



STEMD²

Ne'epapa Ka Hana (NKH) 2.0 | Professional Development Program

Authentic Social Learning

An Inclusive Teaching Model to Support Diverse Learners in Hawai'i

Module 4: Planning and Goal-Setting for a Successful STEM Classroom with the ASLM

Lecture 7:

Lesson Planning for Success with the ASLM

There is an old saying: *Failing to plan is planning to fail*. As a teacher, you already know that lesson planning is vital to the success of any lesson. To create inclusive lessons with the Authentic Social Learning Model, you will want to spend some time planning your lessons to ensure a successful lesson with a high level of engagement. Do not worry, you will not have to change your lesson planning method to implement the ASLM. If you have found a system that works for you, continue to use that system. Depending on how you currently structure your lessons, you may want to shift the focus of your planning to create more student-centered, 21st-century lessons. If your lesson plans currently involve you giving direct instruction for the majority of the time you spend with your students, you can use the following guidelines to help you move to a more student-centered classroom environment with the ASLM. These guidelines are suggestions; always remember that you have the freedom to change and adapt your lessons to fit your needs and your students' needs.

Before you begin implementing your lessons, it is beneficial to take time to think about how you can use the strategies suggested in this ASLM training to ensure you are incorporating inclusive content, an inclusive environment, inclusive processes, and inclusive assessments. Even with multi-day lessons, it is a good idea to create a daily lesson plan with daily objectives so you can keep yourself and your students focused on the steps that need to be completed. The goal of this

module is to provide you with guidelines, or a roadmap that you can print out and refer to as you are lesson planning to create an inclusive STEM classroom using the ASLM.

Planning your learning content: How could you include authentic learning to provide inclusive learning content?

Step 1: Start with the end in mind to address the standards.

Before you plan any lesson, you have to answer the following questions:

What do you want your students to know?

What should your students be able to do?

It is a good idea to have answers to these two questions before you move on to the planning phase. Before planning your lesson decide what mathematics standards you expect your students to master. Authentic lessons can incorporate several math standards as well as standards from other content areas. Sometimes, it is easy to get lost in the other standards and lose focus on the main objective. Take time to think about and list all of the standards your lesson will address but don't lose sight of the main standard you want your students to master. Then, think about how you want your students to present their understanding and how you want to assess it.

The ASLM focuses on formative assessment to monitor student learning, provide for diverse learning, and improve student achievement. But you will still need to give summative assessments at the end of your unit or whenever your school or district mandates it. Plan how and when you will give your summative assessment before you plan the lesson. Use your summative assessment goals to help you choose the standards and lesson topics throughout the unit. Remember that summative assessments can be performance assessments, particularly for multi-day authentic learning tasks. Performance assessments are more inclusive, since you can provide a list of options for your students to show their understanding through their learning style and comfort level. Summative assessments can also be formal tests. These are less inclusive but necessary to prepare students for the district summative assessments they will take. Try to use a variety of summative assessments to increase inclusion.

Step 2: Plan rigorous math assignments that require critical thinking and problem-solving using authentic learning.

Students should be communicating about math to deepen their understanding and problem-solving skills. Consider using authentic place-based learning to address your standards. How can you teach that standard in an authentic math lesson or project? Are there local examples you can use when you are teaching? You can still use your textbook

or provided curriculum to teach specific skills, but consider how you could change the examples to be more meaningful for your students. Plan an authentic real-world problem that your students can work collaboratively to solve. Think about how you can help your students make connections with the math content and real-world applications. What experts can you involve in the process? How can you use technology to bring the outside world into your classrooms (TED Talks, videos, blogs, etc.)? Refer back to Module 3 for more ideas and examples.

Step 3: Plan daily objectives related to the mathematics state standards, CCSS mathematical practices, or 21st-century skills.

