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**Unlocking the Doors to Engagement and Accessibility: A Curriculum Development for
Second Grade Learners in Social Studies**

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Abstract

The goal of this project is to create a second-grade Social Studies curriculum that increases engagement and provides accessibility to all students. The intent is to pull from the instructional frameworks of Universal Design for Learning developed by CAST, Project-Based Learning by The Buck Institute and differentiation by Carol Ann Tomlinson. The following research question was used to propel forward the goal of this project: *How can a second grade Social Studies unit unlock student engagement and universal accessibility by applying three educational frameworks?* This question was answered by literature research on the topics of engagement and accessibility followed by the three frameworks mentioned above on UDL, PBL and differentiation. This research was then analyzed for overlapping characteristics that would lead to a curriculum development that was highly engaging and universally accessible for second grade students.

Keywords: engagement, accessibility, motivation, project-based, individualistic system

SECTION ONE

Introduction

Imagine a classroom whereupon opening the door anyone could walk in and see an active, engaged community of students that were immersed in learning and that learning was accessible to each student regardless of ability. There is a need within my world of teaching to have a curriculum that is engaging and flexible enough to accommodate multiple types of learners. There is a need for a curriculum that plans intentionally for gifted students, those with disabilities, English as a Second Language Learners, and others. Many curriculums that I have come across lay a foundation, but I would find myself needing supplemental materials for those that needed something more challenging, those that needed something easier and those that just needed more, more information, more depth. Having a curriculum that not only covers the content but engages *all* of my students would be instrumental in creating a classroom that I have always hoped for. I hope to use my research and findings to support my reasons for an actively engaged, universally accessed classroom that uses social studies as a means to create meaningful connections.

While working in a second-grade classroom I struggled with the social studies curriculum I was given. The focus was on language arts and math because these were the subject areas that the state tested. No one really cared about social studies and it was always the first thing out of the schedule when you found yourself short of time. I also found the curriculum boring, repetitive and with my current group of students- not challenging enough. They were reading out of a book with a few pictures and then answering a couple of questions. They needed more if they were going to grow and retain information.

I developed a unit. In my unit design, students chose a topic of their own to research and then presented that information to the rest of the class. This is when I saw excitement and growth from my students. They were allowed choice, independence, guidance, and the ability to work at their own pace. They also developed technology, critical thinking, and oral presentation skills. The project was flexible in its adaptation to each student. I had the ability to challenge or provide extra support where it was needed. These are all reasons why I chose to research and develop a curriculum that is engaging and accessible for all my students and is based on educational theory and research. My initial research led me to delve deeper into the instructional frameworks of Universal Design for Learning, Project-Based Learning and differentiation as these frameworks aligned closely with the goals of my classroom. I also chose Social Studies as the pathway of content to be studied even though minimal instruction is required in this area by the state, the ability for real world connections is strong.

According to research, about 44% of schools have cut back on social studies instruction in the classroom (NCSS, 2016, par. 2). The National Council for the Social Studies (NCSS) goes on further to state, “Denying students opportunities to build social studies vocabulary and background knowledge by engaging in social studies activities can lead to lower literacy levels and, ironically, increase the achievement gap” (2016, par. 2). The NCSS position on social studies in elementary education is that the curriculum should be meaningful, integrative, value-based, challenging and active. If this is the recommendation of the council then we should not be limiting the time for social studies instruction, we should be increasing it. All of this brings me to research the following question:

How can a second grade Social Studies unit unlock student engagement and universal accessibility by applying three educational frameworks?

SECTION TWO

Literature Review

This literature review is being written to explain how teachers can build engagement amongst students while also providing equal access for all types of learners such as gifted students, those with disabilities both learning and physical and English as a second language learners. The literature review begins by exploring the broad topics of engagement and accessibility. Next, it delves into three different frameworks that support engagement and access. Those three models will be Universal Design for Learning (UDL), Project-Based Learning (PBL) and differentiation. The next section combines these three frameworks and demonstrates how they might complement each other and work together. The last section synthesizes all this information into the design for a second-grade social studies curriculum that is engaging and accessible.

Engagement

Increased engagement first starts with motivation. Merriam Webster defines motivation as “a force, stimulus or influence” and engagement is the blending of motivation with thought (as cited in Harrison et al., 2017, p. 1). Motivation and engagement can stand independently but are frequently found hand in hand. “Positive motivation leads to increased engagement, increased engagement leads to continuing reading success, and this ongoing reading success leads to increased motivation” (Harrison et al., 2017, p. 218). Engagement in school happens when students are motivated. Unfortunately, according to research students slowly become disengaged with school, especially as they get older (Ferrero et al., 2021). The excitement for learning is there at the beginning of the school experience, and then it seems to dissipate over time. Educators need to find the reasons for student disconnect and find ways to encourage intrinsic

motivation. Corpus and Wormington (2014) describe intrinsic motivation as “what is inherent to the self or task” and extrinsic motivation as “what originates from outside the self or task” (p. 1). Both types of motivation can happen simultaneously, but getting a student to have an internal desire for learning is the goal. They become intrinsically motivated when they are working with real materials and answering real questions (Wellen, 2018). Research has shown intrinsic motivation to relate positively with student scores and grades whereas extrinsic motivation (i.e., working towards a reward, a performance motivation) is related negatively (Corpus et al., 2009, as cited by Corpus & Wormington, 2014).

Seminal work on motivation by Carole and Russell Ames(1984) described three different types of motivation for students with those being a competitive, cooperative or individualistic system. Each of these structures can have benefits and limitations and can be used interchangeably.

First, the competitive system sets up a winning and losing scenario. A child will focus on how to win in this type of environment. They will feel successful when they win and look poorly at themselves when they lose (Ames & Ames, 1984). When a child feels like they are not winning, internal motivation is hard to encourage. This type of system works well for those who already achieve at a high level, and it is not for the broad range of learners.

Next, a cooperative system allows for group work and the ability to work together and be responsible for a part of the work. This type of system rarely works equally however as high achievers will take on more responsibility and low achievers may not be able to complete their portion of the work (Ames & Ames, 1984). Students can become frustrated with their work partners instead of focusing on their own learning.

The last approach is an individualistic system that gives more freedom for a student to own their learning. “Individualized systems of learning emphasize monitoring the change in one's performance over time, which is critical for realistic goal setting and for establishing success criteria” (Ames & Ames, 1984, p. 42). Students have to take full responsibility for this system, but they are only competing against themselves. They are not as pressured to perform for a certain amount of time and can instead focus on doing their individual best. An individualistic system is the one that shows and supports a highly motivated and engaged classroom.

This form of motivation is further supported by studies conducted by John Guthrie and Allan Wigfield. Intrinsic motivation leads to deeper processing strategies that are necessary for learning whereas extrinsic motivations can lead to avoidance and poor strategies (Guthrie et al., 1997).

Motivation is like potential energy where you are ready to start reading and engagement is like kinetic energy and the learner is fully absorbed in the current task (Harrison et al., 2017). Guthrie et al. (2006) reviewed evidence and reported that when students are engaged in reading, they comprehend better and have better reading outcomes. Teachers need to not only encourage intrinsic motivation, but also figure out how to engage students with the content that is being taught. “Students tend to comprehend little and lose focus of classroom instruction when their teachers fail to use instructional strategies that match their learning styles. Differentiated instruction can alleviate or eliminate this disengagement” (Morgan, 2014, p.34) All three frameworks of Universal Design for Learning (UDL), Project-Based Learning (PBL) and differentiation incorporate models that can foster greater engagement amongst learners. The next section discusses student accessibility towards content that is being taught.

Accessibility

Each child should have the ability to grow and learn the same as their counterparts within a grade level. Whether they are high performing (gifted), average, have learning differences, other disabilities, or English Language Learner (ELL), they each should be allowed equal access in learning and understanding content. This does not mean that they all start and end at the same place, but that their level of growth from where they are starting is relatively the same. This is supported by Lev Vygotsky's concept of the zone of proximal development (ZPD) where a student works within an appropriate degree of difficulty based on their current level of understanding (Morgan, 2014).

The Individuals with Disabilities Education Act (IDEA) is a law that provides free public education for those who qualify through evaluation and makes sure that they receive the services that they need to be successful throughout their education journey (U.S. Dept. of Edu., 2022). It was passed in 1975 and then reauthorized in 2004 where it stated,

Disability is a natural part of the human experience and in no way diminishes the right of individuals to participate in or contribute to society. Improving educational results for children with disabilities is an essential element of our national policy of ensuring equality of opportunity, full participation, independent living, and economic self-sufficiency for individuals with disabilities. (Para. 5)

The IDEA ensures that all students have access to an equal education even if they require services or accommodations.

Another important law to note is The Rehabilitation Act of 1973, Section 504. This law helps protect against discrimination for those with disabilities. Students with disabilities are to be given the same opportunities as everyone else. Section 504 of the Rehabilitation Act requires schools to provide a free and appropriate public education also known as FAPE. "FAPE consists

of the provision of regular or special education and related aids and services designed to meet the student's individual educational needs as adequately as the needs of nondisabled students are met” (U.S. Dept. of Ed., 2022, para. 5). Schools are required by law to provide an equal space for all learners regardless of disability status.

Curriculum taught within schools should be accessible to all, but it does not come without thoughtful planning and design. Educators need to determine the best strategies to implement so that all students have access to the content that is to be mastered. UDL, PBL and differentiation show positive potential towards greater accessibility.

Universal Design for Learning

Universal Design for Learning (UDL) is an instructional framework that helps teachers plan and accommodate curriculums for all of the students in the classroom no matter the ability level or challenges that each individual might have (Baldwin, 2021). UDL is based upon one principle that is widely agreed upon amongst the education world; that learners respond in many ways to different types of instruction. UDL may be a recent trend in the education field, but the idea really comes from many predecessors before it. The Center for Applied Special Technology (CAST, 2018) explained,

It is deeply rooted in concepts such as the Zone of Proximal Development, scaffolding, mentors, and modeling, as well as the foundational works of Piaget; Vygotsky; Bruner, Ross, and Wood; and Bloom, who espoused similar principles for understanding individual differences and the pedagogies required for addressing them. (Para. 2)

CAST (2018) has provided a framework for educators to use when planning with UDL in mind. It specifically lays out three areas that are central to a UDL curriculum design:

engagement, representation, and action and expression. The three parts of UDL design are explained next.

Engagement

Research has shown that giving student voice and choice to those with and without disabilities while also allowing them to play an active role in their learning has great potential for an increase in student engagement (Ferguson et al., 2011; Wallace et al., 2016 as cited in Zhang et al., 2022). UDL puts this at the forefront of its mission. The goal is to meet the needs of all learners.

