differentiated learning. Students should have choices about the learning activities that they engage in. They should be given the opportunity to work alone at times, or in groups with other similar ability students. This gives the student a sense of ownership in their education (Johnson et al., 2020, pp. 206-207).

One of the benefits of differentiated learning is that it can be tailored to meet all content areas. An example of differentiation used in an extracurricular classroom is referred to as the "Hot Sauce" method. Students in a physical education class are divided into groups for a skill drill or some other type of task or game based on how competitive that they want to be. Students can vary their "sauce" degree from hot to medium to mild based on how competitive they feel on that given day. This allows the students the freedom to select their ability without fear of "letting a group down" if they are not as skilled at an activity. Students can move from one group to another if they feel that they want to be in a highly competitive group or a group that is less competitive. It is not necessary to have the same number of students in each group. If there is a limit to how many can be in a group for the sake of the activity, additional groups can be added at each level to accommodate freedom of choice. This prevents students from being bound to one certain group all the time. There may be days when even the most competitive student

would like to take a break and be in a less competitive group. This type of methodology can be adjusted and reimagined to fit most content areas. Teachers should attempt to make all group activities engaging and fun so that all levels feel included equally (Hollibaugh, 2022).

There are critics of differentiated learning. McGillicuddy and Devine (2020) suggest that differentiation can have a negative effect on the students. Grouping children by ability could make children in the lower leveled groups believe that they are not capable of learning and could lead to them falling further behind in their education. Instead of meeting the needs of all students, they feel that differentiated learning could widen the gap of achievement between pupils. They express concern that students are aware of which group they fall into, and that lowers their self-esteem. When they surveyed a group of children, over sixty-six percent of them said that they had never been moved from the group that they were first placed, and many of them expressed that they had been teased because they were in the lower group. Children in the higher groups felt like they were already at the top, so there was no need for them to strive to achieve more. In their study, they also found that females and minorities tended to be placed in the lower groups, indicating an inequality in placement.

Some critics believe that teachers are often less effective in the lower groups. There is concern that the content for lower groups may be adjusted to the point that meaningful content and true engagement is lost. There is also concern that more time is spent on behavior management and less on instruction in these lower groups. All these factors lead to concerns that differentiated learning may widen the gap between students rather than lower it (Hong et al, 2012).

Finally, Valiandes and Neophytou (2017) state that studies indicate teachers often find it very difficult to implement and sustain differentiated learning in the classroom. It takes

considerable time and planning to make sure all groups have equitable, engaging lessons where all students have the opportunity to be challenged and succeed. Due to lack of resources, large class sizes, and heavy workload, teachers are often overwhelmed with trying to implement the program as it was intended.

Scaffolding

Scaffolding uses a variety of techniques to enable students to progress towards a stronger understanding of the content, and ultimately more independence in relation to their learning. Teachers will build upon a lesson in smaller increments so that students are able to grasp that content before they move onto the next step. This leads to less frustration for students because they can build towards the ultimate goal without having all the information given to them in one large lesson (The Glossary of Education Reform, 2015).

Although scaffolding is similar to differentiated learning, it does have key differences. In scaffolding, teachers break up learning into chunks and provide tools and strategies for each chunk. When working on reading a text, with scaffolding, teachers might first preview the text, introduce key vocabulary, and read the text in sections while pausing to discuss each section. Where in differentiated learning each group might all have completely different stories, in scaffolding all the students are working on the same text, just broken down into smaller lessons (Alber, 2014).

Scaffolding is meant to perform much as a scaffold would at a construction site. It is meant to provide support for the student, giving them tools to eventually be able to master the task independently. As the students gain more confidence through the support lessons, the teacher will slowly remove the “scaffolds” so that the student can work through the lesson on

their own. The key to success in scaffolding is for the teacher to recognize the type of support that the student needs to gain independence, and to be able to adjust accordingly.

Scaffolding has many benefits. Students are able to take a more active role in their learning and are able to engage more with classmates asking questions and offering support to one another. When implemented correctly, there is greater assurance that students will better understand and acquire the knowledge or skill that is being taught. Teachers can act more as a mentor than the dominant expert. Momentum is created in the classroom because students spend less time searching for information and more time on task learning and discovering (Hall et al., 2008).

Van de Pol et al. (2010) outlined a framework for scaffolding that addressed intentions and means. With intentions, they discussed keeping the learning on target and maintaining the students movement toward the objective, providing explanations and structures that keep the students organized, reducing freedom over time so that the students are not given tasks before they are ready to take them on, gaining the students' interest in the task and helping them understand the requirements of the task, and managing frustration control for students by keeping them motivated and recognizing potential set-backs. The scaffolding means provide feedback to the students regarding their performance, giving clues or hints to help move them ahead in the lesson, giving clear explanation as to what they are meant to do and why, modeling the lessons for the students, and asking the students question that require a cognitive answer.

Scaffolding is not without its challenges. Like differentiated learning, it is very time consuming for the teacher to plan and implement. Being able to provide appropriate scaffolding for each student requires that the teacher know the students well enough to understand what their cognitive limitations are, and then being able to select the appropriate scaffold for their diverse

learning needs. Also, often there is a lack of sufficient training and personnel to correctly implement this program (Hall et al., 2008).

Turn and Talk

Turn and talk (T&T) is a strategy that encourages students to talk with their peers and develop better language skills. It is implemented by the teacher, usually during large group instruction, by providing a topic or asking a question. The teacher will then instruct the children to "turn and talk" to their partner or partners about the topic or question. After allowing them some time to discuss, the teacher will call them back into the large group and may ask people in the group to share what they discussed (Hindman et al., 2022).

Hindman et al. (2022) further state that research shows that there are four key components to T&T: the initiating prompt, the child-child talk, the teacher-child talk, and the overall management of the activity. These four components being in place best foster children's language development. In the first component, the teacher provides an open-ended question (e.g., "How," "Why") or a statement ("Tell me about...") that encourages children to provide more than a one-word answer, and that has more than one correct answer. By posing open-ended questions with more than one correct response, children are encouraged to compare and contrast the answers that they find, and this promotes more peer interaction. T&T is especially effective when introducing new vocabulary or ideas because when children both hear and use these new words and concepts, they are more likely to retain that information.

The child-child talk component focuses on peer interaction. Talking with peers helps build language and vocabulary regardless of the children's language level. As stated in the previous paragraph, the child-child talk can be especially helpful in helping students learn and retain new words or concepts. Teachers will need to actively monitor conversations by moving

around the groups to be sure that the students are staying on topic. Younger children might need more time to express their ideas, but if given too much time, they will move away from the main focus.

The teacher-child talk component occurs as the teacher moves throughout the different groups. Children's language development benefits from multiple-turn conversations with adults, and this gives the teacher opportunity to hear what the child has to say about the prompts. Teachers can give feedback to the groups and may even pose additional follow-up questions to discuss with them. It is important for the teacher to repeat and summarize key child contributions for the whole group so that all of the children have an opportunity to take away key information.

The fourth component deals with teacher management of large-group activities. It is important that the teacher keep the groups from going off-task. Children learn best when they know what they are supposed to talk about, how to take turns, and how to control the voice level in the room. Teachers need to have effective classroom management skills so that the activity has the desired results (Hindman et al., 2022, p. 7-8).