Decide what your students will be expected to accomplish each day and set clear objectives that are attainable for both your students and yourself. Many standards will take multiple days to master but your students can practice more than one standard in a day. Share the objectives with your students so they are aware of the daily plans.

Some days, your objectives may be focused solely on your state mathematics standards. Other days, you may focus your objectives on mathematical practices or 21st-century skills. Other days may be focused on effectively using technology resources to find reliable sources. It takes time to build a classroom of self-regulated learners, so allow yourself and your students the time to learn those skills. It is acceptable, and recommended, that some of your lessons are focused on mastering collaboration and communication while still practicing math standards and working toward mastery of those standards.

Planning your learning environment: How could you include social learning to promote student engagement in an inclusive environment?

Step 4: Plan your lessons around the ASLM social learning strategies to increase student engagement.

Your students will be more engaged and motivated when your lessons incorporate social learning. Plan ways to integrate 21st-century skills such as problem-solving, collaboration, and communication into your lessons. Consider ways you can support your students as they work in their social networks. Plan to utilize the ASLM strategies to teach your objective. Create authentic problems your students can use social exploration, social ideation, social experimentation, and social validation to solve. If you have access to technology, think about how you could utilize social technology to help your students

meet the objectives. Ensure you have permission from your administration to use social technology in class. Specific examples for this can be found later in this module.

Step 5: Plan ways you can facilitate group learning through individual participation.

The goal of social learning is to create inclusive environments and encourage equity in participation and mathematics instruction by motivating students with lesson plans that incorporate ASLM. Think about the roles that group members will have to adapt to ensure the successful completion of their assignments. Remember, the goal is equity in participation, so you do not want one student responsible for all areas of the assignments. How can you ensure that all students can find a role so they can contribute to the overall success of the group? How will you support your students as they form groups with diverse students? Think about ways you can encourage your students to select group members based on their strengths and fitness for each role rather than just choosing their friends.

Planning your learning processes: How could you differentiate instruction to create inclusive learning processes?

Step 6: Plan your whole-group direct instruction, but focus on how you can provide small group intervention.

Use direct instruction to explain complex concepts that the students will need to be successful in their projects and assignments. Direct instruction should rarely take an entire class period. Remember to limit your instruction to conceptual understanding and not procedural steps. A great advantage to the ASLM is that you can teach the concepts to small groups or individuals. Take the time to plan how you will meet the needs of each group or individual. Providing small group interventions is usually fairly easy to do if you are using social learning, but it is a good idea to plan for it ahead of time.

Plan ways to monitor and guide students' learning in their social learning groups. Think about some questions you might ask to check for understanding and ensure students are progressing through their assignments. Think about ways you can assist the students in utilizing the ASLM strategies to their advantage. If your students are not progressing, how will you help them move forward?

Step 7: Think about how you will meet the needs of diverse learners.

Your classroom is made up of an array of diverse learners. You will have some students that are struggling and some that are advanced. Take time to plan for resources that you can use to meet the needs of all of your students. You may want to list some technology

resources if they are available in your classroom. You can look back at module 3 for some suggested resources for struggling readers. Remember to consider your high-need students as well as your advanced students when you are thinking of resources. In each daily lesson think of ways that you can help struggling students, such as assigning them a research partner or providing resources. Also, think of ways you could extend the lesson to challenge your more advanced students. If you plan for addressing the diverse needs of your students in advance, it will help you avoid that sense of panic when you have a group that finishes early and you do not have anything for them to do.

Planning your learning outcomes: How could you create inclusive learning outcomes that improve student achievement?

Step 8: Plan for embedded formative assessments based on your daily objectives.