This is the “why” of learning. UDL guidelines from CAST (2018) encourage teachers to provide options for recruiting interest of students by allowing for choice, making content relevant, and providing a safe space. Teachers should provide options for sustaining effort and persistence through clear and explicit goals. They should differentiate the degree of difficulty, provide alternate resources, and have students work together when needed. It is important that teachers also give feedback that is focused on the journey of learning rather than a performance assessment. The last thing teachers should supply to promote engagement is to provide options for self-regulation by setting realistic goals, teaching coping skills, and time for self-assessment and reflection.

Representation

This is the “what” of learning. UDL guidelines from CAST (2018) point teachers to provide options for perception by giving choice in information display and alternate ways to receive information other than auditory or visual. Teachers should provide options for language and symbols through clarification, decoding and the use of multiple media platforms. Lastly,

teachers should provide options for comprehension by activating prior knowledge, highlighting major ideas, and providing guidance through content such as checklists, graphic organizers, and scaffolding.

Action and Expression

This is the “how” of learning. The UDL guidelines from CAST (2018) outline options for physical action through methods of response and access to tools and assistive technologies when needed. Teachers should provide options for expression and communication by using a variety of media and multiple tools for constructing and composing. Teachers should also provide options for executive function with appropriate goal setting, planning and strategy support and facilitating the management of information and resources.

UDL is a framework that encourages and fosters greater motivation and engagement. In a study conducted by Zhang et al. (2022) the goal in mind was for continual improvement. Teachers reported greater intrinsic motivation and engagement through the use of student feedback and self-regulation tools such as surveys, checklists and graphic organizers. Students responded with positivity when given clear and direct goals and were motivated when they had a clear understanding of learning content. The students responded well to having access to multiple forms of media and information and they worked in small groups, on their own and with the teacher. The important piece is that the learning environment is flexible based on the individual needs present within the classroom and students are motivated and engaged within this design.

UDL lays out a clear framework that incorporates engagement, representation, and action and expression. These are the key components to a successful curriculum utilizing this strategy. Project-based learning is described next.

Project-Based Learning

Project-based learning (PBL) is becoming more popular among educators, but many educators do not see the data showing that scores are significantly higher for this mode of teaching, especially at the elementary level (Duke et al., 2016). Ferrero et al. (2021) stated that more research should be done beyond just achievement scores, that project-based learning could be useful in developing higher-order skills such as problem-solving, critical thinking, deep understanding, and self-evaluation. Project-based learning may have positive effects on achievement but may offer many more benefits that are not always evaluated in research.

The Buck Institute defines Project-Based Learning as “a teaching method in which students learn by actively engaging in real-world and personally meaningful projects” (2019, para.1). Deborah Diffily (2002) also defined project-based learning stating, “projects help children relate the work of school to work outside the classroom. Children select an area of interest and work collaboratively to research the topic, using as many diverse types of information as possible” (p. 3). Project-based learning is the integration of well-designed projects with curriculum that provide ample opportunities for learning (Wellen, 2018).

Project-based learning is not to be confused with problem-based learning although the two have many overlapping characteristics. A problem-based approach simply lacks sustained inquiry and a public product while a project-based approach may not center around a problem but an opportunity such as a community event (Duke et al., 2016). Problem-based is typically shorter and can be a single subject whereas project-based is multidisciplinary and is for an extended period. Project-based is slightly more structured and an instructional strategy with a goal set in place and problem-based is more open-ended and can lead to more than one correct answer. Duke et al. (2016) described three defining characteristics for project-based learning,

(1) Students work toward something (i.e., a project) for an extended period. (2) What students are working toward is the primary driver of learning during a unit as well as the culmination of that unit. Throughout the unit, each activity in which students engage is not carried out for its own sake, or because the teacher told them to, but rather to contribute to meeting the project's goals either directly or by developing knowledge and skills needed to carry out the project. (3) The projects students work on have a purpose beyond satisfying school requirements or expectations: addressing a real problem, need, or opportunity in the world. (p.6)

One benefit of adopting a project-based learning approach is that the style of teaching lends itself to learning in multiple ways; many domains are used to achieve the same goal (Tamim & Grant, 2013). There is flexibility in how a teacher can teach and how a student can learn. There are many other benefits of project-based learning, too. Tamim and Grant (2013) went on to report that “when involved in a project, students’ performance was improved, they worked harder, and they gave better quality of work” (p. 82). Positive effects on student attitude that lead to deeper thinking and better final product is not to be overlooked. Research on project-based learning shows a positive impact on student attitude, motivation and engagement including those with disabilities or learning difficulties (Halvorsen, 2012).

Project-based learning does show academic success potential even though limited research has been done, particularly in the lower grade levels. In the study conducted by Duke et al. (2016) within a second-grade level, project-based learning showed a positive impact in the areas of social studies and informational reading but did not show any effects in informational writing even though it was incorporated in the lesson plans. Social studies improvement was equivalent to five to six months of greater learning than the control group and about two months

of greater learning for informational reading. The study suggested further observation and research be done to determine how to incorporate writing better. The researchers speculated that more time may have been needed to be dedicated towards writing instruction and the consistency over a longer timespan may reflect different results. This study was also conducted in a low-income school where scores were lower than a higher income school and may contribute to lower scores in writing. This study showed sufficient promise on the use of project-based learning in the classroom to help narrow the achievement gap in social studies and informational reading.

The Buck Institute gives an outline for Project-Based Learning that they call the “Gold Standard of PBL.” They list the following seven characteristics as essential for quality project-based learning: (a) challenging problem or question, (b) sustained inquiry, (c) authenticity, (d) student voice and choice, (e) reflection, (f) critique and revision, and (g) public product. These are described in the next sections.

Challenging Problem or Question

In Project-Based Learning the project is centered around a meaningful problem to be solved or a question to be answered (Buck, 2019). According to John Larmer (2018), a good question is engaging for students- it can be understood and is interesting while also invoking further inquiry. It is also open-ended and aligned with learning goals. Larmer gives an example of a first draft question, followed with critique, to a then revised question. It states as follows: “Should natural areas be developed?” and “Should our city build new housing on the land by the river?” It was revised to be more specific and connect with the local community (real world) driving higher engagement.

Sustained Inquiry

Sustained inquiry is an extended time of looking for resources and finding information (Buck, 2019). “Students should interview experts, contact organizations, businesses and government offices; read books; use the Internet; read newspapers and magazines; and go to museums” (Wolk, 2001, p.57). This is a time not just for gathering information, but also to ask more questions. QFT or Question Formulation Technique is one way of having a step-by-step process for generating questions. This strategy is encouraged by the Buck Institute (2019). It helps students to focus on a group of “Need to Know” questions that they can circle back around to when they get distracted or confused in the sea of information.

Authenticity

The goal of educators is to create lifelong learners, but to do that students need to be given the opportunity to own their own learning (Wolk, 2001). The joy in learning is fading from the education system because students are not being active participants in what they learn or how they learn. The greatest learning happens when the motivation to learn comes from within, gaining authenticity, owning their own education. Wellen (2018) stated,

Project-based learning allows students to explore their world and construct knowledge through genuine, authentic interaction with the environment. Students are engaged in the quest for knowledge, skills, and understanding. This quest encourages students to construct problem-solving techniques, implement research methods, and develop questioning strategies. The students become life-long learners. (p. 64)

Authentic interactions with the world lead students to develop real-life skills that remain with them and encourage them to continually keep learning.

Student Voice and Choice

Through project-based learning students can choose what learning style suits them best and this then allows for teachers to assess abilities that might sometimes hide in a traditional setting (Tamim & Grant, 2013). “By allowing children to pursue topics and questions of their choice, we are nurturing a lifelong love for learning and an intellectual curiosity about the world” (Wolk, 2001, p. 57). When students get to take ownership of their learning, motivation and engagement also increases (Tamim & Grant, 2013). In the words of one student from Newsome Park, “Doing projects teaches you more because you get to experiment and understand how things work. If you can experiment and see how things work, it will be stored in your brain longer. And if it’s funner, you’ll learn faster” (Curtis, 2002, p.52).

Reflection

Fitzgerald (2020) conducted a case study on one third grade teacher who implemented a PBL curriculum. This specific study looked at opportunities that could be found in a PBL instructional format for social and emotional skills (SEL) and literacy. Data was taken from the PBL curriculum, field notes from classroom observations, a transcribed video and student artifacts. This was collected over 29 days of instruction. The results showed potential for SEL and literacy to intertwine simultaneously and be a productive method of learning. Throughout the study the teacher “modeled, explicitly taught, and supported opportunities for students to learn and use skills related to collaboration, expression, ownership, and reflection” (Fitzgerald, 2020, p. 596).

Critique and Revision

Students begin to learn that their knowledge matters when they are called upon to critique not only their own work, but also that of their peers and the information that they come across. This is a form of motivation for students as they learn to give and accept feedback, knowing they are responsible to others outside of themselves (Harrison et al., 2017). Students learn to deal with criticism and learn how to interact with their peers. Once students have received critiques they are encouraged to go back over their work and revise anything that needs changed.

Public Product

Project-Based Learning creates a space for a final product to be presented to classmates and others. This allows students to practice many workplace skills such as creating PowerPoints, speaking in front of a group, summarizing and synthesizing information, gathering visuals and so on. This is another aspect of project-based learning where choice plays an important role. “Allowing students the freedom to choose their final product reinforces student ownership, brings creativity and imagination into the classroom, and lets students learn from one another” (Wolk, 2001). This is also an opportunity for students to work on skills that are needed beyond the school realm and into today’s workforce. Wellen (2018) stated,

If students are required to be prepared to make lasting contributions to society, they will need to work with the materials and the content of today’s curriculum in real and engaging ways. One way to meet and teach the skills needed for future learning will be to use project-based learning strategies with students of all ages. (p.57)

The final product should allow for some choice by the student and can range from things like a PowerPoint, poster, a song, a book, or brochure. There are several ways for a student to show what they have learned.

Project-Based Learning is an instructional framework that focuses on student choice and interaction with the real world. Through a challenging problem or question, sustained inquiry, student voice and choice, reflection, critique and revision, and public product, students can develop higher levels of understanding and be more engaged in the learning process.

Differentiation is the last instructional strategy and is discussed next.

Differentiation

Differentiation is a way of thinking about teaching and a collection of strategies that are used to address individual needs within a classroom (Heacox, 2012). Tomlinson (2008) stated “differentiated instruction is student-aware teaching” (para. 3). In differentiated instruction, students come first; what they need directs the instructional planning. Levy (2008) explained,

Educators have to look at where the bar is set and where the students are when they enter classrooms. Some students will work all year with tutelage and barely make the bar; some can leap over the bar gracefully; and some were already over the bar before they entered class. If we use the standards as our guide, we can teach all students equitably.

