

Intel® Teach Elements:
Assessment in 21st Century Classrooms
Action Plan: Anna Morris

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Module 1: 21st Century Learning

Lesson 1: 21st Century Classrooms

Activity 1: Roles in the 21st Century

Estimated Time: 15 minutes

In what ways do you consider yourself a 21st century teacher? Describe how you:

- Collaborate with other teachers
- Use technology in your classroom
- Act as a facilitator of your students' learning
- Use multiple forms of assessment for content and 21st century skill development

I use technology when it makes sense to do so. Students use the Internet for research and simulations. Students sometimes create multimedia presentations to present their learning. I try to incorporate projects when I can that involve current, real-world problems that can be investigated through the application of math. In those cases in particular, I act more as a facilitator and have students develop their own solutions. I do use multiple forms of assessment like rubrics, checklists, and so forth, but I want my students to become more proficient at using them to support their learning. I do want to incorporate more 21st century skill development.

Module 1: 21st Century Learning

Lesson 1: 21st Century Classrooms

Activity 3: Evolution of Assessment Practices

Estimated Time: 15 minutes

In the chart, record your current assessment practices and how you would like to change your assessment practices.

Current Assessment Practices	Changes to Assessment Practices
Rubrics and scoring guides to grade projects and presentations	Have students use rubrics more to assess their own work and each other's
End-of-chapter tests, quizzes	Some of my students don't do well with traditional test-taking, but I know they know the content. They just get flustered. I'd like to develop multiple methods of determining student learning—without adding a lot to my work load.
Homework assignments, worksheets – practice of math concepts	Assess students' real-world application of math—so students better understand concepts and purpose
Learning logs	Continue use

Module 1: 21st Century Learning

Lesson 2: 21st Century Skills in the Classroom

Activity 3: 21st Century Skill Selection (Optional)

Estimated Time: 20 minutes

1. Consider the units you teach.
2. List units where you explicitly teach, or would like to teach, 21st century skills.
3. For those units, list the technologies you use or would like to use.

Unit	21st Century Skills	Technology
Number and Operations	Creativity, critical thinking, and problem solving	Multimedia presentation, Internet, handhelds
Measurement	Critical thinking, problem solving	GPS, surveyor transit
Geometry	Collaboration, creativity, information literacy	Internet, multimedia, online simulation
Algebra and Patterning	Information literacy	Internet research
Probability	Collaboration, creativity	Online surveys, spreadsheet

Module 1: 21st Century Learning

Lesson 3: 21st Century Assessment Practices

Activity 1: The Role of Formative Assessment

Estimated Time: 10 minutes

How does formative assessment benefit your classroom? What kinds of changes would you need to make in your assessment practices to include more formative assessment?

Formative assessment helps me know when my students are “getting it” and when they’re not. This helps me respond appropriately in pacing and content based on my students’ needs. Rather than simply relying on quizzes and end-of-chapter tests to assess my students’ understanding, I would also like to use more informal methods of assessment so I don’t have to wait for test results to make adjustments in my teaching.

The learning logs my students keep help them to be more reflective learners—and I would like to do more to support them in that process. One thing that I want to implement is including activities where students use rubrics and checklists to peer- and self-assess.

Module 1: 21st Century Learning

Lesson 4: Module Review

Activity 1: Module Summary

Estimated Time: 10 minutes

Based on your understanding of assessment, what assessment goals would you like to set for yourself during this course, month, or school year? Write your goals. Some examples include:

- Choose 21st century skills to focus on during a particular unit or project
- Use formative assessment strategies in my classroom
- Add 21st century skills to my rubrics
- Use additional assessment instruments to assess
- Have students assess themselves and their peers
- Distribute rubrics before and during the project
- Use journals and/or observations to assess

My assessment goals:

Focus on creativity and information literacy in my geometry unit on bridges and incorporate 21st century skills into other units

Have my students use rubrics and other assessment instruments throughout a unit to do more peer- and self-assessment and support reflection activities

Conduct more informal formative assessment

Module 2: Assessment Strategies

Lesson 3: Focus on Rubrics

Activity 3: Rubric Development

Estimated Time: 10 minutes

Reflect on your current use of rubrics in your classroom.

How might you use rubrics in new or different ways to improve your students' learning?

I have used rubrics to grade projects and to explain expectations. I want to have my students use rubrics to peer- and self-assess their work.

Module 2: Assessment Strategies

Lesson 4: The Assessing Projects Library

Activity 2: Assessing Projects Application

Estimated Time: 20 minutes

Explore the rubrics shown in the table or in the *Assessing Projects* library. Select and save at least one product or performance rubric and at least one 21st Century skill rubric to your Course Folder or to your Personal Library if using *Assessing Projects*. Describe how and when you would use each assessment.

Product or Performance Rubric name:

Multimedia Presentation Rubric

How I will use the rubric:

I will use parts of it to create the Bridges project rubric

21st Century Skill Rubric:

Research Rubric

How I will use the rubric:

I will use parts of it to create the Bridges project rubric

Module 2: Assessment Strategies

Lesson 5: Module Review

Activity 1: Module Summary

Estimated Time: 10 minutes

Reflect on your learning in this module.