Plan to integrate formative assessments into your daily lessons. Even in multi-day authentic learning tasks, try to assess your students' daily understanding, whether you do so formally or informally. Remember to include daily checkpoints in your planning and decide how you will assess the students at those checkpoints. Try to use a variety of formative assessments, including performance assessments. Is there a way you can offer a choice of assessments to promote autonomy? Consider ways that you may be able to incorporate performance assessments throughout the project to meet the needs of diverse learners. If your objective was a specific math concept, plan how you will assess your students' progress toward mastery of that concept. If your objective was a 21st-century skill, like problem-solving, think about how you will assess that objective. Remember that the questions that you ask each group to ensure that they are progressing are formative assessments. You can choose to record these assessments in the grade book based on your school and classroom needs.

Step 9: Plan your method of providing feedback and how you will use that feedback to improve student achievement.

The most important part of a formative assessment is that it is used to provide feedback. Plan how you will give specific and immediate feedback to your students. Feedback can be given to the whole class, though this should be only in limited instances. Usually, your feedback should be given to small groups or individual students. The goal is to move toward mastery, so the more specific and individualized the feedback, the more effective it will be. Keep in mind that the goal of feedback should be to improve achievement. Take some time to consider how you will use feedback to guide and differentiate instruction. Is there a way to provide individual instruction without making students feel like they are being singled out? For example, you could form ability groups or groups

based on students' needs to provide further practice and instruction based on your assessment data. These groups are different from social learning networks because they are short-term and only for the purpose of focused instruction. You could use your feedback to re-teach skills to specific social learning groups as they work on their problem-solving task.

Practical Strategies for Implementing the ASLM: The First Weeks of School

This Professional Development course has given you strategies and examples for teaching the Authentic Social Learning Model so your students will enjoy learning math in an inclusive learning environment. You, in turn, will enjoy spending your days facilitating your students' learning. However, you and your students will probably need time to transition to this new style of teaching and learning. This section consists of practical strategies to use the first weeks of school to prepare your students to work and learn using the ASLM. As always, the following strategies are suggestions that you can modify to fit the needs of your classroom and your students. While this Professional Development course recommends using the following strategies to implement the ASLM at the beginning of the year, you can implement this model and transition your classroom at any time.

Strategies for Preparing for Your Students Before the First Day of School

1. Arrange your furniture to accommodate social learning and provide seating options.

You want your classroom to be an environment that encourages collaboration, so the placement of your furniture should be conducive to that purpose. Ideally, your furniture should provide various seating options so students can sit where they feel most comfortable. If possible, try to use a mix of tables and desks to provide options for your students. If you can, look for grant opportunities to get yoga balls, stools, or other diverse seating options for your students. Any furniture arrangement will work as long as it creates comfortable options for you and your students. Play with different seating arrangements, but resist the urge to assign seats; assigned seats limit student-selected social learning networks. If you spend a few minutes on the internet you can find a wide variety of seating options for collaborative classrooms. See the resources section of this module for a few suggestions to get you started.

2. Plan your authentic learning opportunities.

Planning your authentic learning projects is generally the most teacher-intensive and time-consuming part of the ASLM. Plan your projects ahead of time so you can spend your lesson planning time breaking the projects into daily objectives and planning the formative assessments. Focus on including rigorous tasks to increase problem-solving

skills. NHK 2.0 provides a book series with various sample activities covering middle school math standards that can be adapted to other grade levels, too.

3. Plan for your students who have special needs.

Once you have access to your class rosters, take time to learn which students have IEPs, 504s, are gifted, or have other special needs. Learn their needed accommodations or modifications so you can plan your lessons around those needs. Once you meet your students, start planning for their special needs by listening to their ‘stories’ and talking to them. You will not only learn about their preferred ways of learning but just as important, you will get to learn about them. This will allow you to better prepare and modify your lessons to make them relevant.

4. Find experts or community members who are willing to connect with or mentor your students.

Start to make connections with experts or mentors to help with your authentic learning tasks and help you extend your students’ learning beyond the classroom. Ask around at businesses, government entities, and universities to find volunteers. Some of these experts may even provide inspiration or ideas for authentic learning opportunities. The more access your students have to professionals outside of the classroom, the more connections they start to make between education and real-life.