The risk is our focus will shift to the standards and away from the child. With the tools of differentiated instruction, we can keep the focus where it belongs and take each student as far as he or she can go. (p. 164)

“Differentiating instruction means changing the pace, level, or kind of instruction you provide in response to individual learners’ needs, styles or interests” (Heacox, 2012, p. 5).

Heacox (2012) went on to state that differentiation is rigorous, relevant, flexible and varied, and complex. The workload for students should not be too low so they become bored and lack effort, but also should not be too high to where they feel they cannot succeed.

Differentiation is not doing more of the same thing and it's not making concepts simple.

Differentiation should focus on essential learning and be flexible to student choice and challenge students' thinking to increase engagement. Students who are low achieving might need options for movement (e.g., working stations), choices, a variety of instructional resources (e.g., graphic organizer, smartboards) and the ability to work in groups rather than routine and patterns (Kellough, 1999 as cited in De Jesus, 2012).

Tomlinson (2008) and Heacox (2012) both discuss the ways that teachers can differentiate through content, process and product while also considering a student's readiness, interests and learning profile. These six components are foundational to differentiation and are explained next.

Content

Content is what is being taught, the topic or concepts within the curriculum that is usually established by the school or district that often reflects state and national standards (Heacox, 2012). Differentiating content can look like a student being matched with an activity based on their readiness level, students being given choices in topics to study, and resources and materials being distributed based on a student's level of understanding whether it needs to be basic or advanced (Heacox, 2012).

Process

Process is how the information is being taught by looking at student learning profiles and interests to modify and accommodate for multiple types of learners (Heacox, 2012). One student may learn the content through videos, pictures and graphs while another may learn the same information through an experiment or acting something out. Students are always learning the same information, but the way they reach the same goal might be different (Heacox, 2012).

Product

Product is the result, something tangible or verbal that represents understanding of content (Heacox, 2012). This is another area where student choice is encouraged, and a student's interests may play a factor. When a student can choose what their final product will be, it encourages students to "take on challenging work, to run with their ideas, or to come up with unique ways to show what they've learned" (Heacox, 2012, p. 11).

Readiness

When preparing a unit or lesson, teachers need to determine if all foundational skills have been mastered by the student before moving onto the next level of instruction. The readiness of a student needs to be established (Heacox, 2012). Some students may be at the beginning of learning skills, some may need a little more practice and others may have already mastered the learning before a teacher has even taught it. "Our challenge as teachers is to find ways to build on and extend the learning of students who are already on their way, while providing basic instruction and practice for students who are beginning or struggling" (Heacox, 2012, p. 9). Tomlinson (2008) stresses the importance of finding the right fit for each student. When the

work is too hard, a student does what they can to escape the situation or humiliation and if it is too easy students will try to finish quickly and not be challenged (para. 12).

Interests

What a child is interested in plays a key role in motivation level. “If students lack interest in the subjects taught in school, they will have little motivation to learn” (Morgan, 2014, p. 36). A student's interests can stem from their background, ethnicity, environment, social class, or personal preference. As an educator it is important to know your students and therefore know what might interest and motivate them to learn at a high level.

Learning Profile

“Learning profiles reflect individual preferences for where, when, or how a student obtains and processes information” (Heacox, 2012, p. 8). A student’s learning profile gives a teacher a better idea of how best to instruct a certain student. Some students may be visual learners and need to see pictures, graphs, and text; others may need to hear information and be auditory learners; even more may be kinesthetic learners and do best when feeling and working with objects and materials (Heacox, 2012).

There is also Howard Gardner’s multiple intelligences. He breaks down personal learning preferences down to nine modes which are verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, the naturalist and existential (Heacox, 2012). There are many different ways that a student might learn best, and it could be just one or multiple ways per student. “Differentiated instruction allows you to reach more learners through thoughtfully examining your students’ learning profiles and using this data as a lens to inform your instructional planning” (Heacox, 2012, p.8).

Connecting the Dots

Gathering all the information on Universal Design for Learning, Project-Based Learning and differentiation, there are many overlapping characteristics between these three instructional frameworks. One major theme reiterated throughout all three frameworks was the need for student voice and choice. Getting to know the student and how they learn best is central to increasing intrinsic motivation and keeping them engaged. It is also noticed that making content current and relevant for the student will also help with engagement.

Project-based learning showed positive signs for increasing engagement in multiple studies. Students also responded well and were more motivated when presented with project-based activities. In UDL's framework and the idea of differentiation, project-based learning addresses the need for hands-on work and catering to different learning styles.

All three frameworks discuss a need for reflection and/or feedback throughout the process of learning and not just at the end of a unit or study. Both PBL and differentiation talk about a public or final project as a means for motivation and engagement.

Another major theme throughout the frameworks was flexibility in how a student gets to learn which circles back around to a student-centered approach. Flexibility allows for adaptation and accommodation for specific student needs.

Tomlinson (2008) presented a logical persuasion for differentiation to play a role in the blending of mastery, standards and engagement. Tomlinson (2008) stated, There's logic in differentiated instruction when we use it to ensure student mastery of content. Differentiation calls for teachers to have clear learning goals that are rooted in content standards but crafted to ensure student engagement and understanding. If teachers are uncertain about the learning destination, their students are adrift. We want students to

go into the world fully possessed of the power of knowledge. Yet what we teach must engage learners, or we've lost them before we've begun. (Para. 4)

All frameworks discuss distinctive styles of learning and how each child is different and therefore learns in varying ways. Providing multiple ways to interact with the content is crucial. It is also important to pinpoint the starting point of each student. Tomlinson discusses readiness and Vygotsky has the idea of zone of proximal development that allows for greater accessibility. All the research and frameworks should continually be studied to find similar characteristics and themes embedded throughout.

Designing a Social Studies Curriculum

Utilizing the strategies of Project-Based Learning, Universal Design for Learning, and differentiation takes time. Not only do teachers need to practice and become familiar with these ideas, but they also need to connect it with state standards. Teachers will have to work hard for students to understand content while also meeting standards (Wellen, 2018). There are limitations to teaching and designing curriculum with these frameworks in mind. Teachers will need time to plan effectively. Romano (2002) described a school in Virginia that successfully implemented a project-based learning approach, but teachers were given afternoon planning sessions once a week. Time for planning and collaboration is critical to success. “Although differentiated instruction is designed to benefit all students, it requires extremely hard work by knowledgeable and well-prepared teachers. This teaching strategy could be the most important trend for a better future for the educational system” (Morgan, 2014, p. 37).

Dobbertin (2012) described how to blend strategies that promote engagement while also meeting state standards,

By maintaining a consistent focus on what students will learn, teachers develop a clear road map for success on grade-level expectations and, ultimately, on state assessments. Teachers must find ways to assess students' different entry points on the path to mastery of those expectations and to determine whether each student is progressing appropriately on the journey. The substantial amount of time teachers put into planning learning targets and differentiating activities pays off: More students succeed initially, and teachers have built-in opportunities to provide all learners additional support and challenges along the way, lessening the need for interventions later. (p. 69)

Planning for a curriculum that is student-centered, flexible, and accommodating yet also shows mastery is a daunting task. Taking the best from all three of these frameworks will lead to this type of curriculum design.

Content that Connects

According to research, about 44% of schools have cut back on social studies instruction in the classroom (NCSS, 2016, par. 2). The National Council for the Social Studies goes on further to state “Denying students opportunities to build social studies vocabulary and background knowledge by engaging in social studies activities can lead to lower literacy levels and, ironically, increase the achievement gap” (2016, par. 5.). The NCSS position on social studies in elementary education is that the curriculum should be meaningful, integrative, value-based, challenging, and active. A curriculum that blends the ideas of Universal Design for Learning, Project-Based Learning, and differentiation will help meet these goals of the NCSS.

Conclusion

Universal Design for Learning, Project-Based Learning and differentiation have many overlapping characteristics and should be evaluated further in an attempt at a curriculum

development in second grade social studies. Based on evidence given, the blending of these three frameworks spark promise in student engagement, and accessibility. The frameworks provided for these strategies support and encouraged higher engagement and access for all learners. These frameworks show a strong connection of a student-centered education that allows for voice and choice and multiple modes of learning that allows a student to interact with content in meaningful and different ways. There is promise in the content area of social studies as a pathway to higher level thinking and achievement.

Continued research should be done as the information and data is continually evolving in these fields. The scope of these frameworks and broader topics of student engagement and accessibility are vast and improvements can and should be made as necessary.

SECTION THREE

Theoretical Perspective

The goal of this project is to create a second-grade Social Studies curriculum that is engaging and accessible. The intent is to pull from the instructional frameworks of Universal Design for Learning developed by CAST, Project-Based Learning by The Buck Institute and Differentiation by Carol Ann Tomlinson to design a curriculum that is highly engaging and universally accessible to all types of learners regardless of ability. Although my decisions for the design of this curriculum are informed by these frameworks, it is not strictly adherent to them. Instead, I will pull ideas from each to create a new curriculum.

The curriculum design will focus on one social studies unit within the second grade Ohio Learning Standards for Social Studies (ODE, 2018). It will focus on the theme of map skills. The state standards associated with this design are listed below.

I. THEME: PEOPLE WORKING TOGETHER (ODE, 2018)

- A. Work serves as an organizing theme for the second grade. Students learn about jobs today and long ago. They use biographies, primary sources, and artifacts as clues to the past. They deepen their knowledge of diverse cultures and their roles as citizens.

SPATIAL THINKING AND SKILLS

- a) Content Statement: 5. Maps and their symbols, including cardinal directions, can be interpreted to answer questions about the location of places. (p. 14)

Three Frameworks

UDL is all about being flexible and adapting to each students' unique needs. It is a framework that promotes creating an environment that is available for everyone. PBL, specifically the Gold Standard created by the Buck Institute stresses the importance of creating curriculum around projects that connect students to the real world. Differentiation explained by Tomlinson is finding out what level each student is starting at and developing motivation through individual student interests. Each framework has a slightly different focus or emphasis, but all three seem to be sending the same message and have many of the same ideas. I have tried to identify the key components that I saw arise throughout my research across the three educational frameworks and I will describe those next.

Engagement: How Do I Keep Students Engaged?

Student-Centered

What makes for a motivated and engaged group of learners? According to Ames and Ames (1984) an individualistic system is the greatest supporter of this kind of environment. This means a system that is student-centered and tailored to each students' unique interests and learning styles. A student-centered approach is also emphasized in Project-Based Learning through student voice and choice, Universal Design for Learning through engagement and representation, and Differentiation through interests and learning profiles.

Some examples of what an individual, student-centered curriculum might look like are: dialogue between the teacher and the students, feedback from students through a survey or other format, a questionnaire to gather student interests, individual student goal setting, lessons that incorporate themes and interests of the learner, presentation of information in multiple formats (visual, auditory, tactile, movement, music) so that the learner can interact with content the way

they learn best. An individual or student-centered system does not automatically mean alone or by themselves, in fact working together is encouraged. This system is a mindset that each student brings their own unique set of skills. The curriculum can still be student-centered and working in groups at the same time.

