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Emerging Scholar
Multiple Intelligence in a Center Based Environment

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Kaitlyn Arns is pursuing her Bachelor's in Elementary Education at Northern Arizona University in Flagstaff, AZ. Her research interests include understanding how the Theory of Multiple Intelligences and Self-Determination Theory can be better understood to help engage students in the classroom. This research was conducted to gain a new perspective on students as individual learners and the findings serve as a resource for teachers to reform instructional practices. After graduating in December 2021, she will continue advocating for student needs and be using the different teaching approaches from this research in her own classroom.

Abstract

The Theory of Multiple Intelligences (MI), originally defined by Howard Gardner (1993, 1999), continues to contribute to epistemological and pedagogical understandings and practices in the elementary classroom. The multiple intelligences manifest naturally through students' work; center-based learning is an effective approach to authentically activating children's innate intelligences. Centers provide an opportunity for students to explore a subject through varied experiences. The MI Theory reveals each child possesses particular intelligences and ways of understanding which supports their learning in unique ways. Consequently, traditional lessons taught in whole group settings do not satisfy individual needs. Furthermore, affording children with opportunities to determine choices in their own education, they become more motivated to engage with the material. Self-Determination Theory explains why an individual's interest in their schoolwork increases once they are empowered to make decisions about what they learn based on their interests. Building on Gardner's work, this current discussion suggests the most effective way to foster all intelligences is through choice-based centers. This overview of existing research supports implementing the theories of Multiple Intelligences and Self-Determination in the classroom. Recommendations for centers and authentic assessments are also included as a guide for reforming instruction to best benefit students.

Keywords*:* Multiple Intelligences, Intrinsic Motivation, Centers, Assessment, Student-Centered, Self-Determination Theory, Learning Styles, Small Groups, Units, Choice-Based, Constructivism

Introduction

Howard Gardner's (1993, 1999) Theory of Multiple Intelligences, as well as other literature, supports a student-centered approach in education. The Theory of Multiple Intelligences increased in popularity with educators because many were finding that not all students responded to traditional teaching approaches; thus, teachers sought to find an effective way to improve instruction in order to reach all their children (Strauss, 2013). With the defining of these intelligences in the classroom and the implementation of a student-centered approach, students have the opportunity to gain more control over their own education and also the chance to pursue their personal inquiries. Teaching is an evolving profession requiring both educators and students to adapt as they grow and develop. In order to provide students with dynamic learning opportunities that foster genuine interest in and understanding of class material, it is important for teachers to provide creative, inquiry-based, and explorative center options allowing students to operate in multiple domains.

For many educators, multiple intelligences become evident in all student populations as they work with children on a daily basis. Thus, it is important for teachers to develop an idea of how to activate MI's through different methods of instruction (Peterlin et al., 2021). Developing the strengths of learners is essential for student success in the classroom. Even though students manifest a particular intelligence, it does not mean they lack the skills of the other intelligences, or that they cannot operate in multiple domains. This is a key point to remember when deciding how a teacher wants to guide their students through the learning process. Many teachers believe that identifying the multiple intelligences in their students is the best way to guide their instruction, but when intelligence is identified by the teacher, it can lead to overly structured assignments (Jiajun, 2020; Kaya et al., 2007). It is critical students be trusted with the power to regularly decide for themselves how they can best engage with the content. Developing a one-size-fits-all lesson for students to follow does not leave flexibility for them to explore different approaches to the presented material (Sharon, 2001). Furthermore, if a teacher labels a child into a particular MI box, that may have the potential to narrow the child's educational experience. One solution to this potential limitation is to introduce centers and choice into the classroom. By introducing choice-based centers, students are granted more power over their own education and are allowed to manifest their intelligence(s) in multiple and dynamic ways. Ensuring multiple options for interest-based learning provides a way for children's inherent intelligences to manifest in a natural way. This can lead to a greater degree of intrinsically motivated effort as well as help students gain confidence in their abilities (Ballinger, 2011).