Strategies for Preparing Your Students to Learn with the ASLM in the First Weeks of School

1. Use personality and learning style questionnaires to help your students learn about their strengths and individual learning styles.

Have your students take personality tests to identify their personality type, strengths, and weaknesses. This is the first step to helping your students learn the roles they are suitable for in authentic social learning. Plus, you will find that your students love learning about themselves. There are a variety of free tests available online. Try to find one that can be easily interpreted by your grade level of students.

Allow your students to identify their learning styles so they can start to develop their learning pathways. Ask students to inform you of their preferred learning styles. Use resources available online to help your students identify their unique learning styles. See the resources section of this module for suggestions on personality and learning style questionnaires.

Example:

You could also create a project using this short activity, where students are able to learn about themselves and their classmates in a casual setting. Give your students a personality test that describes their strengths and weaknesses at the end. Ask your students to write a short explanation of how they are like the description and how they are different. Then, ask your students to form groups with students who match their personality types. Allow them to have about 10 minutes to discuss how they like to work in groups and what works best for them in the class. After that, ask the students to form groups with students who have different learning styles. Give them about 10 minutes to discuss how they like to work in groups and what works best for them in class.

2. Be deliberate about spending time to build relationships with your students.

Take the time to learn about your students' lives outside of the classroom. When your students know you care about them, they will work harder in the classroom. Listen to their stories, aspirations, pains, and challenges without being judgmental. Remember, you need to connect to students' hearts before training their minds. This is not wasted class time. It is preparing your students to work in a new learning environment where you will be facilitating their social learning groups and providing critical feedback. None of that will work without a strong relationship first.

Most teachers already use "get to know you" activities at the beginning of the school year. If you already use something that you like, keep using it. Instead of just having the students do the activity, include yourself too. Present your item to the class and have the students present theirs also. Your students want to get to know you as much as you want to know them. Keep in mind that it is important to consistently take time to continue to learn about your students throughout the year. Learning about your students is an ongoing process that takes time.

Example:

Print out a blank outline of a t-shirt. Ask your students to design a t-shirt that describes them. Their t-shirt should symbolize their favorite hobbies, favorite school subject, their family, and a future goal. Then, have the students present their shirts to the class and explain how it symbolizes the ideas listed above. Don't forget to present your t-shirt design, too.

3. Develop several mini-projects using the ASLM strategies to teach your students how to learn using the ASLM.

Create simple, short projects that your students can work on using social learning. Create short projects so your students can work within several different groups in the first few weeks. Use these projects to teach the skills needed for the ASLM strategies. These should be authentic learning challenges, but they can be light-hearted and a little silly to get the students engaged. The goal is to get students comfortable with social learning and presenting to their classmates. Using light-hearted problems will help the students become more comfortable. If your students get used to presenting in less-stressful situations, they will be more comfortable later during more difficult lessons. Ideas for projects are only limited to your imagination. See the resources section for some suggestions to get you started.

Example:

Ask your students to create math superhero leagues to work together and solve a problem. Ask your students to create a “superhero” version of themselves and what superpower they would have. This helps you learn a little bit about your students and helps with relationship building. Next, ask the students to form a superhero league with four to five students in each league. They should work with their league to solve a somewhat silly problem. For example, you could pose the problem that the Wi-Fi at school went out due to a storm. The students would have to use all of their superpowers to fix the Wi-Fi. Ask your students to present their ideas in a skit for the class.

4. Prepare your students for social learning by building relationships with one another as they work with several different groups.

Allow your students to work with several different students in the class. Use several different mini-projects like the one before. Ask your students to choose their groups for each mini-project using a different set of criteria. Use their personality types or learning styles. Try to expose your students to as many other students as possible at the beginning of the year.

Example:

For one group project, you can have them select groups where no one shares the same learning style. For another project, you could ask them to work with others who have similar styles. Or, you can have them choose people who were all born in a different month or who all have the same favorite color. The options are as endless as your imagination.