Project-Based

“Project-based learning provides highly desirable benefits for students, such as the creation of independent, self-regulated learners, the promotion of engagement towards learning, or the fostering of meaningful learning” (Ferrero et al., 2021, p. 11). The research done in this study by Ferrero et al. shows many benefits of a project-based learning strategy with better engagement making an impact on achievement levels. On top of higher engagement there is the development and support of an independent learner who is making meaningful connections.

Having a curriculum that is project-based lends itself to more flexibility throughout the learning process. A project-based approach is more about the journey and not just the result although a final product is included. Students can have more or less time throughout the project and the teacher can guide students on an individual basis. Selecting projects for students to interact with allows them to build real-world connections and move at a pace that is appropriate for them. They can also choose the type of learning that motivates them if they are reaching their goals for that unit. There is no need for the whole class to sit and listen to a lecture about the information if that is not how they retain information.

Content that Connects

High engagement also includes content that is relevant to the students. Students need to be able to personally connect with what they are learning for them to have the highest internal motivation to keep learning. Social Studies is a means for students to create meaningful, real-

world connections. Social Studies provides a pathway for students to connect the past and the present, applying the information to themselves and therefore being able to remember the content better.

Feedback and Reflection

This curriculum is not meant to be used as a summative assessment only project. An important aspect of this process is for there to be multiple checkpoints and feedback given by the teacher, peers and even the student themselves. It is not meant for students to wander completely on their own, but to continually dialogue and make changes as needed throughout the process of the project. Time should be given for reflection on what is working, what is not working and anything that could make it better. The final product should not come as a surprise to the student, but rather should show everything that they know and are proud and confident to share with others. UDL calls for better self-regulation, PBL dedicates two standards to reflection and critique and revision, and Tomlinson emphasizes the process in differentiation. Having a space for feedback and reflection seemed to be key in the type of environment I wish to establish.

Final Product

At the end of each unit there will be a public or final product. Both PBL and differentiation call for a public or final product to present student work. This is to showcase everything that the student(s) has learned throughout the course of the unit. This should be a joyful time of sharing. Students should have a choice in what type of product they wish to make (PowerPoint, poster, 3D model, song, poetry, book, brochure, etc.). Students are more motivated and engaged throughout the unit or project when they have something to work towards. Having students' work published or displayed in public is an encouragement for students to work

diligently. This also gives students a chance to learn how to speak in front of and communicate with others.

Accessibility: How Do I Make the Curriculum Available to Everyone?

Zone of Proximal Development

Vygotsky is well known for his Zone of Proximal Development. This is a theory that says students should start in their learning wherever they are, and their growth should be based on where they started, not where their grade level is supposed to be. This is one way to make curriculum accessible to everyone. This curriculum uses an individual system so each student will have their own goals to reach by the end of the unit. Everyone's goals are not going to be the same. Assessments and surveys may need to be done in advance to determine appropriate goals for each child.

Learning Styles/Approaches

Howard Gardner's multiple intelligences break down preferences to nine modes which are verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, naturalist, and existential. There are many ways that a student might learn best, and it could be just one or multiple ways per student. "Differentiated instruction allows you to reach more learners through thoughtfully examining your students' learning profiles and using this data as a lens to inform your instructional planning" (Heacox, 2012, p.8). This curriculum will give suggestions and ideas, but ultimately not everything can be planned for because of the nature of human individuals. Each classroom and each student will be different and as teachers we do our best to accommodate as needed.

Clear and Explicit

Each student deserves to know what they are meant to strive for. They should not have to guess. Students work best when they have clear and direct goals and directions. Tomlinson

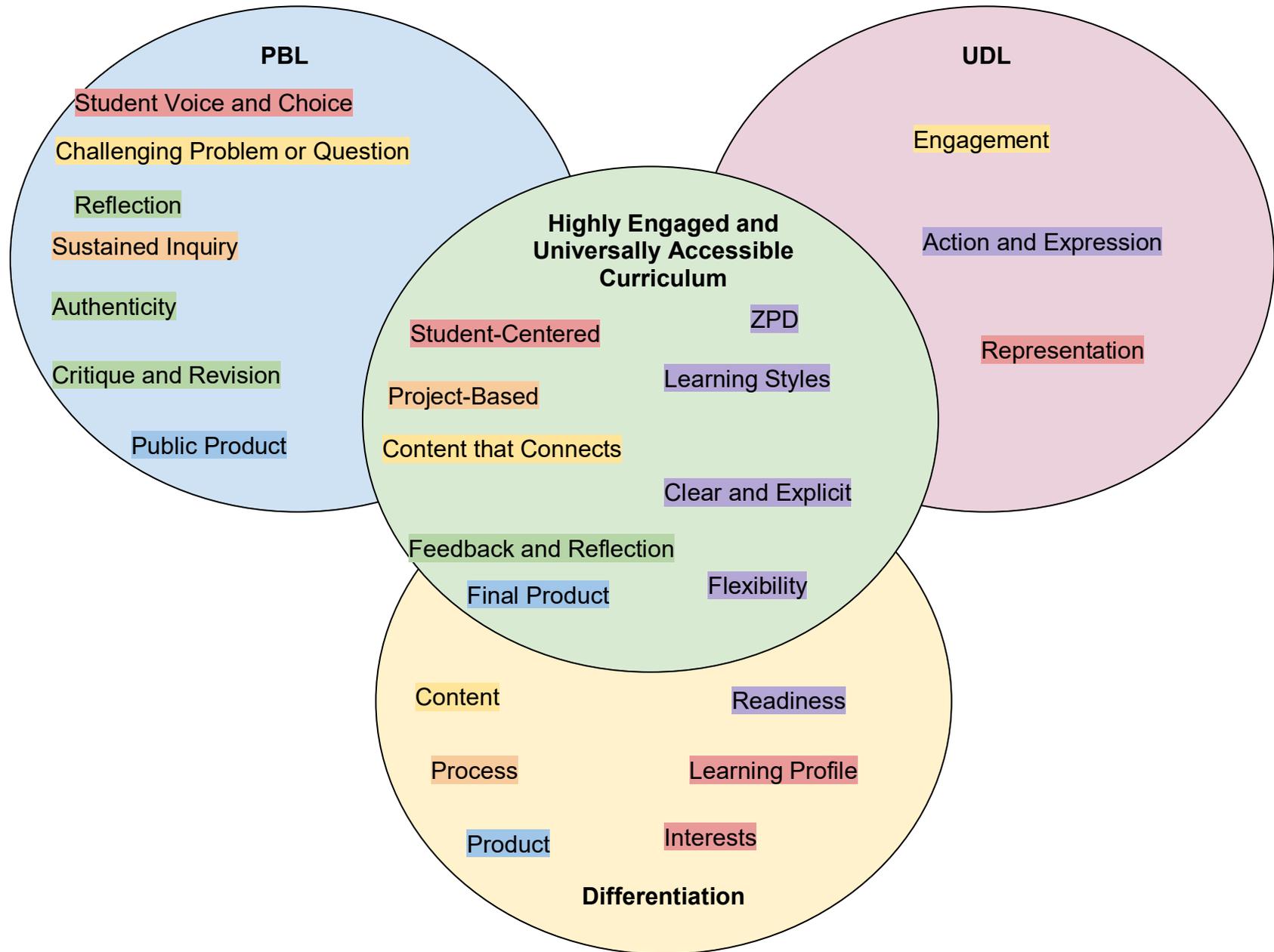
(2008) explains that one way to differentiate is the process of learning. Making terms and goals simple and clear is an accommodation that can help each student in the classroom.

Flexibility

This curriculum is meant to be flexible both for students and teachers. Flexibility for students looks like choice in learning style, choice in time needed to complete and choice in final product. Flexibility for the teacher looks like using the resources and skills that you need for your classroom and taking things out if it does not work for you and your students.

Conclusion

The research and information found on these three frameworks is vast. At the same time, it is also not enough. Some of these theories and ideas have been around for awhile and others are just now emerging. New research is coming out every day. This is a study that can be continuously pursued and never fully complete. I will continue to strive for new information and data to guide and inform my curriculum instructions. The beauty of this curriculum is that it is already meant for flexibility, and it can grow and adapt with new research.



SECTION FOUR

Curriculum

How to Read this Curriculum

Hello. Welcome to my curriculum on map skills. This curriculum was made for the purpose of generating more engagement amongst students as well as providing accessibility to all students regardless of ability. This curriculum is designed to be flexible and adaptable. The Ohio Learning Standards are used as a guide, but the curriculum is not strictly adherent to them. Please feel free to modify where needed to suit the needs of your students.

This curriculum comes after researching and analyzing three different educational frameworks. Those frameworks are Universal Design for Learning (UDL) (CAST), Project-Based Learning (PBL) (Buck Institute) and differentiation (Tomlinson). Throughout this curriculum you may notice different color-coded headings. These are the overlapping characteristics found throughout the three frameworks and are being incorporated into this new curriculum. These characteristics are listed and described below:

Engagement: How Do I Keep Students Engaged?

All the following characteristics in this section are related to keeping students engaged. Whenever you see something highlighted in red, orange, yellow, green, or blue, it denotes how the curriculum is engaging students.

Student-Centered

Student choice and cultivating student interest is critical in keeping students engaged. Some examples of what an individual, student-centered curriculum might look like are: dialogue between the teacher and the students, feedback from students through a survey or other format, a questionnaire to gather student interests, individual student goal setting, lessons that incorporate

themes and interests of the learner, presentation of information in multiple formats (visual, auditory, tactile, movement, music) so that the learner can interact with content the way they learn best. An individual or student-centered system does not automatically mean alone or by themselves, in fact working together is encouraged. This system is a mindset that each student brings their own unique set of skills. The curriculum can still be student-centered and working in groups at the same time.

Project-Based

Having a curriculum that is project-based lends itself to more flexibility throughout the learning process. A project-based approach is more about the journey and not just the result although a final product is included. Students can have more or less time throughout the project and the teacher can guide students on an individual basis. Selecting projects for students to interact with allows them to build real-world connections and move at a pace that is appropriate for them. They can also choose the type of learning that motivates them if they are reaching their goals for that unit. There is no need for the whole class to sit and listen to a lecture about the information if that is not how they retain information.

Content that Connects

High engagement also includes content that is relevant to the students. Students need to be able to personally connect with what they are learning for them to have the highest internal motivation to keep learning. Social Studies is a means for students to create meaningful, real-world connections. Social Studies provides a pathway for students to connect the past and the present, applying the information to themselves and therefore being able to remember the content better.