Providing students more freedom and choice can be an intimidating idea for some teachers. Teachers may worry that by giving students more control, the students will abuse their freedom and that the choice-based centers will lead to classroom management issues. Often situated in a curriculum-centered, standards-based paradigm, some teachers operate in a coverage mindset and worry about test scores. However, multiple studies describe how providing students with choice in their education increases their motivation to spend more time and energy on the learning task (Chang et al., 2016; Erwin, 2004). Not only does choice in the classroom benefit students academically, but it also develops lifelong skills such as self-regulation and problem solving. Additionally, the Self-Determination Theory supports these findings and concludes that

allowing students to make their own decisions promotes feelings of autonomy, motivation, and healthful functioning (Patall et al., 2010).

A difficult aspect of implementing choice into the classroom is understanding how the role of the instructor changes. In a student-centered and choice-based learning environment, the teacher's role is to guide students through their own explorations and discoveries. Traditionally, educators' training is to teach students based on the school curriculum, which can lead to narrowed pathways for learning and allow limited flexibility for students to explore content from multiple intelligences. The traditional methods of instruction may be more efficient in terms of content delivery and standardization, but it might also lead to burnout for both students and teachers (Oberle et al., 2020). One of the benefits of ensuring students the power to make their own decisions in the classroom is it leads to diverse, creative, and imaginative projects that inspire teachers and students alike while also maintaining a fresh, varied classroom atmosphere. Afforded control over their own learning, students demonstrate hidden talents and innovative ideas not possible through worksheets or scripted teaching and learning processes. By supporting students in their own search for knowledge, teachers channel their instructional energy into focusing on the individual needs of their students rather than creating standardized lesson plans targeting all learners.

In order to begin implementing these practices into the classroom, a base knowledge of the Theory of Multiple Intelligences, an understanding of the rationale for implementing choice-based centers, and a description of how choice and interest-based learning foster intrinsic motivation become important. This discussion provides educators with ideas and recommendations on how to apply these strategies into practice and additionally, illustrate specific examples of centers and project ideas. Finally, integral to the discussion, descriptions underscore the importance of authentic ways to assess students' work without the use of rubrics or tests. Research-based recommendations for instruction that fit within a child-centered paradigm will also be included. As the most effective and applicable methods of instruction become evident, teachers situate their teaching philosophy and decide how they will apply this knowledge to benefit their future students.

Literature Review

Finding a way to engage students in the school curriculum can be difficult because of the differences between each student and the nature of homogenized curriculum programs. Classroom instruction becomes impacted by a variety of factors. These include developmental stages, cultural identities, socio-economic status levels (SES), individual backgrounds, and multiple intelligences (Goetz et al., 2013). In order to instruct all students in an authentic way, teachers recognize the individual needs of each student (Kolman et al., 2017). Teachers view children as unique individuals, rather than perceiving them as a whole group. Understanding children's learning in this way, teachers use culturally responsive pedagogy, meet individual developmental needs, provide diverse and dynamic scaffolding, and allow for the natural manifestation of multiple intelligences (Sanders et al., 2016). When teachers evidence an awareness of the many differences in their children and participate in the freedom to create varied instructional experiences, they become better able to engage all of their students.

Multiple Intelligences

Howard Gardner indicates nine main multiple intelligences exist in humans (McClellan & Conti, 2008). He argues that people are not born with all of the intelligence they will develop in their lifetime, but that intelligence emerges as they grow and encounter new experiences. The original theory of intelligence states that each person has a general "g" intelligence that focuses on their cognitive abilities (Marenus, 2020). Gardner describes the nine intelligences as verbal-linguistic, logical-mathematical, spatial-visual, bodily-kinesthetic, musical, interpersonal, intrapersonal, naturalist, and existential (Northern Illinois University Center for Innovative Teaching and Learning, 2020). Gardner's research contributes to the development of instructional methods considered appropriate in support of children's unique and emerging minds. Many studies evidence these methods can be effective and valued by the children, which can positively impact intrinsic motivation (Gardner, 1993; Dueñas Macías, 2013; Kaya et al., 2007; Norris et al., 2004). The following provides a description of Gardner's nine multiple intelligences as they relate to the classroom environment.