Turn and talk can have issues if not implemented correctly. Teachers must be careful not to use traditional dialogue rather than meaningful discourse. In traditional dialogue, teachers pose a question that can be answered with a yes/no response. These types of questions will not encourage the building of higher-level thinking skills. Teachers want to instead generate meaningful discourse, or conversation, among the students with the teacher acting as the facilitator. They must pose questions that encourage meaningful discussions and cognitive develop. Teachers must also be careful to allow enough processing time for students to be able to develop their thoughts and generate discussions with their peers. Turn and Talk can

sometimes be inequitable for the lower-performing students. Teachers can assist in this by giving some "think time" before asking the children to turn and talk so that students have time to process and develop ideas before they begin sharing with their partners (Walter, 2018, p. 181).

Walter (2018) also suggests adding a written component to the turn and talk concept. Creating a discourse rich environment for learners means offering many opportunities for speaking, reading, listening, and writing. In all content areas, including math, written activities can help enhance the turn and talk process. Writing helps children make the connection between what is spoken and what is written. Graphic organizers can be very beneficial in helping students make the connection. Students are able to write about their reasoning and organize their thoughts before they move to discussing with a partner or group. A written element also gives the teacher something to help gauge the student's understanding of the material as well (Walter, 2018, p. 183).

Visual-Spatial Approach

Students that are visual-spatial learners are typically adept at puzzles, mazes, and creating visual images of locations and objects. They are able to take things apart and put them together again with little instruction. However, they typically need time to reflect on activities, and typically lack many of the skills that are associated with "traditional learners".

In order to meet the needs of students with this learning style, teachers need to use a variety of strategies. These students will often need to be presented with the "big picture" at the beginning of the activity as opposed to the traditional step-by-step process. When they know understand the end goal, they are better able to put together the steps that lead up to that goal. Inductive learning is an effective strategy which allows the student to find their own way of

achieving the end goal as opposed to presenting the goal in small chunks which is the traditional approach to presenting new material to students.

Because these students typically lack organizational skills, it is helpful to color code materials that the student needs for certain tasks. Also, when giving verbal lectures, graphic organizers are a helpful strategy for keeping the student on task and focused. It is also beneficial to record lessons for students with this learning style so that they are able to pause and reflect on the material presented at their own leisure.

Finally, the most important approach that teachers can have with students with this learning style is making sure that they build a good relationship with the student. Help the student develop their own strategies of awareness in the classroom. Encourage them to take cues from their classmates in order to help guide them along during lessons and activities. Also, give them time at the end of the school day to reflect on what happened during the day and visualize what materials and tasks they will need to have with them to complete any homework (Mann, 2001).

Blended Learning

Blended learning can mean different things, but for the purpose of this paper, it will refer to the integration of online learning and in-person learning. Rodriguez (2023) states that "blended learning is a formal education program in which a student learns at least in part through online learning with some element of student control over time, place, and pace." Students will also learn in supervised brick-and-mortar location away from home.

The blended learning model contains pillars that focus on the creation of lessons. These pillars can include such things as data-driven instruction, personalized learning, relationships, rigor, and relevance. The author discusses five strategies that support these pillars. In the first

strategy, teachers will want to utilize goal setting by involving the student in cocreating their own goals. Students are more likely to complete goals that they helped design for themselves. It is important for the teacher to conference with the student regularly to review and monitor their goal progress. It is best to focus on only one or two goals at a time so that it is more manageable for both students and teachers to monitor. It is important that the goals are specific, measurable, achievable, relevant, and has an element of time length.

The second strategy is to apply standards mastery mapping. Establishing a visual representation of the goals can help the student see if they are progressing in a skill area. Allowing the students to help maintain their map gives them ownership and accountability over their progress. These maps can be digital, or they can be paper. A bar graph that the students color in as they progress is an effective visual. Mapping allows students to reflect on their performance in a concrete way.

Providing pretesting- and post-testing with real-time feedback is beneficial to helping students stay on track. Many educational software programs have these features built into their programming. Accurate feedback helps teachers identify and reteach needs and allows students to track their progress and identify their own strengths and weaknesses.

Introducing choice boards and menus is another effective strategy in blended learning. Students are able to choose tasks or learning paths that will allow them to eventually arrive at the same destination as other classmates. These menus and choice boards should include both online and offline activities. The point is to keep the students' interests peaked and to keep them engaged and progressing.

Finally, teachers may want to establish peer tutoring. Students can build relationships with other students, while sharing knowledge with one another. Teachers need to strategically

pair students based on personality, mastery level, and readiness to participate and contribute. Peer tutoring helps to build confidence and leadership opportunities for the students tutoring and help the recipient students learn new ways of solving problems that they have been struggling with. Overall, students will benefit from social interaction and language development (Rodriguez, 2023).

There are issues with blended learning, with the greatest being issues with technology. Teachers have to consider rather families will have access to internet and devices in order to complete activities. Many rural areas still do not have reliable, fast internet.

Another major issue in regard to technology is cost. Licensing for software programs can be very expensive, especially for schools with large amounts of students. Teachers must consider where they will acquire funds to pay for the software when deciding to pursue a blended learning classroom.

Teachers will have to have all stakeholders involved on board with the process. If parents and students do not find the program easy to understand and use, then they will not be invested in it. It will be important to have a reliable IT person that can offer assistance when problems with technology arises.

Finally, with blended learning, teachers will have extra work, especially in the beginning stages. Even after the program is set up, it will take a good amount of time to manage a blended learning classroom over a traditional classroom (Winstead, 2023).

Flipped Learning

Flipped learning, or a flipped classroom, occurs when students learn with instructional videos and lectures outside the classroom at their own pace, and complete assignments and interactive activities in the classroom. This is the opposite of how the traditional teaching model

would be. Flipped learning differs from blended learning in the fact that in flipped learning, the majority of the teaching takes place through videos online and the classwork is done in person. In blended learning, more of the activities are computer based, while lectures are done in-person (Cheng et al., 2018).

Flipped learning can be effective with students of all age levels, however, at the elementary level it will need modifications. According to Stephens (2022), "Flipped learning seems to be most effective when it comes to foundational knowledge, higher-order thinking, building interpersonal skills, improving content engagement, and developing metacognitive abilities" (para. 10). It is found to be more effective in areas of language, and less effective in areas of mathematics. At the elementary level, many teachers find that it is better to flip some specific lessons, rather than following a fully flipped classroom design.

When implementing a flipped lesson, teachers will want to follow design plan. First, the teacher will create a video introducing the new concept. This video can contain an explanation of the concept, as well as several examples of the concept. There may also be a short activity with the concept that the children will complete and bring to class. The video instruction is also beneficial for the parents to watch as well. Parents being able to see how the lesson is taught is an advantage over traditional in-person lecturing. Parents are better able to understand exactly what the student is learning, and therefore, will be better able to offer assistance.

When the children return to school, the concept can be reviewed with the teacher and their peers. The activity that was completed at home can be reviewed to assess student understanding before the children are broken up into groups for hands on activities dealing with the previously introduced concept.

Teachers find that when students come to class with more prior knowledge, the need for direct instruction is lessened. This allows the teacher more time to work with students individually and in their small groups. Students benefit from more attention from the teacher, and teachers benefit by being able to more closely monitor each individual student's progress (Stephens, 2022).