Feedback and Reflection

This curriculum is not meant to be used as a summative assessment only project. An important aspect of this process is for there to be multiple checkpoints and feedback given by the teacher, peers and even the student themselves. It is not meant for students to wander completely on their own, but to continually dialogue and make changes as needed throughout the process of the project. Time should be given for reflection on what is working, what is not working and anything that could make it better. The final product should not come as a surprise to the student, but rather should show everything that they know and are proud and confident to share with others.

Final Product

At the end of each unit there will be a public or final product. This is to showcase everything that the student(s) has learned throughout the course of the unit. This should be a joyful time of sharing. Students should have a choice in what type of product they wish to make (PowerPoint, poster, 3D model, song, poetry, book, brochure, etc....). Students are more motivated and engaged throughout the unit or project when they have something to work towards. Having students' work published or displayed in public is an encouragement for students to work diligently. This also gives students a chance to learn how to speak in front of and communicate with others.

Accessibility: How Do I Make the Curriculum Available to Everyone?

All the characteristics listed in this section relate to making the curriculum more accessible for students. Whenever you see something highlighted in purple, it denotes a way of making the content more accessible.

Zone of Proximal Development

Vygotsky is well known for his Zone of Proximal Development. This is a theory that says students should start in their learning wherever they are, and their growth should be based on where they started, not where their grade level is supposed to be. This is one way to make curriculum accessible to everyone. This curriculum uses an individual system so each student will have their own goals to reach by the end of the unit. Everyone's goals are not going to be the same. Assessments and surveys may need to be done in advance to determine appropriate goals for each child.

Learning Styles/Approaches

Howard Gardner's multiple intelligences break down personal learning preferences to nine possible modes which are verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, the naturalist and existential. There are many different ways that a student might learn best, and it could be just one or multiple ways per student. This curriculum will give suggestions and ideas, but ultimately not everything can be planned for because of the nature of human individuals. Each classroom and each student will be different and as teachers we do our best to accommodate as needed.

Clear and Explicit Language

Each student deserves to know what they are meant to strive for. They should not have to guess. Students work best when they have clear and direct goals and directions. This is also extremely helpful for English as a Second Language Learners and those below grade level.

Flexibility

This curriculum is meant to be flexible both for students and teachers. Flexibility for students looks like choice in learning style, choice in time needed to complete and choice in final

product. Flexibility for the teacher looks like using the resources and skills that you need for your classroom and taking things out if it does not work for you and your students.

Unit: Map Skills

Project: Build A City

Ohio Social Studies Learning Standards:

This curriculum uses the Ohio learning standards as a guide, but it can be adapted to most other standards easily. The following standards are the ones used for this unit of study.

THEME: PEOPLE WORKING TOGETHER

- A. Work serves as an organizing theme for the second grade. Students learn about jobs today and long ago. They use biographies, primary sources, and artifacts as clues to the past. They deepen their knowledge of diverse cultures and their roles as citizens.

1. SPATIAL THINKING AND SKILLS

- a.) Content Statement: 5. Maps and their symbols, including cardinal directions, can be interpreted to answer questions about the location of places.

Central Focus for this Unit:

The central focus of this unit is to know how to read maps and understand the symbols represented within them. By using these map skills, students should be able to answer questions about the location of places.

Summative Objectives for this Learning Segment:

Students will:

- Know what map symbols mean.
- Distinguish between distinct types of maps.
- Apply understanding of maps to answer questions about the location of places.

Authentic Project-Based Summative Assessment (Describe briefly here):

For the summative assessment students will design, create, and build their own city. A map key with symbols and a compass rose with cardinal and intermediate directions must be present somewhere within the project. This project is meant to be flexible in its design with room for student choice and creativity. The final project can take on many forms whether virtual or 3D or other teacher-approved choice. There is a rubric given to students at the beginning of the project.

A. State the objective(s) for the lesson (think about what it is they will need to know and be able to do in order to achieve the Summative Objectives stated at the top of this page.), then

B. Summarize the lesson/activities (think about what instructional activities you can implement that will support the daily objective you are aiming to achieve), then

C. List formative assessment/Identify what it will be assessing (think about how you can assess if the student has achieved the objective for the day/identify what skill/knowledge/disposition is being assessed).

Lesson 1 - Monday	Lesson 2 - Tuesday	Lesson 3 - Wednesday	Lesson 4 - Thursday	Lesson 5 - Friday
<p>A. Students will know and understand map skills related to vocabulary.</p> <p>B. Read Aloud: “Looking at Maps and Globes” by Rebecca Olien</p> <p>Vocabulary Hunt: Students are given five words to define in their own terms and then draw a picture or find one that relates to the definition.</p> <p>C. Observe and talk with students throughout vocabulary work. Pull students one on one to create goals for the unit.</p>	<p>A. Students will learn about distinct kinds of maps.</p> <p>B. Vocabulary Review: Create simple definitions and have students check their work. Add motions or music to words.</p> <p>Dialogue: Teacher and students observe, analyze and discuss a variety of maps, noticing similarities and differences.</p> <p>C. Observe or write down in a journal students who are participating in the class discussion, those who seem confident, those unsure or shy.</p>	<p>A. Students will apply knowledge of maps to create a class map.</p> <p>B. Read Aloud: “Me on the Map” by Joan Sweeney</p> <p>Map the Room: Students will create a classroom map.</p> <p>C. Collect classroom maps at the end of the class period. Take notes and observe while students are working independently or in pairs.</p>	<p>A. Students will identify and build 3D shapes.</p> <p>B. Whole class review of 3D shapes.</p> <p>Building Shapes: Using toothpicks and marshmallows, students will practice making different shapes.</p> <p>Explore more: Students will build with different materials of all shapes and sizes to learn the best shapes for constructing buildings.</p> <p>C. Observe during the shape building process.</p>	<p>A. Students will apply knowledge of maps to start work on a city blueprint.</p> <p>B. Read Aloud: “Mapping Penny’s World” by Loreen Leedy</p> <p>Design a Blueprint: Students begin to draw a map of their city.</p> <p>C. Blueprints of maps will be collected along with the final product.</p>

Lesson 6 - Monday	Lesson 7 - Tuesday	Lesson 8 - Wednesday	Lesson 9 - Thursday	Lesson 10 - Friday
<p>A. Students will know and understand map skills related to vocabulary.</p> <p>B. Read Aloud: “Maps and Globes” by Harriet Barton</p> <p>Vocabulary Hunt: Students are given 5 words to define in their own terms and then draw a picture or find one that relates to the definition.</p> <p>C. Observe and talk with students throughout vocabulary work.</p>	<p>A. Students will learn about distinct kinds of maps.</p> <p>B. Vocabulary Review: Create simple definitions and have students check their work. Add motions or music to words.</p> <p>Blueprint: Students will continue working on their maps of their city.</p> <p>C. Observe and provide support while students are working independently.</p>	<p>A. Students will apply knowledge of maps to complete a grip map activity.</p> <p>B. Read Aloud: “North, South, East and West” by Meg Greve</p> <p>Grid Map Worksheet: Students will answer questions about a grid map.</p> <p>C. Collect worksheets.</p>	<p>A. Students will know map symbols and what they mean.</p> <p>B. Blueprint: Students will finish drawing their map and will work on adding details and color to their maps.</p> <p>C. Check in one on one with each student and do a self-assessment with them about their city.</p>	<p>A. Students will apply knowledge of maps to start work on a city blueprint.</p> <p>B. Read Aloud: “My Town” by Rebecca Treays</p> <p>Design a Blueprint: Students begin to draw a map of their city.</p> <p>C. Blueprints of maps will be collected along with the final product.</p>

UNLOCKING THE DOORS TO ENGAGEMENT AND ACCESSIBILITY: A CURRICULUM DEVELOPMENT FOR SECOND GRADE LEARNERS IN SOCIAL STUDIES

Lesson 11 - Monday	Lesson 12 - Tuesday	Lesson 13 -Wednesday	Lesson 14 - Thursday	Lesson 15 - Friday
<p>A. Students will know and understand map skills related to vocabulary.</p> <p>B. Read Aloud: “Where Do I Live?” by Neil Chesanow</p> <p>Vocabulary Hunt: Students are given 5 words to define in their own terms and then draw a picture or find one that relates to the definition.</p> <p>C. Observe and talk with students throughout vocabulary work.</p>	<p>A. Students will learn about distinct kinds of maps.</p> <p>B. Vocabulary Review: Create simple definitions and have students check their work. Add motions or music to words.</p> <p>Creating a 3D city planning.</p> <p>C. Observe during work time.</p>	<p>A. Students will create a map key.</p> <p>B. Read Aloud: “The Once Upon a Time Map Book: Take a Tour” by B. G. Hennessy</p> <p>Developing Map Keys Activity</p> <p>C. Collect Map Keys.</p>	<p>A. Students will know how to read a compass rose.</p> <p>B. Create a compass rose activity.</p> <p>Work on building 3D city</p> <p>C. Collect Compass Rose. Observe during the building process.</p>	<p>A. Students will apply knowledge of maps to start work on a 3D city.</p> <p>B. Read Aloud: “Maps” by Aleksandra and Daniel Mizielinski</p> <p>Project Flex time</p> <p>C. The final project will be collected at the end of the unit.</p>

UNLOCKING THE DOORS TO ENGAGEMENT AND ACCESSIBILITY: A CURRICULUM DEVELOPMENT FOR SECOND GRADE LEARNERS IN SOCIAL STUDIES

Lesson 16 - Monday	Lesson 17 - Tuesday	Lesson 18 -Wednesday	Lesson 19 - Thursday	Lesson 20 - Friday
<p>A. Students will know and understand map skills related to vocabulary.</p> <p>B. Read Aloud: “My Pop-Up World Atlas”</p> <p>Vocabulary Hunt: Students are given 5 words to define in their own terms and then draw a picture or find one that relates to the definition.</p> <p>C. Observe and talk with students throughout vocabulary work. Pull students one on one to create goals for the unit.</p>	<p>A. Students will apply knowledge of maps to create a 3D city.</p> <p>B. Vocabulary Review: Create simple definitions and have students check their work. Add motions or music to words.</p> <p>Project Flex time</p> <p>C. Check in with students. Reflect with them on what is working, what could be better in their cities.</p>	<p>A. Students will apply knowledge of maps to create a 3D city.</p> <p>B. Project Flex time</p> <p>C. Check in with students. Reflect with them on what is working, what could be better in their cities.</p>	<p>A. Students will be able to talk about the location of places.</p> <p>B. Final Product Presentations</p> <p>C. Rubric</p>	<p>A. Students will be able to talk about the location of places.</p> <p>B. Final Product Presentations</p> <p>C. Rubric</p>