1. *Verbal-linguistic intelligence* is referred to as "well-developed verbal skills and sensitivity to the sounds, meanings and rhythms of words . . ." (Northern Illinois University Center for Innovative Teaching and Learning, 2020, para 2.). Strengths for this intelligence include reading, writing, and speaking. Proper use of language is understood as is the meaning of written and spoken words. Students who have a strong verbal-linguistic intelligence might gravitate towards creative writing, debating a topic, or expressing their learning through a literature project. A person with a strong verbal-linguistic intelligence evidences the skills to speak, write, communicate, and learn new languages more easily (Gardner, 2017). These students benefit from meeting in groups to tell stories, reading books, taking part in a debate, playing word games, and writing for a class newspaper (Pal, 2011).
2. *Logical-mathematical intelligence* is the ability to think in an abstract and conceptual way. Students with this type of intelligence can find and interpret patterns in life and in schoolwork. If given center choices, a logical-mathematical intelligence would most likely engage with scientific or mathematical projects to investigate inquiries or explore the options of solving a challenging problem (Marenus, 2020). The purpose of teaching mathematics to students goes beyond providing them with numerical facts. Math requires students to use problem-solving skills that can be applied to other aspects of their life as well (Arum et al., 2018). When teachers provide the opportunities for students to explore their logical-mathematical intelligence capacity, they build their problem-solving skills and grow as learners.
3. *Spatial-visual intelligence* is defined as the capacity to think in pictures, images, and visualize in an abstract approach. Students who think in this way use both their visual input from the external world and internal imagery to think about and understand content on a deeper level. To aid students who identify most with this intelligence, an instructor might provide various artistic options of expression (Marenus, 2020). One barrier regarding this intelligence might be students with aphantasia which refers to a condition for which a person has reduced or absent voluntary imagery (Zeman et al., 2015). This means some students cannot visualize class material in the way that people with a strong spatial-visual intelligence can. This is one of many reasons why it is important for

students to be presented with various opportunities to learn rather than compelled to complete an assignment that requires them to do something they physically remain incapable of.

4. *Bodily-kinesthetic intelligence* is defined as the potential for a person to use their body to solve problems. Howard Gardner described how mental and physical activity become related and that a coordinated child could learn through this approach (Macnamara, 2016). Students with a strong bodily-kinesthetic intelligence communicate well through body language and learn best when something is first modeled by the instructor so they can mimic their actions. To most accurately assess what students with this intelligence understand, teachers provide students with opportunities to make or invent something with their hands, perform a dance, or participate in role-play. Centers in the classroom greatly benefit these students because they may evidence difficulty in sitting still for a lesson (Blumenfeld-Jones, 2009).
5. *Musical intelligence* refers to a skillset in performing, composing, and appreciating musical patterns (Marenus, 2020). Introducing music and sound into the classroom is critical for children evidencing a strong musical intelligence. These children become most aware of sounds in the classroom as well as in the real world. They benefit from engaging in band practices or listening to the different sounds of animals to better understand connections between species. These thinkers can communicate and find meaning through different sounds that may not activate the same type of learning for other students (Helding, 2010). Additional research describes how musical centers in the classroom benefits students because they can creatively interact with material through a method that best fits their learning needs (Ballinger, 2011).
6. *Interpersonal intelligence* is the ability to understand the motivations, intentions, and desires of other people. Additionally, people with this intelligence, possessing good social skills, work effectively with others (Macnamara, 2016). This way of approaching learning explains how they are able to easily relate to others. This intelligence can be activated in the classroom through partner or group work because these students learn best through personal interactions. Students with an interpersonal intelligence find it easy to understand the feelings of others and are able to see situations from their perspective. This understanding of others draws students with a strong interpersonal intelligence to other people which can lead to seeking out a career with a highly social aspect (Marenus, 2020).
7. *Intrapersonal intelligence refers to* "the capacity to understand oneself and appreciate one's own feelings, fears, motivations, and limitations as well as strengths," (Macnamara, 2016, p. 251). This definition is similar to that of interpersonal intelligence, but the main difference is whether the person better understands themselves or others. A child with a strong intrapersonal intelligence can easily reflect on their own thoughts and actions in a constructive way from which they can learn. These children are most aware of their own emotions, values, and beliefs. Students who think in this way might prefer to complete activities alone rather than with a partner or group. These students may express themselves as more self-confident and inwardly motivated. This type of intelligence helps students to guide their life decisions and supports their ability to self-regulate emotions (Mowat, 2011).
8. *Naturalist intelligence* is described as one's ability to connect with nature through environmental awareness. Students who have a strong naturalist intelligence can

recognize, understand, and appreciate the environment, making them more able to solve environmental and sustainability problems (Wirdianti et al., 2019). One way students express and develop a naturalist intelligence in the classroom is through outdoor activities. Students may garden or research living things surrounding the school (Hasanah et al., 2019).