At the primary level in elementary school, watching videos from home to learn a new concept may not be feasible. In this case, teachers may try an "in-class flip". With an "in-class flip", the teacher would record a screencast that would give instructions for a prepared lesson, as well as model the lesson for the students. Students are then able to independently work on these lessons while allowing the teacher time to work with small groups or individuals. If students were unclear about directions, they could rewatch the video. Teachers may want to create a checklist for the students to help them stay on track and make sure that they have completed all of the activities in the lesson before moving onto the next section. Students are able to take an active part in managing their own learning (Doubet, 2015).

Like blended learning, flipped learning has the same challenges. Access to technology, expense, and stakeholders willing to actively support the process. While doing "in-class" flips would limit the need for devices and internet access at home, it would still require schools to invest in software programs and devices for students to use. Schools would need to be onboard to provide the funding necessary to meet these needs. Also, like with blended learning, teachers would still need to invest extra time and effort in planning successful, purposeful lessons for the students.

Project-Based Learning

O'Brien (n.d.) defines project-based learning as a learning strategy that allows students to apply their knowledge and skills while participating in an engaging experience. Project-based learning helps students develop skills that will better prepare them for future college and careers.

O'Brien (n.d.) further states that there are three characteristics of activities that lead to deeper student understanding. First, there is the interdisciplinary aspect. Because real life challenges rarely involve just one subject area. Projects require students to use inquiry, solution building, and product construction to help solve the challenge. These things will require students to draw on knowledge from multiple subject areas.

Next, project-based learning needs to be rigorous. Students will need to think critically about the challenge. This thinking will help lead them to applying different processes and concepts in order to address the challenge. They will demonstrate their knowledge in the actions that they take to find a solution to the challenge. This will have students engaged in high order thinking, rather than just using recall.

Finally, project-based learning is student centered. Teachers will act more as moderators or facilitators in the process. Students will be encouraged to collaborate with other students and then make their own decisions on how to best complete their work and demonstrate their understanding.

Project-based learning can be implemented into the classroom in a variety of ways. Teachers can plan field trips out in the community. This will allow the students to see how the concepts they are working on in the classroom can be applied to real world scenarios.

Students can create classroom projects, either independently or collaboratively. For example, if students are studying mapping, they could create a map of the school. If they are studying the ecosystem, they might create a model of the water cycle.

Project-based learning is something that parents can help with at home. If the student is studying natural disasters, such as tornados, the parents can help the child develop an emergency plan for their family, or if the child is studying nutrition, the parent can help the child plan and prepare a healthy meal.

Students can also utilize technology in their projects. They might create a website as part of their project. This helps students become more technologically advanced, which will help them in their future endeavors (SmartLab Learning, n.d.).

There are challenges students face with project-based learning. In group dynamics, there may be one student that does the majority of the work. Some students may suffer from low engagement. Project-based learning requires students to have a certain degree of self-discipline to stay motivated and working. Students, especially in elementary grades, have a difficult time taking a role in their own education. They may be confused as to what is expected of them (Duncan, 2019).

There are challenges for teachers as well. Because grading is subjective rather than objective, there may be discrepancies in how grades are assigned. Teachers might also find it challenging to teach the required concepts, in areas such as math, while following the project-based learning theory (The Editorial Team, n.d.).

Inquiry-Based Learning

Inquiry-based learning is an approach that emphasizes the student's role rather than the teacher's role. Rather than telling students what they need to know, teachers ignite student's

interest and encourage them to explore the material, ask questions, and share ideas. The goal of inquiry-based learning is to move students to explore critical thinking to gain deeper understanding. There are typically four types of inquiry-based learning. First there is confirmation inquiry. Teachers will give students a question, along with the answer and a method of reaching this answer. Students will then use critical thinking skills to determine, or confirm, if this is correct.

Structured inquiry is when students are given and open-ended question and method to pursue. Students will then use this information to come to a conclusion. They will present evidence that supports how they arrived at this conclusion.

The third type of inquiry is guided inquiry. With this method, teachers give the students an open-ended question. This inquiry is typically done in groups. Students must collaborate with one another to find the best way to investigate the question and find the solution.

The final type of inquiry is open inquiry. In this type of inquiry, students will determine a question that they want to find the answer to. They will decide what types of processes that they will need to follow to gain evidence to support their answers. They will then present their conclusions (Prodigy, 2017).

Inquiry-based learning encourages children to embrace their curiosity. They are instrumental in coming up with the questions, and the methods that they use to find the answers to these questions. The teacher's role is to guide the process through careful planning and encouragement for reflection by the students. Children are encouraged to share their ideas with one another, which helps build language development and confidence. The main goal is for children to develop critical thinking skills, and in doing so, retaining the general content of the lesson (Cleovolou, 2018).

There are a few challenges with inquiry-based learning. Students may struggle understanding what they are supposed to do. They may have difficulty coming up with their own essential questions because they are used to the teacher being in charge of their education direction. If they are uncertain about what they need to do, they might quickly lose interest.

As in project-based learning, there is a concern that when working in groups, one student might complete the majority of the work. This could result in dissention in the group. It could also result in not all students learning the same thing.

Finally, teachers will have to be organized in their planning and implementation of the program. Many teachers may find it difficult to release much of the control to the students, and assuming a role of mentor and facilitator (Kuykendall, 2022).

Lecture-Based Learning

In lecture-based learning, the teacher typically serves as the sole source of information for the students. Typically, the students are assigned a task, rather it be reading a chapter or completing an assignment, the night before class. The teacher will then discuss the task in a lecture format the next day. The lecture should give information, as well as presenting step-by-step examples regarding the task. Students are encouraged to make notes and corrections to their previous assignment throughout the lecture.

There are several factors that contribute to the overall success of lecture-based learning. First, preparation, by both the students and the teacher are very important. For the students' part, completing readings and activities prior to the lecture help them to be better prepared for the information that the teacher is delivering. For the teacher's part, the information should be well scrutinized prior to the lecture so that the information is thorough without overloading the

student with unnecessary details or steps. Teachers need to be aware of the needs of the students and take all those factors into consideration before presenting the material.

The teacher needs to understand their role in the learning process. They need to deliver the lecture in a well thought out, step-by-step manner. Difficult concepts need to be broken down and linked to previously studied materials so that the students can make a connection. It is important that the lecturer break-up the lecture by offering breaks for questions, or by posing questions to the group and allowing time for response and discussion. The lecture needs to be delivered in such a manner that the student's interest is kept. This can be done by inserting humor or personal experiences in the lecture so that the material is more entertaining for the students (Opdecam & Everaert, 2019).

Lecture-based learning has been criticized over the years as not being a valid way to keep students properly engaged and invested in their learning experience. Many times, lectures are delivered in such a way that students are either overwhelmed with information, or generally bored and tuned out after the first few minutes. However, there are tips that teachers can use to make a lecture-based learning experience successful. Teachers should begin each lecture by reviewing key words and previous information before continuing with the new material. A review activity to help the students make a connection to the previously covered material, as well as asking a broad, engaging question to gain the students' attention are beneficial ways to begin a lecture.