Vocabulary List

1. Geography- the study of Earth and its people
2. Equator- a make-believe or imaginary line that divides the Earth in half
3. Prime Meridian- divides the Earth into the Eastern and Western Hemispheres
4. Latitude- imaginary lines on a globe that show the distance from the Equator
5. Longitude- imaginary lines on a globe that show the distance from the Prime Meridian
6. Hemisphere- one of the halves into which the Earth is divided
7. Cardinal directions- the 4 main directions; north, south, east, and west
8. Intermediate directions- directions that come between the main ones; northwest, southwest, northeast, southeast
9. Map key- shows you how to read a map; also called a legend
10. Compass rose- a symbol on a map that shows directions
11. Symbols- pictures or drawings that stand for things that are real
12. Grid- a network of evenly spaced horizontal and vertical lines used to identify locations on a map
13. Physical map- a map that shows Earth's surface features (oceans, mountains, rivers, etc.)
14. Political map- a map that shows governing divisions (countries, cities, states, etc.)
15. Landform- a feature on Earth's surface that is part of the terrain
16. Transportation map- a map that shows streets, roads, and cities
17. Historical map- images which show a particular event or time in the past
18. Rural- lots of nature and open spaces, with fewer people and buildings
19. Urban- in a city or town: lots of people live there, and there are lots of buildings
20. Suburban- a place where people live just outside of a city or town

List of Resources

Books

- “Me on the Map” by Joan Sweeney
- “Looking at Maps and Globes” by Rebecca Olien
- “Maps and Globes” by Harriet Barton
- “Keys and Symbols on Maps” by Meg Greve
- “North, South, East and West” by Meg Greve
- “Mapping Penny’s World” by Loreen Leedy
- “My Town” by Rebecca Treays
- “Where Do I Live?” by Neil Chesnow
- “The Once Upon a Time Map Book: Take a Tour” by B.G. Hennessy
- “Maps” by Aleksandra Mizielinski and Daniel Mizielinski
- “My Pop-Up World Atlas”

Materials

Large Blank White Paper, Regular blank paper, Index cards, Metal rings, Pencils, Colored pencils, Markers, Pens, Globe, Variety of different maps (physical, political, landform, transportation, historical), Computers, Rulers, Toothpicks, Marshmallows, Building Materials (paper towel rolls, oatmeal containers, cereal boxes, coffee tins) Wooden blocks, Shape magnets, Foam shapes

Week 1: Introduction of Maps

Lesson 1

Lesson Component	Map Skills Unit
Lesson Objective(s)	<ol style="list-style-type: none"> 1. Students will see visuals of possible final projects. 2. Students will know and understand the following vocabulary words: geography, equator, prime meridian, latitude, longitude
Ohio Learning Standard(s) for Social Studies	<p>THEME: PEOPLE WORKING TOGETHER</p> <p>A. Work serves as an organizing theme for the second grade. Students learn about jobs today and long ago. They use biographies, primary sources, and artifacts as clues to the past. They deepen their knowledge of diverse cultures and their roles as citizens.</p> <ol style="list-style-type: none"> 1. SPATIAL THINKING AND SKILLS <ol style="list-style-type: none"> a. Content Statement: 5. Maps and their symbols, including cardinal directions, can be interpreted to answer questions about location of places.
Essential Question(s)	What are the parts of a map?
Materials Needed	Pictures of final product examples, Read Aloud book, Ring of twenty index cards x number of students, computers, magazines, rubric, variety of different maps, student goal worksheet
Vocabulary	Geography, equator, prime meridian, latitude, longitude
Overview	<p>Project Introduction</p> <p><i>Project-Based</i></p> <p>Students will be designing and building their own city. Each day you (teacher and students) will work together to research and gather information that is needed to help complete this project. Students will be working on this project for four weeks.</p> <p><i>Final Product</i></p>

	<p>At the end of this project students will present their cities to classmates and they will be put on display. This could be the hallway, the classroom, a special designated space within the school, the town hall, an art museum, another place in the community, etc. You could also hold a fair or something similar for other students in the school, teachers and staff or parents and members of the community. Do what you feel will motivate your students and do what you have available to you.</p> <p><i>Student-Centered</i></p> <p>There are many ways that this project can look. Please show students a few examples (Appendix A contains pictures of possible final product outcomes. You can also create your own as a model or past student project if you have them). Student projects do not have to look like models or examples, but there will be certain things that need to be included. Student choice in what the final product will look like is important and helps foster internal motivation.</p>
<p>Procedure</p>	<p>60 minutes</p> <p>Project Introduction (15 min.)</p> <p>Tell students about the project using the information given in the overview.</p> <p>Present models and/or examples of what a final product may look like for this unit.</p> <p>Go over the rubric for the final product.</p> <p>Read Aloud (15 min.)</p> <p><i>Content that Connects</i></p> <p>Read “Looking at Maps and Globes” by Rebecca Olien</p> <p>Stop and point out any map skills vocabulary and map symbols.</p> <p>Vocabulary Hunt (30 min.)</p> <p><i>Project-Based</i></p>

	<p>Put the following words somewhere in the room in large print. It will be beneficial to have this list stay up throughout the duration of the project.</p> <p><i>Geography</i></p> <p><i>Equator</i></p> <p><i>Prime Meridian</i></p> <p><i>Latitude</i></p> <p><i>Longitude</i></p> <p>Give everyone a ring of index cards (20 cards on each).</p> <p>Each week throughout the unit you will add five more words and students can use these for review.</p> <p>Students may work together or by themselves to look up these words and write down a definition in their own words on one side of the index card. On the other side of the index card, they can draw a picture or cut out a picture that goes along with the word.</p> <p>Provide books, magazines, several types of maps and computers for students to research word meanings.</p> <p>Check definitions as a whole class the day after a vocabulary hunt.</p> <p><i>Accessibility: (Clear and Explicit)</i> During this time, pull students one on one to establish goals for this unit. Fill out the student goal worksheet (Appendix C). Keep one copy for you and give one copy to the student.</p>
<p>Assessment</p>	<p>Observe and talk with students throughout vocabulary work. Provide accessibility as needed. Pull students one on one to fill out student goal worksheet.</p>
<p>Accessibility</p>	<p><i>Accessibility (Clear and Explicit) :</i></p>

Students will be given a rubric, so they know the expectations for this project (Appendix B).

Accessibility (ZPD)

Support: Give students vocabulary cards that already contain a simple definition. Their job is to find or draw the picture that goes along with the definition.

Enrichment: Have students also use each vocabulary word in a sentence somewhere on the index card. These students may also be helpful in providing support to other classmates and you may want to pair students up strategically.

Week 1: Introduction of Maps

Lesson 2

Lesson Component	Map Skills Unit
Lesson Objective(s)	<ol style="list-style-type: none"> 1. Students will learn about distinct kinds of maps. 2. Students will know and understand the following vocabulary words: geography, equator, prime meridian, latitude, longitude
Ohio Learning Standard(s) for Social Studies	<p>THEME: PEOPLE WORKING TOGETHER</p> <p>A. Work serves as an organizing theme for the second grade. Students learn about jobs today and long ago. They use biographies, primary sources, and artifacts as clues to the past. They deepen their knowledge of diverse cultures and their roles as citizens.</p> <ol style="list-style-type: none"> 1. SPATIAL THINKING AND SKILLS <ol style="list-style-type: none"> a. Content Statement: 5. Maps and their symbols, including cardinal directions, can be interpreted to answer questions about location of places.
Essential Question(s)	What can maps tell us?
Materials Needed	Large paper or surface for web map, distinct types of maps, blank paper, pencils
Vocabulary	Geography, equator, prime meridian, latitude, longitude
Overview	Whole class review over vocabulary terms from the previous day followed by a dialogue between teacher and students on maps.
Procedure	<p>45 minutes</p> <p>Vocabulary Review (15 minutes)</p> <p><i>Feedback and Reflection & Accessibility (Clear and Explicit)</i></p>

As a whole class go over the vocabulary words that students worked on individually or in small groups the day before.

Write down simple and clear definitions for each word and add it to the list of words already displayed in the classroom. Students could also help with this process. Have students check their work and make changes if necessary.

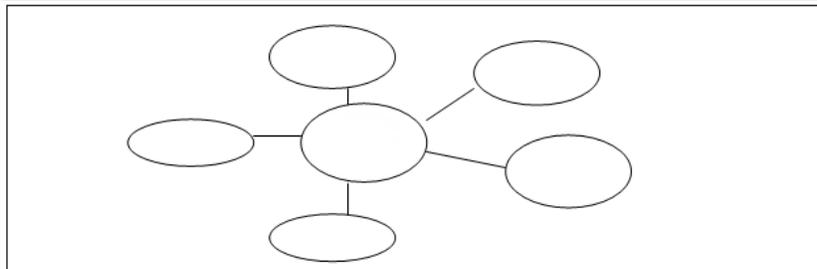
Let's Talk About Maps (30 minutes)

Student-Centered & Content that Connects

Have a conversation with students about maps. What do they already know?

In the front of the room on a whiteboard, digital board or large paper create a web map about maps. Put the word "Maps" in the middle of the web. Add things as students are talking.

Pass out blank paper for students to make their own web maps during the conversation to help reinforce information.



Some questions to ask:

What is a map?

What do we see on maps?

What do maps tell us?

Does every map show or tell us the same things? What is the same? Different?

How do we know what a map is telling/showing us?