9. *Existentialist intelligence* is defined as a sensitivity and capacity to develop and look for answers to deep questions about human existence (Northern Illinois University Center for Innovative Teaching and Learning, 2020). Students seek answers to questions such as "What is the meaning of life? Why do we die? How did we get here?" (Northern Illinois University Center for Innovative Teaching and Learning, 2020). A center-based environment allows students to pursue deeper questions and, in doing so, develop problem-solving skills in the process of learning about the world. Students with a strong existentialist intelligence are reflective in their approach to school and life (Northern Illinois University Center for Innovative Teaching and Learning, 2020). Most recently added to Howard Gardner's Theory of Multiple Intelligences, this intelligence is less developed than the previous eight intelligences.

Intelligences are not limited within children as some children evidence access to many or all of the intelligences, but they may demonstrate greater strength in some areas than others. Teachers include different classroom activities to help develop some of these intelligences in students; centers represent one of the most effective strategies to provide students with opportunities to develop multiple intelligences (Bautista et al., 2019). Providing students with multiple opportunities to explore through various methods of learning reveals the more prominent intelligences in the classroom. The Theory of Multiple Intelligences was not initially developed for educators to improve their practice, but once educators applied Gardner's findings, they found it to hold true in the classroom (Armstrong, 2018).

How to Use the Theory of Multiple Intelligences in the Classroom

The theory of multiple intelligences is not the same as an understanding of learning styles. The definition of intelligence according to Gardner is a "biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are of value in a culture" (Gardner, 1999, p. 28). The term learning styles refer to "how learners gather, sift through, interpret, organize, come to conclusions about, and 'store' information for further use," (Chick, n.d., para. 1). The difference between intelligence and style in the context of teaching and learning in school is that intelligence refers to the strong computational power a person possesses, while their learning style is how the individual approaches a situation (Strauss, 2013). When it comes to determining a child's most dominant intelligence, it is important to remember that they will have characteristics of many of the other multiple intelligences as well. To effectively instruct, a teacher is aware of how the student interacts with the material, rather than focusing solely on their prominent intelligence (Dolati & Tahriri, 2017). When instructors focus too much on this idea of emphasizing a particular intelligence or activating a specific learning style, they begin to assign students a prescribed course of action, which moves the direction away from the learner-centered approach of teaching and into teacher-centered instruction.

A more efficient way to reach students is to offer multiple approaches to learning by setting up choice centers in the classroom (Dueñas Macías, 2013). During center time, students become empowered with the opportunity to make their own decisions about their learning. This student-centered environment introduces choice into the classroom, encouraging students to pursue their own interests and become more intrinsically motivated to learn (Norris et al., 2004). Today, in many classrooms, students remain compelled to follow someone else's rules and curriculum, and then take a standardized assessment that relies heavily on memorization of facts rather than fostering conceptual understandings. In order to ensure students, succeed in the classroom, it is important they are able to make decisions about their own learning, so that the environment becomes developmental, constructivist, holistic, and learner-centered (Kohn, 2020). Requiring students to follow a strict lesson plan that has only one option will not allow them to fully investigate their own interests. School is meant to be a place for students to explore and inquire about the world; if they are given a topic or assignment in which they have no interest, their curious minds may diminish, being shut down or ignored.