After students have worked in several different groups, it is time to teach them how to work in social learning networks. As a group, identify what roles are needed to complete an upcoming task. Ask them to identify the strengths a person has to have for each role

and then ask them to identify the role they are best suited to play. One technique is to have your students write their roles on a piece of paper and hold them so their classmates can see it. Then ask students to select their groups so each role is represented.

5. Teach your students the skills they will need to use the ASLM strategies.

In ASLM classrooms the students will eventually use the ASLM strategies without thinking about it because they will become second nature. But first, the students have to be taught how to use the skills. It is best if you can teach these skills early in the year to help your students learn to use them. Video 4 in Module 2 suggested activities to teach your students how to use the ASLM strategies. The strategies below are based on those, but they are within the context of a simple 1 or 2-day assignment your students can complete helping learn the strategies.

Example:

For this example, older students are going to determine the best way to teach fourth-graders how to subtract fractions as mixed numbers. You can change the topic to any math topic that you think your students could benefit from reviewing. Subtracting fractions is a good starter topic because it involves finding common denominators, equivalent fractions, improper fractions, and reducing fractions to simplest terms. First, ask the students to form groups of three to four.

Before your students can begin developing ideas for teaching fourth graders how to subtract mixed numbers, they will have to research different methods and strategies. This is a good opportunity to teach your students the skills needed for *social exploration*, which is the first strategy your students will use to solve this problem.

Social exploration:

Ask your students to research ways to subtract mixed numbers if you have the technology. They can also do research on 4th grade math education and how students learn best. For example, ask your students to find two different methods for subtracting fractions. If you don't have technology, print out or project three or four different websites with differing strategies on subtracting mixed numbers. Use the research to teach your students how to determine if sources are reliable and how to cite their sources. Open discussions about how to evaluate the content on the internet and determine credibility. Discuss the best way to use keywords to narrow their search to filter out extraneous information.

The next strategy your students will use is *social ideation*. Take the time to teach your students how to compile their research from social exploration and discuss the feasibility of each method. Your students will need to learn how to collaborate and think critically.

Social ideation:

Ask your students to discuss the methods for subtracting mixed numbers to determine the best way to teach a group of fourth-graders. Talk about how to respectfully share divergent and conflicting opinions about subtracting fractions. Discuss ways that your students can respectfully critique and disagree, but use those critiques to create better solutions. Ask them to find solutions they don't think the other groups will have.

After the students have discussed the various methods for subtracting mixed numbers, they will need to analyze each method to develop their final solution using *social experimentation*. The students will need to look at the advantages and disadvantages to each model and decide which method they want to use to teach fourth grade students. They will also create their lesson presentation.

Social experimentation:

Social experimentation is dependent on your students' ability to analyze solutions and provide feedback to refine the solutions. You will need to teach the students both of these skills. Talk about how to compromise with a group to develop one solution. Ask your students to collaborate with their group and use their research and discussion to finalize their solution for teaching fourth-graders how to subtract mixed numbers. Ask them to create a visual display that they can use to teach their method for subtracting mixed numbers.

After the students have created their lesson presentation, they are ready to present their lessons to the class in *social validation*. Give the students time to practice their presentations to help their confidence and presentation skills.

Social validation:

Ask each group to teach their classmates how to subtract mixed numbers, pretending that their classmates are fourth-graders. Talk about basic presentation skills like eye contact, voice inflection and not fidgeting. At the end of their presentation, ask the group how they would have structured their presentation differently if their audience was a group of teachers instead of fourth-graders. Use this opportunity to talk to your students about structuring a presentation for their intended audience.

6. Prepare your students to receive feedback from formative assessments.

Plan to assess a different skill each day so your students get used to formative assessments. When you first implement formative assessment, you can focus on mathematical practices, ASLM strategies, or 21st-century skills in order to provide feedback. For example, you can assess how well the students collaborate or communicate and then provide feedback on how the students can improve those skills.