Introduce and show examples of diverse kinds of maps (Appendix C). Show paper maps, virtual maps, 3D maps or a globe...., What is the difference between a political, physical,

	<p>landform, transportation, and historical map? Pass out and let students explore with all the different types of maps. Make sure each student can always have their hands and eyes on a map.</p>
Assessment	<p>Observe or write down in a journal students who are participating in the class discussion, those who seem confident, those unsure or shy.</p>
Accessibility	<p><i>Accessibility (Learning Style)</i></p> <p>Create motions or a beat that goes along with each vocabulary word to help those students who might learn best through movement and/or rhythm.</p> <p>Ex:</p> <p>La-ti-tude</p> <p>Clap each syllable or stretch arms horizontally to signal latitude lines go east and west like the rungs of a ladder.</p> <p>Lon-gi-tude</p> <p>Clap each syllable or pull an imaginary line from the floor stretching to the sky ending with one arm pointing up and one down to signal that longitude lines go north and south and are long and tall.</p>

Week 1: Introduction of Maps

Lesson 3

Lesson Component	Map Skills Unit
Lesson Objective(s)	1. Students will know how to tell people about the location of places. 2. Students can draw their own map.
Ohio Learning Standard(s) for Social Studies	THEME: PEOPLE WORKING TOGETHER B. Work serves as an organizing theme for the second grade. Students learn about jobs today and long ago. They use biographies, primary sources, and artifacts as clues to the past. They deepen their knowledge of diverse cultures and their roles as citizens. 2. SPATIAL THINKING AND SKILLS b. Content Statement: 5. Maps and their symbols, including cardinal directions, can be interpreted to answer questions about location of places.
Essential Questions	What is on a map? Where do I belong on the map?
Materials Needed	Blank white paper, pencils, Read Aloud book, checklist
Vocabulary	Geography, equator, prime meridian, latitude, longitude
Overview	Students will read a book called “Me on the Map.” After reading this story twice, students will then try to create their own classroom map with a given checklist.
Procedure	<p>60 minutes</p> <p>Read Aloud: Me on the Map (30 minutes)</p> <p><i>Content that Connects</i></p> <p>Read book to students and then reread story through a virtual retelling on YouTube:</p>

	<p>Me on the Map</p> <p>After reading the story go back to the page with the map of her room. Discuss with students about what she has in her room and how she mapped it.</p> <p>This will be their project for today, but instead they will be mapping the classroom. This way they can look around them to help with drawing their map.</p> <p>Map the Room (30 minutes)</p> <p><i>Project-Based</i></p> <p>Give students large sheets of paper and access to writing utensils. Encourage the use of pencils first in case they need to go back and fix something while they are working. Their goal is to draw a map of the classroom.</p> <p>Hand out a checklist of must-have items needed for their map (Appendix E).</p>
<p>Assessment</p>	<p>Collect the map of the classroom from each student at the end of class. Check to see if they were able to do the things listed on the checklist.</p>
<p>Accessibility</p>	<p><i>Accessibility (ZPD)</i></p> <p><i>Support:</i> If students need more support, consider pairing them to work with another student or having them focus only on the major items in the classroom. You may also want to give a map that is already started with some things already placed on it and they will add to it.</p> <p><i>Enrichment:</i> For those that finish this assignment quickly and with adequate quality, have them get another piece of paper and map the whole school or their house.</p>

<p>Procedure</p>	<p>45 minutes</p> <p>3D Shape Review (30 minutes)</p> <p><i>Content that Connects</i></p> <p>Watch the following YouTube video to review 3D shapes. This will help students that are visual and/or musical learners.</p> <p>3D Shapes</p> <p><i>Project-Based</i></p> <p>Pass out toothpicks and marshmallows. Instruct not to eat marshmallows. They will be used for connecting the toothpicks into different 3D shapes.</p> <p>Feel free to start with some 2D shapes first to help students learn how to work with toothpicks and marshmallows and then have them build on to create 3D shapes.</p> <p>Make sure to do the following shapes: Sphere, Cube, Cylinder, Cone, Pyramid. If students are ready, you may also talk about prisms.</p> <p>Say the name of a shape and then have students try to make the shape without looking at a picture first. After a few minutes, display the picture shape on the screen for students to look at (Appendix D).</p> <p>Make sure to discuss that a true sphere cannot be made this way. Ask students why. Discuss shape characteristics. A sphere has no sides.</p> <p>Explore More with Shapes (15 minutes)</p> <p><i>Project-Based</i></p> <p>Place an assortment of 3D shapes all over the room.</p> <p>Have students explore these shapes and how they might build with them. Can they be stacked? What falls over easily? What shape seems the strongest? What shape do they like best? How might the buildings in their city look?</p>
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	<p>Some examples of 3D shapes to gather:</p> <p>Wooden Building Blocks</p> <p>Foam and/or Plastic Shapes</p> <p>Shape Magnets</p> <p>Everyday objects such as an oatmeal carton, milk carton, cans, ice cream cones, plastic cones, balls, dice, tissue boxes, paper towel rolls, cereal boxes, plastic bottles etc.</p>
Assessment	<p>Observe during shape building to see if students can work and solve independently or if they need more support.</p>
Accessibility	<p><i>Accessibility (Learning Styles)</i></p> <p>Working with real world items and interacting with shapes in a hands-on way will appeal to those students who learn best through doing and working with their hands.</p>

Week 1: Introduction of Maps

Lesson 5

Lesson Component	Map Skills Unit
Lesson Objective(s)	<ol style="list-style-type: none"> 1. Students will understand how to use a map key. 2. Students can draw and design their own map.
Ohio Learning Standard(s) for Social Studies	<p>THEME: PEOPLE WORKING TOGETHER</p> <p>A. Work serves as an organizing theme for the second grade. Students learn about jobs today and long ago. They use biographies, primary sources, and artifacts as clues to the past. They deepen their knowledge of diverse cultures and their roles as citizens.</p> <ol style="list-style-type: none"> 1. SPATIAL THINKING AND SKILLS <ol style="list-style-type: none"> a. Content Statement: 5. Maps and their symbols, including cardinal directions, can be interpreted to answer questions about location of places.
Essential Questions	What all is included in a map?
Materials Needed	Large blank white paper, pencils, pens, colored pencils
Vocabulary	Geography, equator, prime meridian, latitude, longitude
Overview	Students will begin to design and draw a map of their created city.
Procedure	<p>60 minutes</p> <p><i>Content that Connects</i></p> <p>Read Aloud (15 minutes)</p> <p>Read “Mapping Penny’s World” by Loreen Leedy</p> <p>Point out any map skills vocabulary and map symbols.</p> <p>What is needed for a map to be complete?</p>

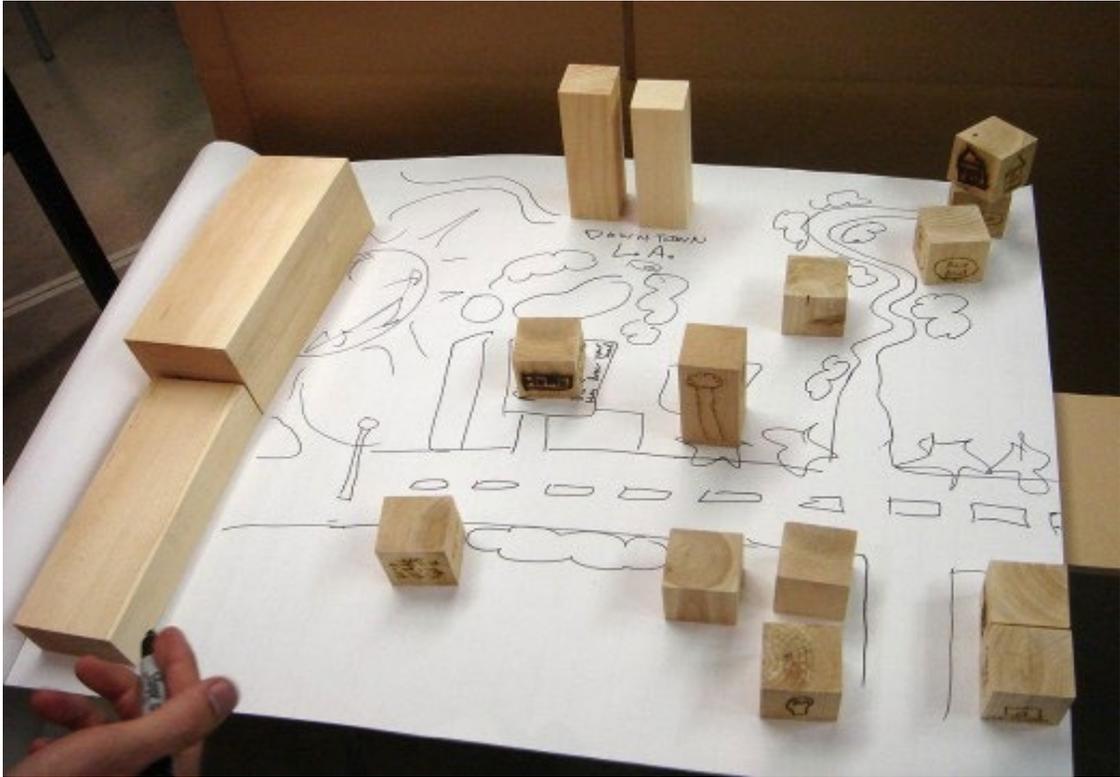
	<p>Drawing a Blueprint and Designing Your City (45 minutes)</p> <p><i>Project-Based</i></p> <p>Most of the class time will be used for students to start drawing and designing their city.</p> <p>Pass out large blank paper and pencils.</p> <p>Remind students to pull out their final product rubric to make sure they are including everything that they need to.</p> <p>Encourage creativity and imagination. It can be real or unreal.</p> <p>Provide support and feedback while walking around the classroom as students work.</p>
Assessment	Observe and provide support as needed. The maps will be collected at the end of the unit along with the final project.
Accessibility	<p>Accessibility</p> <p>Support: Some students may work better in pairs or even a group on this project. Although this may limit individual creativity, it may be beneficial for them to have another student lending a hand.</p>

Appendix A











Appendix B

Rubric

	Poor- 1	Fair- 2	Good- 3	Excellent- 4
Effort Student works diligently during class time and is motivated to try their best.				
Quality The project is done well and with dedication. All parts of a map are present within the city design and build. Creativity is present.				
Presentation The presentation is full of information and gets others excited about their project.				

Appendix C

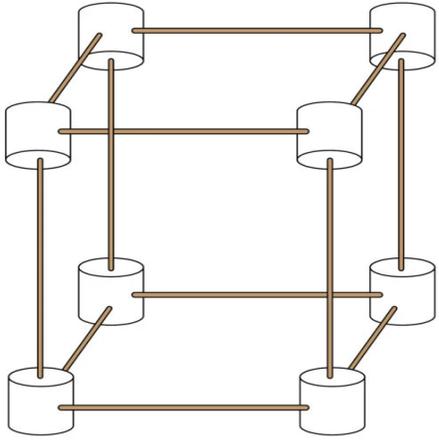
Student Goal Setting

Student Name:

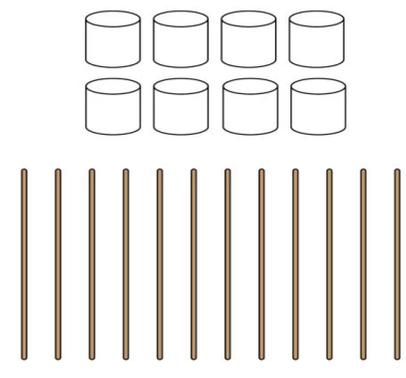
Before	After
Goal 1:	
Goal 2:	
Accommodations:	