Self-Determination Theory

Multiple studies conclude providing students with some freedom and choice in the classroom leads to the development of an intrinsic motivation. This means students engage in an activity because they find it interesting and receive satisfaction in the process. Through intrinsic motivation, students exert greater effort and put more time in their work and projects which result in more authentic learning (Gagné & Deci, 2005). This motivation is further explained by Edward Deci and Richard Ryan's Self-Determination Theory (SDT). This framework examines the human tendency to move towards growth and outlines the differences between intrinsic and extrinsic motivation. The main difference between the SDT and other motivation theories is that its focus is on the strength of autonomous versus controlled motivation, rather than a total amount of motivation. Autonomous motivation helps with effective performance and well-being whereas controlled motivation takes away from these results, especially if creativity, cognitive flexibility, or deep processing of information is involved (Gagné & Deci, 2005).

The Self-Determination Theory also investigates the difference between intrinsic and extrinsic motivations particularly observed in the classroom. One core tenet of SDT, extensively supported by the research, is that "more autonomous forms of motivation will lead to an enhancement of students' engagement, learning, and wellness" (Ryan & Deci, 2020, p. 4). This is true for children at every level of development and across multiple content areas. Higher academic achievement is seen with autonomous forms of motivation, which is likely due to the internalized motivation that leads to a greater effort put forth by the students. As they increase their investment in the work, they identify more with the subject and come to realize a relationship with schoolwork in a positive way (Ryan & Deci, 2020).

Importance of Play and Inquiry to Activate Multiple Intelligences

The Multiple Intelligences Theory highlights the importance of moving away from whole group lesson plans and strategizing towards a less structured approach. Allowing students to play in the classroom is important in that they can discover their own interests. The Declaration on the Importance of Play states that "play is self-chosen, for without active choice and engagement the

activity is empty and reduced in meaning and significance" (IPA, 2014, p. 1). By definition, play is not rule bound. This means play is not attached to learning outcomes. Authentic play allows students to determine and use their diverse forms of intelligence; it evidences no objectives because this might undermine children's self-discovery.

Play is important for learning because it develops essential skills in the students that they will use for the rest of their lives. If a student chooses to play alone, they can improve on their individual problem-solving skills. This will help them when encountering challenging problems during a lesson. Students can also choose to play in groups which assist in building meaningful relationships and as well attain experience collaborating with others (IPA, 2014). Even if play is not directly related to students' academic learning, the experiences they receive through these hands-on explorations increase their engagement in the classroom (Kinkead-Clark, 2019). Data describe how students evidencing opportunities to play in the classroom become "physically healthier, more socio-emotionally grounded, more creative in their thoughts, have more developed oral vocabularies, and are able to engage in more complex critical thinking and problem-solving strategies" (Kinkead-Clark, 2019, p. 178). A center-based environment provides students with multiple opportunities to play because of the freedom to decide how they want to approach their topics of choice.

Incorporating Multiple Intelligence Theory in Classroom Practice

Creating a Student-Centered Environment

Building a student-centered environment in the classroom is essential when strategizing for student success (Ballinger, 2011). It is important students participate in learning opportunities involving social interaction while engaging in classroom activities and centers. Introducing students to this type of environment may take some planning; a highly scripted, teacher-centered approach undermines social interaction. A student-centered environment requires teachers to step back and allow children to inquire and discover on their own. Letting students choose how they want to investigate a topic and spend their time will ultimately lead to a positive shift in their motivation and academic performance (Patall et al., 2010). One art teacher found that allowing her students to be creative and push the boundaries of what they were asked to do resulted in work that was unique, imaginative, and inspired (McElhany, 2017). This is one example of ways in which students demonstrate their extensive capabilities when they have the freedom to explore. Teachers can only provide the conditions for students to authentically learn because ultimately, learning resides within each student. Standardization narrows learning opportunities and creates superficial understandings through memorization.

Using Centers in the Classroom

Educators acknowledge the idea of implementing traditional centers into their classrooms. Traditional centers operate with a specific task for students to complete in a certain amount of time. Then, the students rotate through the stations, so that the teacher can ensure they have a chance to engage with each of the activities. Having various stations for students to explore makes it easier to distinguish between activities and provides a way for teachers to monitor the classroom. However, this type of structured center approach does not foster a genuine

understanding of material or allow students to make authentic connections in their learning (Dueñas Macías, 2013). The predetermined activity at each station limits the options for students and narrows the range of opportunities for engagement.