Another tip is to take breaks during the lecture. Allowing the students to participate in some type of movement exercise gives them a chance to get through restless times. This also gives the students a chance to digest and process the material that has been covered to this point.

Teachers need to take time to gauge students understanding of the material. This can be done by asking the children if there is anything about the material that they do not understand. Teachers can also gauge the general understanding by asking students to give thumps up, down, or sideways to show their understanding of the material. If many students are struggling to understand, take time to review before moving on to new content (Terada,2022).

It is important to understand that students will need this material presented to them in slow chunks. If a lecture moves too quickly, students that like to have time to think about the concepts will get left behind. One suggestion is to video record a lecture and post it so that students can re-watch it later and highlight material that they might not have understood when presented the first time.

Finally, inserting things like videos and graphic organizers into the lecture will help keep students engaged more than just speaking information to them. Presenting the material both verbally and visually greatly increases the likelihood that the material will be retained and understood by the students. Also, make your lectures relatable to the students by incorporating real life experiences and content into the lecture. It is important that lectures are presented in a way that supports diversity and cultural inclusion (Terada, 2022).

Direct Instruction

Direct instruction is similar to lecture-based instruction but has some key differences. Direct instruction is an instructional approach that is directly structured, sequenced, and led by the teacher. It can include lectures but can also include watching videos or demonstrations. The main idea is that the teacher directly chooses the material and the way it is presented to the students. Direct instruction is based on widely on two principles. All students can learn when taught correctly, regardless of their history or background, and all teachers can be successful

when given effective materials and presentation techniques. Direct instruction is not effective for all lessons and is most effective when used in combination with other teaching strategies (Renard, 2023).

Effective use of direct instruction occurs in a series of steps. As with lecture-based instruction, the teacher should begin by building on a prior lesson. If this is new material, the teacher will try to gauge what, if any, background information that the students already have on the subject. The teacher will also go over learning objectives during this introductory stage so that the students are aware of the expectations from the lesson.

Next, the teacher will present the new material. This can be done through a lecture, or it can be done with a demonstration. Demonstrations should be presented in small steps. Demonstrations are often more effective than lecture alone in subject areas such as science and math. Lectures and demonstrations can both be used together in this stage as well.

The next phase of the process is guided practice. The teacher will give the students the opportunity, with monitoring, to complete or explain the concept that was introduced to them. The purpose of this step is to guide practice, make corrections, and if necessary, reteach the concept. After sufficient practice, the ultimate goal is for the student to work independently. It is important that the teacher give feedback during this phase to be sure that the students understand the material, as well as understand the corrections that they are being asked to make.

The students can then move into the independent practice phase. Students will progress through the stages of unitization and automaticity. During the unitization phase, students are going through the steps as they process the lesson and applying it to different scenarios. This will give the students the opportunity to practice what they have learned. As the students

practice, they should reach a point of automaticity where the way to arrive at the answer is automatic and they will not have to follow all the steps.

In the final phase of direct instruction, the teacher will evaluate and review before moving on to the next lesson. Teachers can use assessments to gather data. Upon review, the teacher will determine if the students are ready to move on to the next lesson, or if there are parts of the lesson that will need to be retaught (Renard, 2023).

Student-Centered Learning

Student-centered learning is a technique where the student sets their own goals for learning. After setting their goals, the student will determine the activities and resources that they need to help them reach that goal. As a result of the student being able to pursue their own goal, the activities are more meaningful to them (Pederson & Liu, 2003).

In teacher-directed learning, the teacher sets the learning objectives, and then lays out the plan for helping students reach that objective. However, in a student-centered environment, the teacher takes the role of a facilitator. Teachers will help students through difficulties by asking questions and helping them identify alternate paths or resources, but they will not give the students the correct answer or try to influence them in one direction or another.

To begin the student-centered process, the teacher will present a central question. The students are then presented with an activity or situation which frames this central question, and thus giving the learners a common goal. It is also important that the central question is broad enough that there will be many justifiable solutions. The student will then determine the response they will develop, and then they will formulate their own plan for reaching the desired response. It is expected that the student justifies their reasoning behind any solutions that they arrive at. (Pederson & Liu, 2003, p. 57).

Student-centered learning environments (SCLE) should include several components to help in its successfulness. There needs to be a problem space where the central question is presented in a context which makes it meaningful for the learners. The students should also be provided with relatable cases that gives them a place to gain information about experiences that they might not have had themselves. They also need to be provided with many resources to use as they explore the central question and the route that they will want to take to developing their answer. There are many technology programs that have been developed with student-centered learning in mind.

Interactions with other students is encouraged in the SCLE process. These interactions are more collaborative centered, as opposed to cooperative learning. The students can sound ideas off one another, and give reasons to support their ideas, while respecting other students' ideas and opinions. Students should be able to choose who they wish to collaborate with, it should not be an assigned group chosen by the teacher. However, the student is ultimately able to come to their own conclusions and develop their own opinions (Pederson & Liu, 2003, p.59).

There are some concerns when implementing a student-centered learning environment. One of the main issues that teachers expressed was how to assess assignments. It is suggested that open-ended assessments be used so that the student can examine their own learning needs and changing understanding rather than being assigned a specific grade. However, this is hard to convey to parents that are expecting to see a letter grade assigned to their child.

There are also issues in schools where standardized testing is given high value. Teachers must make sure that they are covering the required standards in order to prepare students for testing. There are concerns about rather the students will arrive at conclusions on their own in regard to learning the necessary material covered on the test.

Funding could be an issue in several areas. First, teachers are often unclear on what their role is in the student-centered learning environment. Districts will need to invest in professional development programs to ensure that all the teachers are properly trained in ways to implement the SCLE successfully.

Technology is also a valuable, yet expensive tool, that schools need to invest in. There are many new programs designed specifically to support the SCLE. Purchasing these programs could be essential in aiding the teacher and the students successfully navigate SCLE by providing specific scenarios related to the central question. Proper technology takes a large burden from teacher planning. (Pederson & Liu, 2003).

Experiential Learning

Experiential learning is a process where students learn through experiences and then reflect and apply the knowledge gained through them. Experiential learning is implemented when students are introduced to highly engaging experiences that emphasize cooperation and collaboration among the students. The experience needs to occur in a structured format where students are engaged. Students need to investigate and ask questions on their own, as well as collaborating with their classmates. Learning often occurs when students are able to relate the experiences to their own lives, and connections will be made with classmates that might have shared similar experiences (Loveless, 2023).

There are several key learning principles that need to be considered when designing an effective learning program. First, the experiences need to be carefully chosen so that they can support reflection, critical analysis and synthesis. The experiences will also need to be structured in such a way that students are required to take initiative, make decisions, and be accountable for the results (Bartle, 2015, p. 2).

Throughout the learning process, the students need to be actively engaged. They should be posing questions, investigating, experimenting, being curious, solving problems, taking responsibility, being creative and constructing meaning. The students should be engaged on all levels. They should be intellectually, emotionally, socially, and physically invested in the learning process. This will produce a perception that the learning task is authentic. The results of the learning should be personal and form the basis for future experience and learning.

Relationships between the student to self, student to others, and the student to the world at large should be developed and nurtured. These learning experiences should allow students to explore and examine their own ideas and values. Because the outcomes cannot be totally predicted, students may experience success, failure, and uncertainty. Students should be encouraged to view the experiences as adventures, and not be afraid to take risks (Bartle, 2015).