Example:

As your students are working on a group problem through the ASLM strategies, walk around to each group and provide feedback on their progress as they solve the problem. Ask your students to justify their thinking and help them find any errors they might have made. In your feedback, focus on more than just the getting to the correct answer, try to provide feedback on their collaboration and communication skills as well. Ask your students for some ideas of how they would like to improve their collaboration. The goal is to get the students comfortable with receiving and using feedback.

For example, when talking about environmental issues it is sometimes difficult to make sense of the numbers. It is not always obvious how dramatic it is for the ocean temperatures to rise a few degrees or for elephant populations to fall to a few thousands. One way we can talk about numbers in a meaningful way is by using *ratios*, which allow us to compare two numbers. You can assign your students a project to use ratios and create a visual representation (graph, chart, table, or other graphic) of the number of honu, the Hawaiian Green Sea Turtles (*Chelonia mydas*), left in the world.

During the project, your students will use **social exploration** and integrate technology, if available, as they research the honu and some things that they can relate to and compare against the honu. If students do not have access to technology, you can provide articles with statistics about the honu. For example, if your classroom is on Maui, you can also provide census or geographical data for that island.

You have a good *feedback opportunity during social exploration* by ensuring that your students are finding valid resources during their research and using informal group discussions. Ask the students if they could verify their numbers with more than one website or source to ensure its validity. If you are providing resources, perhaps provide several sources for the same information, or even some inaccurate ones. Teach the students to check if resources are trustworthy and up to date. Some information may be difficult to find, especially when it is about rare species, and in that case you can have a discussion about why that information is unavailable.

After your feedback, your students will use **social ideation**. The students will solve the math and justify their thinking by showing the steps they used to solve the problem. The

students will have to collaborate with their group to find a way to solve the problem and determine an appropriate visual representation for their solution. Some students will look at the total length of the Maui shoreline and calculate the ratio of honu to miles of Maui shoreline. Another group calculates the ratio of the worldwide honu population to the human population of Maui.

To create a *feedback opportunity during social ideation*, walk around and listen to the group conversations. As the students discuss their possible strategies, listen to their conversation and ask questions to ensure they understand the mathematics involved. Make sure that they've checked each other's math. Make sure that they understand the ratios in the context of the problem by asking them to explain what those ratios would look like. For example, the number of "honu per mile" has a different interpretation than "miles per honu." Give all of the students a chance to speak and get feedback.

Following your feedback during social ideation, the students will use **social experimentation** to refine their solutions. The students will have the opportunity to draft and propose the different solutions within their group and discuss which drafts make most sense and how to polish those drafts. When the students discuss comparing the worldwide honu population with the shoreline length of Maui, they might note that their ratio was unusual because it describes what would happen if every honu came to Maui all at once. On the other hand, Maui students have a sense that their island population is small, yet surprisingly huge compared to the worldwide honu population.

Feedback opportunities during social experimentation are very important to help students move toward mastery and a successful solution. You can discuss their ideas for their visual representation. Ask the students to explain and justify their choice for the visual representation and ask if there would be a more effective representation.

After your students have successfully developed their solutions they will use **social validation** to present them. Your students will present their graphic displays to the class and ask for feedback from other students that didn't work with.

Feedback opportunities during social validation can be from you and the students. Encourage the students in the class to provide feedback for the group that is presenting. Teach the students how to give constructive, but kind, feedback. A good strategy for this is one positive comment and one suggestion for improvement. At the end of the presentations, we can bring everyone together and have one big discussion about why these visualizations are important and what are some ways to help the honu population.

Possible Pitfalls to Watch for and Avoid

Don't overwhelm yourself and your students.

The ASLM model will take some time to implement fully, so use the tips listed above and start with mini-projects assignments at the beginning. It is going to take time for you to learn to facilitate your students' social networks and it will take time for your students to learn to collaborate effectively. Give yourself and your students time to implement the model and improve on it as the year progresses. It is important to be patient with your students, but also yourself!