Apart from the traditional center, Pattillo and Vaughn (1992) describes learning centers as "a defined space where materials are organized in such a way that children learn without the teacher's constant presence and direction" (p. 13). Howard Gardner's Theory of Multiple Intelligences suggests students need to have the opportunity to explore different approaches to learning (Dolati & Tahriri, 2017). This authentic learning is achieved when teachers afford their students the freedom to engage with material in whatever format most appeals to them. Providing this time for students leads to the development of an intrinsic motivation and genuine interest in school (Gagné & Deci, 2005).

Learning centers allow students to work both independently and in small groups. Taking away rules about timing and rotations through center spaces allows students to work at a pace and level that is appropriate for each child's individual needs (Ballinger, 2007). Importantly, centers reflect the interests of a student or group of students. Learning objectives and standards which limit the possibilities for center time and do not support children's choices do not belong in centers. Standards and objectives may be targeted in a small group setting where lesson plans are more structured and guided by the teacher. This customization of centers creates experiences that allow for meaningful learning on an individualized basis and provides students with greater potential for success in and out of the classroom (Pattillo & Vaughn, 1992).

It is important to remember that the idea of centers is not to attach a specific learning objective. Their purpose is to give students a chance to explore their interests in whatever way they see fit. This supports the idea of activating each of the multiple intelligences simultaneously in the classroom. Students can choose from an abundance of options provided by the teacher or generate an activity or project completely on their own. The options provided range in difficulty from simple to complex so that children can decide to challenge themselves or remain in a learning comfort zone. When students choose to repeat the same center or engage with material at a lower level than others, there is no punishment or shame. This choice might be their way of building a strong foundation with the topic before they can grow and challenge themselves. Centers provide an opportunity for children to use their imagination and learn in a way that is comfortable and fun for them. The freedom to choose what center they go to and how they express their understanding supports the Self-Determination Theory as students become more intrinsically motivated. They can choose to work by themselves, with a friend, or even with a group. In this way, centers can also provide opportunities for students to build social skills and learn how to collaborate with others.

Guided by two primary strategies, teachers plan for students' successes. First, as much as possible, teachers individualize learning. As a part of constructivist theory, students learn best when they can connect new learning with personal experiences or their prior knowledge (McLeod, 2019). One way to do this is by integrating technology that will adapt to each student's unique intelligence. Ensuring that each student feels comfortable in their learning environment will improve their confidence and therefore their success in the classroom. The second strategy is to pluralize teaching. This means that rather than following the one-size-fits-all curriculum that is

provided through textbooks and worksheets, teachers introduce a variety of options that their students can choose (Sharon, 2001). The freedom of a choice-based center environment will allow students to explore through their diverse intelligences, interests, and will fit within developmentally appropriate ranges that activate learning in a way that is rarely seen in a one-size-fits-all lesson plan. Providing center options in a classroom allows the teacher to present the same material to students in many ways. Students can then choose to remain at a single station and learn in that way, or they can rotate through the options, giving them a better understanding of a topic through differing methods of delivery (Strauss, 2013).

Setting up effective centers in the classroom can be challenging for teachers who are more familiar with traditional classroom teaching methods. Generally, educators are seen as having facilitative roles and believe that when the teacher is not leading instruction, he or she has lost control of the class. In contrast to a controlled classroom, effective classroom management involves creating an inviting and appealing environment for learning (Korpershoek et al., 2016). Choice-based center environments provide students with opportunities to gain confidence in their learning abilities and can help them recognize their own intelligence and potential to succeed. Various studies on classroom management in relation to center time reveal classroom management does not require students to follow strict rules (König & Kramer, 2016). When children are not allowed freedom of choice while engaging in centers, they disconnect from the material and may lose their interest in school all together (Bautista et al., 2019).