The teacher's primary role is to select suitable experiences, pose problems, and set the boundaries of the experience. They need to be prepared to support students and ensure their physical and emotional safety. Beyond those, the teacher should play the role of facilitator to the learning process. They will want to encourage spontaneous opportunities for learning and be careful not to let their own preconceptions or biases influence the students (Bartle, 2015, pp. 2-3).

When visualizing what experiential learning should look like in a classroom, there are several factors that should be included. The activities should be learner-centered, and student directed. The activities should have emphasis on problem solving, discovery, and inquiry. They need to be designed so that they show practical applications to the course content. They need to be perception based, and focused on learning about learning (Bartle, 2015, p. 4).

While experiential learning is often implemented at the higher levels, there are scenarios where it can be implemented at the elementary level. Teachers can provide students with a rich environment with interest-based activities. Teachers can plan open projects based on themes that interest children such as dinosaurs or fairy tales. Teachers need to offer the children choices about which experiences that they want to explore. However, in order to not overwhelm children, it is suggested to limit the options to between three and five choices with the lesser number of choices offered to lower primary students. With younger students, teachers would have to have a more hands-on approach when guiding students through the idea process because they will lack experiences to relate to the material on a deeper level. Experiential learning should be used more as a supplementary technique with students at the Kindergarten and lower primary levels (de Bilde et al, 2015).

When teachers prepare for an experiential learning experience, they need to keep several things in mind (Loveless, 2023). First, the teacher will want to assess the students in the class to determine what experience, if any, that they have with the subject. Teachers will want to make sure that the lessons are diverse and culturally appealing to all students in the classroom. It is important that all students feel a sense of inclusion in experiential learning.

Once teachers have identified their student base, they will want to begin planning their activities. When planning activities, teachers will need to keep time limitations in mind. Also, it is important that the teacher can base the activities so that the children will be obtaining information that can be related back to the classroom standards. It is important to identify areas that are most suited for the learning activity as not all content is easy to apply experiential learning techniques. Science is often a subject that lends itself well to experiential learning. For

elementary aged students, a trip outside can easily be made into a learning experience relating to plants and their growing cycle (Loveless, 2023).

One of the main negatives associated with experiential learning is the grading process. It is difficult to assign a grade to something that student-centered. There are several tools that teachers can use to assess progress. First, students, with the teachers help, can create a personal learning plan at the beginning of the year. This plan should highlight their perceived strengths, interests, and short- and long-term goals. This plan should be referred to often throughout the year, and the student should evaluate where they are in their goals, what they have learned, and where they need to go from there.

Teachers can use learning rubrics. Rubrics can be personalized to include a variety of criteria. Students can help generate their own learning rubrics and refer to them to self-evaluate their progress (Segar, 2021).

Teachers can use formative assessments to see if the student is accomplishing their desired outcomes. Students may be asked to draw a diagram outlining a concept that they have been working on. Teachers can use that to assess rather the student is acquiring the knowledge that they should be. Looking at their projects can provide the teacher with information about their understanding of their topic, and can help identify any gaps present (Segar, 2021).

Cooperative Learning/Think-Pair-Share

Cooperative learning involves a small group of students working together as a team to solve a problem, complete as task, or accomplish a common goal. Group members will be part of a team, and the responsibility for success or failure will be shared equally by all members of the group. Cooperative learning can be beneficial in developing peer relationships. Since they are dependent on one another to achieve a goal, they will want all the members of their group to

be successful. This creates motivation for a student to be prepared, work hard and be on task during class because these behaviors will lead to peer approval (Artzt & Newman, 1990, p. 448).

Cooperative learning encourages active learning over passive learning. The belief behind this concept is that learning is most effective when students are actively involved and motivated in their studies. Research has shown that the implementation of cooperative learning can improve student performance, especially in the areas of math and science (Ebrahim, 2012, p.296).

Cooperative learning is also viewed as beneficial in the development of social skills. Schools should not just strive to build good pupils academically, but to also strive to create good future citizens. Cooperative learning has been shown to have a positive effect on students' friendships and interpersonal skills, such as social interactions, engagement, self-esteem, and motivation (Ebrahim, 2012, p. 296-297).

In the cooperative learning process, the teacher assumes the role of facilitator of students' learning and a role model for the presentation of the material (Artzt & Newman, 1990). The teacher will also be responsible for creating the groups, including the size of the groups and the composition of the groups. They will establish the types of tasks to be completed by the group and explain to the students the reasoning behind this cooperative learning task. The teacher will also need to explain how the group will be graded. Creating a rubric for the students to see is one way of doing this. They will also explain prior to the activities the expectations for the group's behavior, and individual and group responsibilities. During the activity, the teacher should move about the groups, monitoring, offering support, and intervening if any issues are noticed. The teacher should also offer encouragement and praise throughout the process (Palmer et al, 2019).

Cooperative learning can be implemented into the classroom through the "Think-Pair-Share" strategy. "Think-Pair-Share" is an effective strategy for teachers because it can be applied in some form across most all content areas. To begin, pairs will be determined, and the problem will be explained to the students. The teacher will be responsible for determining the pairs, and assigning the areas where the students will meet.

During the "think" portion of the process, students are given time to work individually. Students can begin thinking about how they would solve the problem, and can begin working towards a solution. This portion of the activity should last approximately five minutes. Older students may want to write down their ideas as they work through the issue.

Students will then move into the "pair" stage of the process. In this stage, the students will discuss their ideas with one another. They will explain their results to one another and listen to the reasonings of their partner. Ultimately, they will come up with a solution to the problem that they both agree upon and prepare to share their findings with the class (Mariamah et al, 2021).

The final stage is the "share" portion. Students would take time to present their findings and listen to the results of the findings of the other pairs. This should prompt active discussions among the students regarding similarities and differences that they found during the earlier stages. The teacher can facilitate the discussion but should encourage the students to reason out the solutions by sharing with one another (Mariamah et al, 2021).

Teachers have also implemented a variation of the "Think-Pair-Share" method by incorporating a reading and writing component to the process. In the "RWPS" method, students will first have an assigned reading component to complete. Then they will write down their

thoughts and ideas prior to discussion. The "PS" stage is pair and share and is completed in the same way as the "TPS" method (AdLit, 2023).

Action-Based Learning (Kinesthetics)

Action-based learning is based in the active learning methods. Active learning is defined as a set of instructional methods that engage students in the learning process. With action-based learning, students are actively learning through movement (Culp et al, 2020, p. 11). Studies have shown that physical activity can boost brain function, so the benefits of movement in the classroom go beyond just the physical. In his TED talk, Michael Kuczala discusses the brain-body connection, and states that "learning does not begin from the neck up. It happens from the feet up" (Kuczala, 2015, 2:35). By creating a classroom culture where students do more than just sit and passively listen, teachers can promote a wide variety of benefits for students, such as improved on-task behavior, increased collaboration, increased self-confidence, greater risk-taking, and more opportunities to take leadership roles. Research has shown that students that are stationary are only able to listen attentively for as many minutes as their age (McGlynn & Kozlowski, 2017, p.24).