Don't think you have to change everything about your teaching to implement the ASLM.

The ASLM is designed to help you find ways to modify your current teaching style and shift to a student-centered inclusive classroom. If there are certain aspects of your classroom or assignments and projects that you love and your students love, keep them. The ASLM is intended to make your classroom more enjoyable for you and your students, so maintain the parts you love and change the parts you do not.

Don't forget to collaborate with your teammates and coworkers.

One reason that teachers leave the profession is that they feel isolated. We suggest finding another teacher at your school and commit to implementing the ASLM together. You can share your success stories to help one another and share things that didn't work so you can adjust your strategies.

Don't forget to have fun!

Teaching is supposed to be an enjoyable experience for you and your students. Take time to celebrate successes and enjoy your time with students. Your students are full of energy and creativity and they want to share it with you.

Teacher Resources for Implementing the ASLM

Resources for Social Learning

Possible Seating Options:

<https://thecornerstoneforteachers.com/classroom-seating-arrangements/>

<https://www.displays2go.com/Article/Effective-Classroom-Seating-Arrangements-32>

<https://www.template.net/business/charts/classroom-seating-chart-template/>

Ideas for Mini-project for the first few weeks:

<https://my.pblworks.org/projects>

[Ideas for First Week Project](#)

Learning Style Inventory:

<https://www.dvc.edu/enrollment/counseling/lss/survey.html>

https://wvde.state.wv.us/counselors/links/students/documents/9.8.1-Learning_styles_assessment.pdf

Personality Tests:

<http://mycareerproject.org/test/personality-test/>

<https://www.16personalities.com/free-personality-test>

The Hawai'i Department of Education provides a list of resources for teachers to implement STEM in their classrooms. Many of these resources will provide you with a starting place for developing student-centered lessons.

<http://www.hawaiipublicschools.org/TeachingAndLearning/StudentLearning/Stem/Pages/tech-tools.aspx>

<http://www.hawaiipublicschools.org/TeachingAndLearning/StudentLearning/Stem/Pages/Competitions-and-Units.aspx>

Resources for Social Learning:

<http://teachpsych.org/resources/Documents/otrp/resources/eggleston04.pdf>

<https://teaching.cornell.edu/resource/examples-collaborative-learning-or-group-work-activities>

Resources for Authentic Learning

PBL Projects/Ideas: <https://my.pblworks.org/projects>

PBL Planning Form: <https://my.pblworks.org/planner>

PBL Resources (videos, etc): <https://my.pblworks.org/resources>

Resources for Inclusive Mathematics

The most important resources for creating an inclusive math classroom are probably located at your school site. Since each student and each school is unique, other educators at your site are a great resource for understanding your students' unique needs. Make sure you are aware of all of your students who have IEPs and 504s. Know which students are ELL, gifted, or have any other unique needs.

Virtual manipulatives: <http://nlvm.usu.edu/en/nav/vlibrary.html>

Online graphing: <https://www.desmos.com/calculator>

Vocabulary cards with illustrations:

http://www.doe.virginia.gov/instruction/mathematics/resources/vocab_cards/index.shtml

Alternate mathematics explanations and examples:

<https://www.ixl.com/>

<https://study.com/buy/course/6th-8th-grade-math-practice-review.html>

Resources for Implementing Formative Assessments

With a quick search on the internet, you can find a wide variety of formative assessments. Find formative assessments that you are comfortable with and your students will find engaging. The sky's the limit when it comes to formative assessments. So have fun developing your assessments and your students will enjoy them too.

<https://shakeuplearning.com/blog/20-formative-assessment-tools-for-your-classroom/>

<https://www.nwea.org/blog/2019/75-digital-tools-apps-teachers-use-to-support-classroom-formative-assessment/>

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