When reviewing learning center types present in elementary school classrooms, data illustrate the options for some subjects more common than others; additionally, time spent by teachers in the different centers varied widely (Bautista et al., 2019). Also, teacher-directed centers with time limitations defeat the purpose of giving students the time they need to inquire and explore their personal interests at their own pace. It is important students be provided with more freedoms and less restrictions for their multiple intelligences to manifest naturally and for them to have the opportunity to think in multiple domains (Barbot et al., 2012). For centers, students can be prompted with various choices or the option to create an original center idea of their own. The provided prompts might include different terminology based on the multiple intelligence they activate. The verbs that would be present at various centers demonstrate examples of how students might engage with the material. It is important to remember that these prompts ensure options for the students; prompts/verbs do not translate into measurable objectives for the class. According to McKenzie (2015), the verbiage used in choice-based centers might include: read, write, speak, or explain for centers that foster a verbal-linguistic intelligence. A logical-mathematical intelligence might be fostered by the following verbs: solve, question, hypothesize, or calculate (McKenzie, 2015). These verbs can be included in center prompts or suggestions that promote opportunities for the student's intelligence to manifest in dynamic ways. Likewise, a visual-spatial intelligence may be fostered by the following: observe, draw, create, or imagine (McKenzie, 2015). It is important to note that these verbs are not key terms in objectives and will provide a broader range of authentic learning and opportunities for applications that may not be quantifiable. In fact, choice-based centers should have no standardized objectives. Bodily-kinesthetic prompts could include build, play, dance, or move (McKenzie, 2015). A musical intelligence might be characterized by the following: listen, hear, echo, or mimic (McKenzie, 2015). As evidenced by these verbs, the teacher must plan an environment that is rich with diverse pathways for exploration and interest-based learning. Interpersonal could include

sharing, collaborating, interviewing, or influence (McKenzie, 2015). Similarly, intrapersonal could include express, evaluate, rationalize, or defend (McKenzie, 2015). Naturalist opportunities might include sort, classify, arrange, or map (McKenzie, 2015). Finally, existentialist opportunities could include reflect, synthesize, explore, or even dream (McKenzie, 2015). These verbs can be used as a guide for writing potential center ideas, but during class time, students should also be provided with the option to do something that is not listed by the teacher but is interesting to them (Norris, 2004).

Each of the verbs that can be used in instructional prompts at centers activates various parts of a student's mind, creating a more effective activity for them than a universal worksheet given to the entire class (McKenzie, 2005). The verbs become a starting point for students to use as a resource, helping them to brainstorm and guide their own thinking; these terms should not be used as a tool to grade students' work. Students may authentically demonstrate their learning from centers, but any assessment should be qualifiable and situated in the unique context of the individual's activities.

The wording of the center options is important because a narrow set of instructions could limit the possibilities for a student. For example, at a writing center, if an option is to learn the correct spelling of selected words from the dictionary, students will not be encouraged to understand the meaning of the word. However, if students were asked to create a story using words from a dictionary, they could generate unlimited ideas for a story. An effective center structure is to provide open-ended suggestions with unlimited possibilities that can involve a student's own motivations, interests, and passions (Armstrong, 2018).

Using McKenzie's (2015) center verbiage, many of the verbs align with Bloom's Taxonomy, which is defined as an educational framework that can be used to determine a student's depth of knowledge (Lin Hunter et al., 2020). It is a hierarchy of cognitive skills ranging from simple to complex comprehension (Bloom, 1956). The six levels of cognitive skills become more challenging as they progress, thus giving students the opportunity to challenge themselves (Bloom, 1956). When writing potential center options, teachers should consider using the higher cognitive skill terminology to promote more imaginative activities. These include the lower levels of cognitive process including remembering and understanding with indicators such as: memorize, list, summarize, and paraphrase. Center suggestions should also include opportunities for students to use middle level and higher-order processes like application, analysis, evaluation, and creativity. The indicators for these cognitive levels could include diagram, apply, compare/contrast, judge, defend, construct, plan, and produce. Using Bloom's Taxonomy can be a helpful reference throughout any aspect of teaching to ensure that students are meeting goals that activate higher order cognitive skills and do not simply ask students to memorize information.

Choice centers provide a time for students to develop skills on their own in whatever way they choose. Centers do not contain any objectives or standards regulating students. Regulation restricts the possibilities and defeats the purpose of a student-centered environment. However, it still remains important for teachers to maintain the standards and objectives for their grade level but through different means. In addition, they need a concrete way to assess student progress throughout a unit.

For example, during center time, teachers can create small groups and teach more-individualized content. This allows teachers to more accurately gauge where each student is in their understanding (Weiss, 2013). Students will then have the opportunity to develop a deeper understanding of a concept through the guidance of the teacher (Armstrong, 2018).