Teachers can implement action-based strategies into their classrooms in a variety of ways. To boost reading comprehension, teachers can implement technique called Comprehension Process Motions (CPM). Comprehension Process Motions are hand placements and movements to represent abstract concepts, such as finding main ideas, inferring, and making predictions. These movements stimulate students' active learning, and can enable students to demonstrate that they are using a specific process. Teachers can watch for these signals while the students are reading independently so that they are aware that the student is comprehending

on a higher level (Block et al, 2008, p.461). Use of these motions can be taught are a Kindergarten level and used throughout the primary years of education.

Teachers should incorporate "brain breaks" throughout the day to get students up and moving. These actions can be incorporated into content lessons. Teachers can ask multiple choice questions, and have the students perform a certain movement to answer the question. This incorporates brain breaks while still covering content. These types of activities keep the entire class engaged as opposed to just calling on one student. The teacher can visually assess the entire class at one time. Teachers can teach content through motion by creating a series of movements. All of these things create avenues to support explicit learning, which is the brain's preferred way to learn (Kuczala, 2015).

Teachers can implement movement into all content areas. A fly swatter can be used to swat letters or sight words in a reading activity, or numbers or shapes in a math activity. Teachers can use different items to appeal to the students' sense of touch. Clay can be shaped into letters or numbers. Feel boxes can be used to allow children to describe items to other students by touch alone. This increases descriptive vocabulary and promotes collaboration between students ("Early childhood…", 1982).

Flexible Classrooms/Seating

Flexible classrooms and flexible seating are techniques that teachers can implement to increase student engagement, independence, and motivation. In a flexible classroom, desks have been mostly all replaced in favor of flexible seating. This includes a variety of work surfaces, seating sizes and heights which allow for different body positions. Students do not have an assigned seat, but are free to choose the seating option that bests suits the task they are working on. This allows students the freedom to explore, experiment, and make the space their own. The

goal is to encourage students to find original and creative ways to experience the classroom. This also allows the teachers to have the ability to rearrange the classroom at any time to suit the teaching activity and type of behavior that is expected (Bluteau et al, 2022).

Research has found that flexible classroom arrangements can contribute to the development of persona skills, such as self-reliance, self-regulation, and problem-solving. This can empower students to take more ownership of their learning experience. Flexible seating can have positive effects on attention, motivation, engagement, and behavior. Students are encouraged to move, which is especially beneficial with students that have a difficult time paying attention and staying on-task. Flexible classroom arrangement addresses students' physical, social, and cognitive needs (Bluteau et al, 2022).

Flexible seating choices can be beneficial in building a sense of community, communication, and collaboration among students. When using traditional, assigned seating, students may become possessive of that certain space and supplies. However, when using flexible seating, students will travel to different areas of the classroom, and sit where they choose on any day. Students will learn to take turns with one another, which will make for a better classroom community.

Communication is improved because students will have to choose where they want to set for that day. This improves communication between students and teachers. Students will have to be able to problem-solve, practice conflict resolution, and move towards high-order thinking skills.

Students will easily be able to collaborate with other students. Students are able to quickly pair up with a partner or a group because it is not necessary to move desks around to join a group. They are then easily able to rejoin for a whole group collaboration as well because

nothing will need to be moved around. Students will also have more of an opportunity to collaborate with different classmates because they will not be in the same area of the room every day (Wagoner, 2019).

Flexible seating will also create a mindset shift for both students and the teacher. By implementing flexible seating, the teacher will have students that are more highly engaged, and because the teacher can easily move about the classroom, it will be easier to see what the students are working on. Teachers will develop a different mindset about what a structured classroom looks like (Wagoner, 2019).

Students will become more self-aware about what types of seating and environment that best supports their learning style. A shift in mindset will help students understand how their environment works, and how better to deal with changes and conflicts. They will gain a better understanding that even mistakes factor into greater learning (Wagoner, 2019).

When implementing flexible seating in the classroom, teachers are only limited by their imagination, and their budget. Traditional tables can be lowered so that students can sit on large pillows. Bookshelves can become standing workstations. Plastic storage crates can be fitted with whiteboards and used as a mobile workspace for students. Couches or bean bag chairs can be used with lap desks or clipboards. Traditional chairs can be replaced with large yoga balls for the students to sit own. Large elastic bands can be attached to traditional chair legs so students can bounce their feet or fidget with when seated. Classrooms can still have a few traditional desks for students to sit in when they want. There are many options for seating that allow for student motion, such as wobble seats, pedal desks, and rocker seats.

Teachers will want to offer at least five more seating options than they have students in the classroom. This will give all students the opportunity to choose their seat for the day, and

reduces conflict over a certain seat. When first implementing flexible seating, allow every student the opportunity to sit in all areas for at least one full day before introducing the freedom of choice. When moving from a large group setting, like on a classroom rug, alternate which row you dismiss first from every group activity. This will enable every child to have the opportunity to choose where they want to sit (Stephens, 2022).

Teachers will want to clearly define expectations for the students when in their flexible areas. Students will need to understand that the student can be moved if the teacher sees that they are not on task. The teacher can help the students recognize what seating style works best for the activity they are completing. Students might want to choose one of the more comfortable options for reading, and one with a more supportive writing surface when they are writing or doing math. The teacher will need to set up a process to settle any arguments that might occur over seating. Try to allow the students to find a solution to their conflict when that is possible. Finally, make sure that there are clear attention grabbers for the student to recognize when it is time to change activities, or move back into a whole group setting (Stephens, 2022).

There are issues that can arrive with flexible seating. This type of freedom of choice can sometimes be overwhelming for some students, especially for those that value structure and routine. Some students might not enjoy the lack of personal space. Some students might struggle with not having an assigned desk and having to share the furniture and space with other students (Bluteau, 2022).

Teachers may also struggle with the best ways to implement this style into a traditional classroom. It will take patience, effort, and great management skills to help the students adapt to having more freedom. There may be issues with behavior that arise, and teachers will need to have a clear plan to address those issues.

Finally, there will be budget limitations. Teachers will need to be able to equip their classroom with many different furniture options. Teachers will have to get creative with the types of items that they purchase, and they will perhaps need to call on the community to get donations of different furniture and supply options (Stephens, 2022).

Gamification

Gamification is a teaching strategy that uses game elements such as point systems, leader boards, feedback, and rewards for encouraging and achieving goals in the classroom (Bharamgoudar, 2018, p.268). Because technology is a driving force in the classroom today, teachers need to find different strategies to engage students. Gamification applies gaming strategies to improve learning and increase student engagement. Playing games can help develop problem solving skills and improve critical thinking in students. Gamification takes educational content and transforms it into a game to help improve student engagement. The strategy of gamification is not necessarily to teach new content, but to reinforce concepts that have already been introduced.

Teachers can create several gaming strategies to help motivate children through competition. Many of the educational based gaming programs will have these built into their programming. Students can earn points and badges as they progress through their lessons. Teachers will be able to monitor their progress based on the amount of points that they earn. The teacher can create a leaderboard display in the classroom so that they children can monitor their progress, as well as compete with their classmates, thus increasing motivation to work hard.