Appendix D

Build a Cube



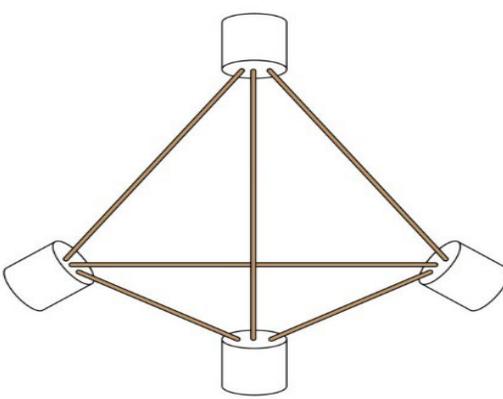
I NEED



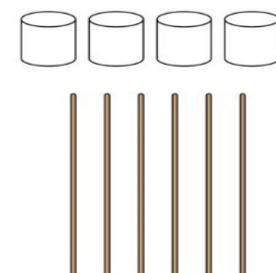
VERTICES: _____ EDGES: _____

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Build a Triangular Pyramid



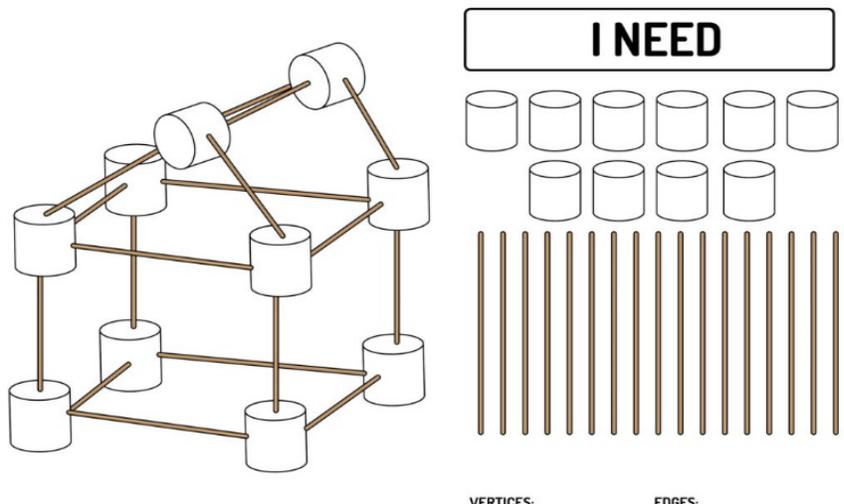
I NEED



VERTICES: _____ EDGES: _____

WWW.FRUGALMOMEH.COM

Build a Pentagonal Prism

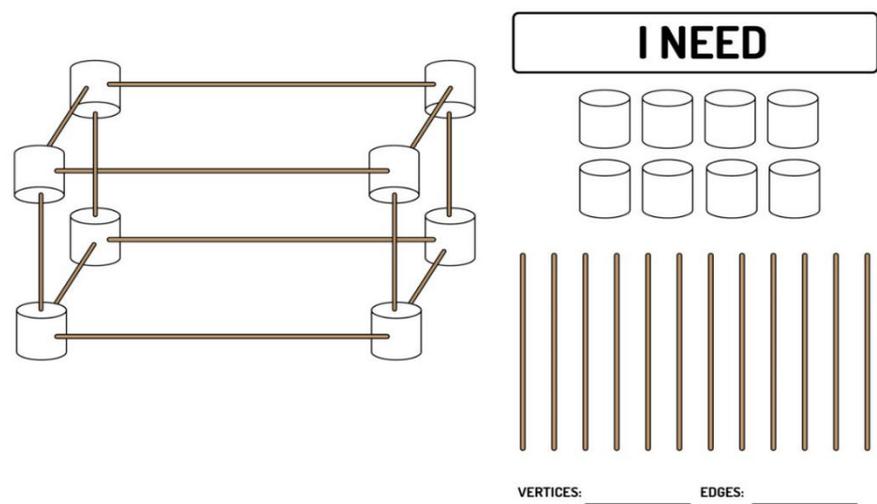


The diagram shows a 3D model of a pentagonal prism. It is constructed from 10 cylindrical caps and 15 wooden sticks. The sticks form the edges of the prism, connecting the vertices of the top and bottom pentagonal bases. To the right, under the heading "I NEED", are the materials required: 10 cylindrical caps (5 for the top base and 5 for the bottom base) and 15 vertical wooden sticks.

VERTICES: _____ EDGES: _____

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Build a Prism



The diagram shows a 3D model of a rectangular prism. It is constructed from 8 cylindrical caps and 12 wooden sticks. The sticks form the edges of the prism, connecting the vertices of the top and bottom rectangular bases. To the right, under the heading "I NEED", are the materials required: 8 cylindrical caps (4 for the top base and 4 for the bottom base) and 12 vertical wooden sticks.

VERTICES: _____ EDGES: _____

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Appendix E

Me on the Map Checklist

Please check things off when you add them to your map.

Your classroom map MUST include:

	Cardinal directions- North, South, East and West
	Intermediate directions- Northeast, Northwest, Southeast, Southwest
	Compass Rose
	Map Key
	Symbols
	Doors
	Student and Teacher Desks
	Shelves

References

- Ames, C., & Ames, R. (1984). Goal structures and motivation. *The Elementary School Journal*, 85(1), 39–52. <http://www.jstor.org/stable/1001617>
- Baldwin, C. A. (2021). Universal design for learning. *Reference & User Services Quarterly*, 59(3/4), 173–176.
- Buck Institute for Education. (2019). *Gold standard PBL: Essential project design elements*. PBLWorks. Retrieved October 26, 2022, from <https://www.pblworks.org/what-is-pbl/gold-standard-project-design>
- CAST. (2018) *Universal design for learning guidelines version 2.2*. UDL. Retrieved October 26, 2022, from <https://udlguidelines.cast.org/>
- Corpus, J. H., & Wormington, S. V. (2014). Profiles of intrinsic and extrinsic motivations in elementary school: A longitudinal analysis. *The Journal of Experimental Education*, 82(4), 480–501. <https://www.jstor.org/stable/26594427>
- Curtis, D. (2002). The power of projects. *Educational Leadership*, 60(1), 50–53.
- De Jesus, O. N. (2012). Differentiated instruction: Can differentiated instruction provide success for all learners? *National Teacher Education Journal*, 5(3), 5–11.
- Diffily, D. (2002). Project-based learning: Meeting social studies standards and the needs of gifted learners. *Gifted Child Today*, 25(3), 40. <https://doi.org/10.4219/gct-2002-69>
- Dobbertin, C. B. (2012). “Just how I need to learn it.” *Educational Leadership*, 69(5), 66–70.
- Duke, N. K., Halvorsen, A.-L., & Strachan, S. L. (2016). Project-based learning not just for STEM anymore. *Phi Delta Kappan*, 98(1), 14–19. <https://doi.org/10.1177/0031721716666047>

- Ferrero, M., Vadillo, M. A., & León, S. P. (2021). Is project-based learning effective among kindergarten and elementary students? A systematic review. *PLOS ONE*, *16*(4), 1–14. <https://doi.org/10.1371/journal.pone.0249627>
- Fitzgerald, M. S. (2020). Overlapping opportunities for social-emotional and literacy learning in elementary-grade project-based instruction. *American Journal of Education*, *126*(4), 573–601. <https://doi.org/10.1086/709545>
- Guthrie, J. T., Alao, S., & Rinehart, J. M. (1997). Literacy Issues in Focus: Engagement in Reading for Young Adolescents. *Journal of Adolescent & Adult Literacy*, *40*(6), 438–446. <http://www.jstor.org/stable/40015517>
- Guthrie, J. T., Wigfield, A., Humenick, N. M., Perencevich, K. C., Taboada, A., & Barbosa, P. (2006). Influences of Stimulating Tasks on Reading Motivation and Comprehension. *The Journal of Educational Research*, *99*(4), 232–245. <http://www.jstor.org/stable/27548134>
- Halvorsen, A.-L., Duke, N. K., Brugar, K. A., Block, M. K., Strachan, S. L., Berka, M. B., & Brown, J. M. (2012). Narrowing the achievement gap in second-grade social studies and content area literacy: The promise of a project-based approach. *Theory & Research in Social Education*, *40*(3), 198–229. <https://doi.org/10.1080/00933104.2012.705954>
- Harrison, C., Alvermann, D. E., & Afflerbach, P. (2017). What is engagement, how is it different from motivation, and how can I promote it? *Journal of Adolescent & Adult Literacy*, *61*(2), 217–220. <http://www.jstor.org/stable/26631102>
- Heacox, D. (2012). *Differentiating instruction in the regular classroom: How to reach and teach all learners*. Free Spirit Publishing.

- Larmer, J. (2018, July 13). *A tricky part of PBL: Writing a driving question*. PBLWorks. Retrieved December 7, 2022, from <https://www.pblworks.org/blog/tricky-part-pbl-writing-driving-question>
- Levy, H. M. (2008). Meeting the needs of all students through differentiated instruction: Helping every child reach and exceed standards. *The Clearing House*, 81(4), 161–164. <http://www.jstor.org/stable/30189983>
- Morgan, H. (2014). Maximizing student success with differentiated learning. *The Clearing House*, 87(1), 34–38. <http://www.jstor.org/stable/43999367>
- National Council for the Social Studies. (2016). *Powerful, purposeful pedagogy in elementary school social studies*. Social Studies. Retrieved October 25, 2022, from <https://www.socialstudies.org/position-statements/powerful-purposeful-pedagogy-elementary-school-social-studies>
- Ohio Department of Education. (2018, January). *Ohio's learning standards for social studies*. Retrieved October 26, 2022, from <https://education.ohio.gov/Topics/Learning-in-Ohio/Social-Studies/Ohio-s-Learning-Standards-for-Social-Studies>
- Romano, K. (2002). Cultivating curiosity. *Teaching Pre K-8*, 33(3), 48.
- Tamim, S. R., & Grant, M. M. (2013). Definitions and uses: Case study of teachers implementing project-based learning. *Interdisciplinary Journal of Problem-Based Learning*, 7(2), 71–101. <https://doi.org/10.7771/1541-5015.1323>
- Tomlinson, C. A. (2008). The goals of differentiation. *Educational Leadership*, 66(3), 26–30.
- Unluol Unal, N., Karal, M. A., & Tan, S. (2022). Developing accessible lesson plans with universal design for learning (UDL). *International Journal of Disability, Development & Education*, 69(4), 1442–1456. <https://doi.org/10.1080/1034912X.2020.1812539>

U.S. Department of Education. (2022, November 7). *About IDEA*. Individuals with Disabilities Education Act. Retrieved December 1, 2022, from <https://sites.ed.gov/idea/about-idea/>.

Weldon, T. (2012). Individualized learning. *Capitol Ideas*, 55(5), 12–15.

Wellen, L. (2018). A classroom for all students: Project-based learning. *Lutheran Education*, 56–66.

Wolk, S. (2001). The benefits of exploratory time. *Educational Leadership*, 59(2), 56–59.

Zhang, L., Jackson, H. A., Yang, S., Basham, J. D., Williams, C. H., & Carter, R. A. (2022). Codesigning learning environments guided by the framework of universal design for learning: A case study. *Learning Environments Research*, 25(2), 379–397.

<https://doi.org/10.1007/s10984-021-09364-z>