Effective Methods of Assessment

Teachers can assess their students in many ways without the use of tests or assigning letter grades to their work. Some of these ideas include projects, presentations, or products of students' center explorations. Student-driven projects can be open-ended and allow students to explore a topic in whatever way they choose. This is similar to the reasoning behind centers because a strict rubric limits the possibilities inspired by the multiple intelligences. Projects can be guided by an overarching topic, but then students experience the freedom to go in whatever direction they choose. Presentations afford a similar element of freedom as the projects. The assessment aspect originates in the teacher's examining knowledge and understanding holistically which can be recorded through anecdotal records. The teacher can pose prompting questions to the students about their project and determine if there are still gaps in their understanding. While tests and rubrics may be easier to produce and grade, they do not represent the same depth of understanding as projects and presentations provide (Armstrong, 2018).

To help children embrace their creativity and individualism in the classroom, teachers provide options of open-ended assignments and projects that can be assessed authentically by the teacher. The goal of an authentic assessment is to determine the students' conceptual understanding. The focus of the assessment is not to grade the work or rank it against others, but rather, for the instructor to see where the student is missing some information and determine how they can reintroduce it later in the unit. One strategy to accomplish this is for students to present their projects, sharing with the entire class or with a small group what they discovered about their topic of interest. The teacher can then write an anecdotal record, a detailed descriptive narrative written after a specific behavior or interaction and use this note to guide their instruction (McFarland, 2008). It is important teachers provide documentation for their students to show growth; authentic assessments can align with standards. However, rather than benchmarking, authentic assessments can be used to guide students through their own continuum of learning on their own timetable. In this way, teachers individualize the assessment for each child and nurture each child's independent growth at their own pace. If teachers emphasize students meeting each of the grade level standards, they run the risk of pushing a child through material they do not yet fully understand, leaving them unprepared for future units that may require them to build on previous knowledge.

The rationale for ensuring students create personalized projects to demonstrate their understanding is tied to the idea that each student learns in different ways. Children develop at different rates and expecting each of them to be able to produce the same prescribed product representing their understanding would not provide true insight into what they actually understand. According to Marenus (2020), one of the most important educational implications from the Theory of Multiple Intelligences can be summed up through individuation and pluralization. Individuation reveals that because each person differs from one another, there is no reason to teach and assess students identically. The identical assessments that are seen in

classrooms today consist of multiple-choice tests that encourage memorization rather than investigation of the topic.

Conclusion

Instructional practice that is informed by the Theory of Multiple Intelligences continues to indicate a positive effect on student achievement (Hanafin, 2014; Kaya et al., 2007). The Theory of Multiple Intelligences enhances learning, teaching, and assessment in schools (Hanafin, 2014). Incorporation of choice-based centers in the classroom promotes the ideas behind Gardner's theory and provides more opportunities for authentic learning across multiple domains than traditional instructional methods. The one-size-fits-all lesson that relies on textbooks and worksheets prioritizes verbal-linguistic and logical-mathematical intelligences at the expense of the other seven intelligences, which remain equally important (Lynch, 1992).

Choice-based centers provide the most flexible opportunities for developing multiple intelligences in students, but that does not mean it is not possible to develop these skills during a whole group lesson. All of the multiple intelligences identified by Howard Gardner exist in every classroom so that teachers can provide experiences to promote the less predominant intelligences in their instruction (Dueñas Macías, 2013). Allowing students to choose where to develop their new knowledge of a subject leads to more flexible lessons. Knowing about the benefits of activating multiple intelligences affords teachers an increased probability of ensuring their students succeed in and out of the classroom. Encouraging students to pursue their own interests will enhance their intrinsic motivation and support their determination to achieve academically. Providing students with choices in their education can positively impact their overall academic achievement. When the learning environment is too controlling, autonomy and intrinsic motivation become reduced and burnout for students and teachers alike is more common (Patall et al., 2010). It is important students be provided with the power to decide how they want to learn so that their multiple intelligences are activated. Choice-centers remain one of the most effective ways to provide these engaging and creative opportunities for individual achievement in the classroom.

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