Applying gamification in the classroom will typically require investment into learning software. However, there are many excellent programs that are offered free. Some of the more popular sites are Khan Academy, Quizlet, Kahoot!, and Google Read-Along. Games like

Quizlet and Kahoot! enable students to compete in a game show like setting where they respond via their devices. Teachers can select the subject to align with standards that are being covered in the classroom.

Teachers can carry the gaming mentality beyond just the technology-based approach. Elements of gaming can be added into the design of the classroom. Teachers can create different points-based activities and create badges and leaderboards to reflect those as well. Teachers can give points for academic based activities, as well as giving points for non-academic based activities like tidying up the classroom. Teachers can create their own physical badges that students can post in their cubbies or on their desks. There can be boards posted that show different "levels", and what is required for the student to advance to the next level. Creating visuals will keep students engaged and motivated to achieve (Buljan, 2021).

Makerspaces

Salisbury and Nichols (2020) refer to makerspaces as places where participants can design and create projects using a variety of physical and digital tools (p. 50). These spaces can either be in a classroom dedicated to this activity, or it can be used on a smaller scale in the corner of a regular classroom. Makerspace is very similar to project-based learning. It encourages students to be actively involved with their learning experience by providing materials for hands-on activities. Children are encouraged to use their imagination to solve problems, or to create new inventions. Students can also be given time to just tinker and play. Letting their own creativity guide what they produce.

While the term, makerspaces, is new, the principles behind the concept are not. The concepts of "learning by doing", and creative problem solving and tinkering is aligned with learning theories introduced by John Dewey's experiential education theory and Jean Piaget's

constructive learning theories. One of the most popular frameworks for makerspaces is based on a theory introduced by Mitchel Resnick. Resnick's theory centers around the "Four P's: projects, passion, peers, and play (Salisbury & Nichols, 2020, pp. 50-51).

Following this principle, can help teachers merge makerspace activities with their content-area learning. Teachers need to keep in mind the "four p's" when planning their activities. Using these as a guidepost will help keep teachers on track for meaningful lesson planning.

The project aspect of the theory involves making sure that the subject is broad. Teachers want the students to be able to make the lesson their own. Students will need to be able to take their own route when finding the way to the end goal. They will need to able to tie their project in with the initial lesson, but how they arrive there should be their own. This gives them a greater sense of ownership in their education, and thus making it more likely to retain the lesson being taught (Salisbury & Nichols, 2020, pp. 50-51).

The space should provide ample materials to engage the students' passion. This should be their main driving force as they bring their own interests and ideas to the project. Teachers will want to encourage students to place their own personal touches and identities to their projects. Students that are passionate about what they are creating are going to be more involved and invested in what they are learning.

It is important that there is also a peer aspect to the activities. Teachers will want students to have the opportunity to engage with their peers while working on their activities. Activities can be done individually, or in groups, but there should always be time allowed for students to talk with their peers about what they are doing, and why they are doing it. This fosters a sense of collaboration among the students while working on social skills.

Finally, the entire process needs to have the feel of play. Students need to feel free to create and design without the fear of making mistakes. Creativity should be encouraged and fostered. Teachers should play the role of sounding board to the students, while helping them to arrive at the content-area objective (Salisbury & Nichols, 2020).

Makerspaces are beneficial to students on many levels. These activities foster student-centered learning. These areas support both constructivism, as students build learning, and constructionism, as students develop tangible products. Students are encouraged to have a growth mind-set as they design-build-test-redesign their projects. Failure does not have negative connotations but is viewed as just part of the learning process. Without fearing failure, students' interest in learning is increased. Students are more likely to engage in very concentrated, higher order, learning as a result (Nadelson, 2021, p. 105-106).

Student development moves beyond just the learning objective. Makerspaces can increase opportunities for equity and inclusion. While many students are placed in groups based on ability in other subjects, that does not have to be the case in makerspaces. Because students are making their own paths and there are no wrong answers, collaborations can occur among students of all ability levels. Students will be more likely to interact and engage in meaningful conversations with their peers, because they do not have to fear failure. This promotes a greater sense of belonging and inclusion among the students, and therefore, creates a more equitable learning environment for all students (Nadelson, 2021, p. 106).

One big benefit of makerspaces is the effect that it has on the identity development of students. Working in a makerspace setting can influence how students view and identify themselves as learners. Students that might typically not excel in a normal classroom environment might achieve high success in a makerspace. Achieving success could then

influence the way students view themselves as learners, and thus helping to develop their growth mindset. Makerspaces offer opportunities for students that may not find success in traditional learning tasks to succeed, and therefore, build their confidence in their ability to learn (Nadelson, 2021, p. 106).

Teachers can create makerspaces in their classrooms with very little difficulty. The main items that need to be on-hand are tools and items that students can use to create. Many makerspaces have a digital aspect to them, where students can use technology to film and edit videos. They can also use software to enhance storytelling through animation. For the younger primary students, the digital aspect does not have to be included for the space to be effective.

Teachers can use different stations to engage the children. Stations can include a crafting station with a variety of items such as buttons, ribbons, and gems. As well as including things like scissors and glue. These items can be organized in buckets or tubs, where they are easily put away is the space is not in use.

Stations featuring electrical circuit kits and robotic kits are also options for a station. Children can gain hands-on science experience through these centers. They are able to explore what makes things work, and to question what happened when things failed. They are then able to transfer that knowledge into real world scenarios.

Stations where children explore construction are another option. These stations can provide a variety of sticks and items to construct their own invention to be used to complete a task. Legos are another valuable building tool that can be included in a construction station. Students can choose to follow a certain Lego design or create their own unique design. Another addition to the construction station can be old toys or unworking appliances that students can take apart and explore how things are built. All of these activities engage the students in what

steps they will need to follow to achieve their final goal, thus encouraging the development of critical thinking skills (Smith, 2021).

The makerspace area in the classroom needs to be where students are able to easily access it, but where it is not in the way of other daily activities. A back corner is a good option for placement. Ideally, if your school has a little used room, it could be dedicated as a makerspace area. This would make it better accessible for many classrooms to use, and the burden of creating and stocking areas could be distributed to many teachers instead of just one.

Makerspaces are especially beneficial for incorporating STEAM (science, technology, engineering, art, and mathematics) into the classroom. Students can explore and apply these learning concepts through a variety of methods. From building a working tool to complete a task to planting a seed and documenting its growth, there are limitless activities that teachers can design to support the STEAM concept (Smith, 2021).

The main focus of any makerspace activity needs to be supporting the student's ability to be hands-on and creative. When implemented correctly, makerspaces can be a valuable tool in creating high levels of student engagement. Students will develop their creativity and problem-solving skills through hands-on activities. They will learn to collaborate and cooperate with their fellow students. Their self-confidence will be boosted as they learn to make real world connections to the in-school activities (Smith, 2021).

Although makerspaces can offer many valuable benefits, implementing them is not without challenges. Many teachers are often unsure about how to best use the areas to align with their teaching standards. Often times, teachers have difficulty explaining the processes to the students therefore creating confusion for the students in knowing what to do in the space.

By design, the makerspaces are meant to be highly, engaging, with active collaboration occurring. This can sometimes be disorienting for some students. This is especially so for those that have conditions in which maintaining routine, and structure is important to them. Teachers will need to be especially sensitive to the needs of these students and find ways to involve them in the makerspaces which will be enjoyable and beneficial to the student as opposed to overwhelming and confusing.

Finally, there is the concern of being able to find the right space to implement a makerspace area, and extra funds to pay for supplies. In this day where classrooms consist of larger numbers of students, extra space is often a luxury that teachers do not have. Funding a space is challenging as well. While teachers can often initially implement the space relatively inexpensively, the need for constant replenishment of supplies will add up over time. (Salisbury & Nichols, 2020).

Universal Design for Learning (UDL)

Universal Design for Learning is an educational framework that works to address the varying needs of learners by removing barriers from the curriculum. Classrooms need to be inclusive for all students, regardless of their needs and abilities. Through intentional planning, teachers can address the varying ways that students access and understand information, engage with content and instruction, and demonstrate what they know. UDL is based on three primary principles: engagement, representation, and action and expression (Lowrey et al, 2017).

The principle of representation is referred to as the “what” of learning. The “what” of learning is recognizing the way that different students learn in different ways. A student with a disability might require different strategies than a student without one. Providing multiple options for representation of content is crucial.

Action and expression are known as the "how" of learning. Students move through their learning environment in different ways. Teachers will need to develop different strategies for helping students find their best way to learn.

Finally, engagement addresses the "why" of learning. This principle addresses the reasoning behind students' efforts, persistence, and self-regulation. This step is essential because it determines how a learner become engaged and motivated to learn (Comevo, 2018).

When implemented correctly, UDL can be beneficial to students of all learning styles and needs, as well as the classroom teachers in many ways. There is increased engagement among both students with disabilities and students without disabilities. Because of the inclusiveness that is created in the classroom, there is a positive impact on students with disabilities and their peers, including the development of friendship. Students without disabilities have shown improvement in completion of work, as well as demonstrating more caring and understanding towards students with special needs. This greater understand leads to improved collaboration overall in the classroom (Lowery et al, 2017).

Implementing UDL into the classroom takes planning and organization. Teachers must first determine their students' strengths and barriers. This can be started by talking with the student about how they feel they learn best, but often, the student might not really understand which style works for them. Therefore, the teacher should also observe them over time and make notes about which method that they observe seems to work best for the student.

Teachers should find ways to incorporate digital materials into their content whenever possible. Digital devices can remove barriers by offering things like text-to-speech to read aloud, and varying font sizes for visually impaired students.

Be sure to offer content in a variety of ways. Some students might grasp the concept by simply reading a textbook, while others might do better watching a video. Once they understand the concept, then let them apply that knowledge to solving a problem, either independently or with a group (Carroll, 2022).

Finally, teachers need to be flexible with how they access the students for understanding. Many students are not going to be able to show what they have learned by just taking a traditional paper-pencil test. Give the students options, when possible, on how they demonstrate what they have learned. They could give speech, prepare a slideshow, or even make a video. The main idea is to give the student a chance to take ownership of their learning (Carroll, 2022).

Conclusion

The challenges facing teachers continue to grow for many reasons. Teachers must continue to strive to close the gap in learning that was created due to the loss of in-person education during the COVID pandemic. Teachers also face an influx of learners that do not have English as their first language, and this is a trend that is predicted to continue to grow over time. An effective teacher must recognize that all students do not have the same learning style. Some students learn best through visual learning strategies. There are learners that respond better to auditory or kinesthetic learning strategies. Teachers must be prepared with the knowledge of how different strategies will be most effective to their diverse population of learners.

For auditory learners, teachers can use a variety of strategies to meet their students' needs. Direct instruction and lecture-based learning both deal with the teacher presenting the majority of the material, and the students listening. In these strategies, the teacher is the primary source of learning. The teacher will choose both what material is presented and how it is presented.

However, there are many strategies that will appeal to the auditory learner, while also allowing them more independence than direct instruction and lecture-based learning. With turn-and-talk, students must present and listen to ideas from their fellow classmates in response to a question presented by the teacher. With student-centered learning, the students play a larger role in deciding how they want to learn the material. Finally, with cooperative learning, it is important that students interact and listen to one another as they work through a broad problem presented to them by the teacher. At the base of all these strategies is the ability to listen and understand what is being presented.

Visual learners respond better when they are given material to look at when they are trying to master new material. Strategies that incorporate visual elements as one of their main bases include the visual-spatial approach. This strategy suggests using graphic organizers when presenting material using a lecture-based approach. This gives the student something to visually use to help them better understand the material. Teachers could also videotape themselves presenting the lecture so that students can pause and rewatch any segments that they did not understand the first time. Flipped learning has a similar approach, with students watching the instruction part of the lesson in their own time through a video before class. During class, students work on assignments so that the teacher is there to provide immediate feedback.

Project-based learning and experiential learning strategies both appeal to the visual learner. In both project-based learning and experiential learning, students will work through challenges while applying real world strategies. They are often times creating or making things that could be used to solve problems. They are learning through experiences rather than just listening to a lecture.

Students with a kinesthetic learning style like to be physically active in their learning environment. There are many strategies that teachers can employ to appeal to this learning style. Teachers can create a classroom that encourages movement by creating a flexible classroom. In this classroom, students will have the opportunity to learn in a variety of spaces with many seating options. Students can choose which option suits them best for the different activities. Creating a Makerspace area allows students to explore a variety of materials when trying to create something that incorporates the classroom content.

Action-based learning and gamification also appeal to kinesthetic learners. Action-based activities incorporate movement into the lesson in a variety of ways. The students are encouraged to move around the classroom and use their bodies to answer questions through different movements. Gamification incorporates the use of games into the presentation of actual classroom content.

There are many broader strategies that incorporate elements of all of the three major learning styles. Differentiation, scaffolding, blended learning, and the Universal Design for Learning all use concepts from all the learning styles to present a more well-rounded classroom. With differentiation, teachers will tailor lessons to appeal to different levels and learning styles. Students will be placed into groups with students of similar levels and learning styles so that they can best receive content in the way that is best for them.

In scaffolding, material is presented in small chunks. In the beginning, teachers take a more active role in presenting and guiding the students. Over time, as the students begin to demonstrate a greater understanding, “scaffolds” are removed so that the student becomes a more independent learner and is less reliant on the teacher.

In a blended learning environment, students will engage in both in-person and on-line learning. This allows students to have flexibility in how they choose to learn. Students are able to learn from home some of the time, and in an actual brick-and-mortar school part of the time. Students are able to collaborate with other students in a variety of ways. A blended learning environment includes many aspects of all of the three major learning styles.

The Universal Design for Learning(UDL) incorporates points from all of the three major learning styles. The main focus of a UDL approach is inclusion. The teacher should create a learning environment and present educational content in such a way that all students, regardless of physical or mental limitations, can succeed and grow. They can do this by setting up classrooms in such a way to accommodate students with any physical limitations. Also, they should prepare lessons where students of all levels can collaborate and feel successful and included.

An effective teacher is going to be able to recognize the needs of their students. Because all students will learn in different ways, it is important that teachers take those needs into consideration when choosing how they will present content. Teachers need to be open to new strategies, and constantly research new and different ways to approach the challenges that the future holds. Teachers that are open and willing to explore and implement a variety of teaching strategies into their lessons are going to be the teachers that produce successful, well-rounded learners that are well on their way to becoming productive citizens in the future.

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