Separating out and thinking through the assessment *purposes, methods, and instruments* helped me clarify the full scope of an assessment strategy. I think seeing assessment this way will help me as I choose the best methods and instruments based on the purposes I have for the assessment. I have a much better understanding of the different purposes of assessment—to think that I used to think assessment was only about demonstrating understanding!

I feel much more confident in creating better rubrics. It really helped to see rubrics in first person, student-friendly language. I hadn't thought of doing that before. I also see how rubrics can be used to support other purposes of assessment besides simply providing a way of assigning a grade.

Module 3: Assessment Methods

Lesson 1: Assessment and Instruction

Activity 2: Instructional Activities as Assessment

Estimated Time: 20 minutes

Describe how you might integrate assessment methods as part of classroom activities.

- Graphic Organizers

Use K-W-L-H chart at the beginning of a project to focus and determine students' prior knowledge.

- Journals and Learning Logs

I have used learning logs successfully with my students to help them (and me) see how they process math problems and think through a process. I want to start using learning logs to help support 21st century skills as well.

- Discussions

My "discussions" tend to look a lot like "lectures" with spot checks on understanding. I would like to try facilitating real discussions where students struggle and debate mathematical concepts, rather than me telling them the steps they need to follow.

- Products and Performances

I already have my students do some projects that include the creation of projects and presenting their ideas, but I like the idea of making sure that 21st century skills are included in products or performances.

Module 3: Assessment Methods

Lesson 3: Classroom Conferences

Activity 3: Example Conferences

Estimated Time: 20 minutes

Describe how you might include each assessment method in your classroom.

- Observation

I can more "consciously" observe as students work in groups to see what strategies they use to solve problems.

- Peer Assessment

I have only used peer assessment to check answers on quizzes—not really peer assessment at all! I can definitely see using peer assessment during projects.

- Self-Assessment

This is another area that I can definitely improve. The learning logs we do are a step in the right direction, but helping my students learn to really look at their work objectively using rubrics and checklists I think will help the math concepts sink in.

- Student-Teacher Conferences

I've gone around the classroom and "checked in" with students when they're working on projects, but I haven't formally scheduled conferences before. I think adding conferences during projects will help me collect better information on where my students are in understanding the concepts as well as encourage metacognition.

Module 3: Assessment Methods

Lesson 5: Assessment Instruments

Activity 1: Overview of Assessment Instruments (Optional)

Estimated Time: 30 minutes

Explore the assessment instruments (rubrics and checklists) shown in the table or in the *Assessing Projects* library. Select and save any that you would like to use or adapt for your classroom. Note how and when you might use the assessments.

Assessment Instrument	How You Will Use It
Multimedia Presentation Rubric	During the Bridges project—I will add the specifics related to this project to the rubric
Mathematical Problem Solving Rubric	To help student think through their problem solving process—can use in conjunction with the learning logs
Project Plan Checklist	I like several parts of this checklist and can use it to build my own checklist that will be a "standard" for projects

Module 3: Assessment Methods

Lesson 6: Module Review

Activity 1: Module Summary

Estimated Time: 10 minutes

Reflect on how implementing what you have learned in this module might change your classroom.

Having self- and peer assessments as a regular part of the classroom will definitely be a significant change. It will be interesting to see how students respond to this kind of assessment in a math class. I also want to try scheduling conferences where I encourage students to take charge of their own learning instead of me just making sure they're on track in meeting deadlines. I have experimented a bit with portfolios before and like the results—I'm going to use them in all my classes next semester.

Module 4: Assessment Development

Lesson 1: Important Learning Goals

Activity 2: 21st Century Skills Objectives

Estimated Time: 20 minutes

In this module, focus on a single project as you complete each Your Turn activity. Note that the planning steps build on each other.

Choose standards and write objectives for your unit. Remember to write objectives that tie to targeted standards, are measurable, and incorporate 21st century skills.

Unit/Project: Bridges Project

Targeted Standards	Objectives
Precisely describe, classify, and understand relationships among types of two- and three-dimensional objects using their defining properties	Create bridge models, evaluate features, and incorporate into their own design
Draw geometric objects with specified properties, such as side lengths or angle measures	Use measurement, scale factor, and geometric properties to draw accurate scale bridge models
Use two-dimensional representations of three-dimensional objects to visualize and solve problems such as those involving surface area and volume	Apply triangulation concepts to complex bridge systems
Use representations to model and interpret physical, social, and mathematical phenomena	

Targeted Standards	Objectives
Understand relationships among the angles, side lengths, perimeter, areas and volumes of similar objects	Compare and contrast the strengths of different components of bridge structures
Recognize and apply geometric ideas and relationships in areas outside the mathematics classroom, such as art, science, and everyday life Create and use representations to organize, record, and communicate mathematical ideas	Research bridge types and their structural design Provide arguments related to principles and to evidence for ideas and choices of bridge design Represent their mathematical thinking in a variety of formats
Apply and adapt a variety of appropriate strategies to solve problems	Gather, organize, analyze, display, and process information to identify solutions and report results Create procedures for constructing and testing components of a bridge structure Analyze the strengths and weaknesses of bridge structures

Module 4: Assessment Development

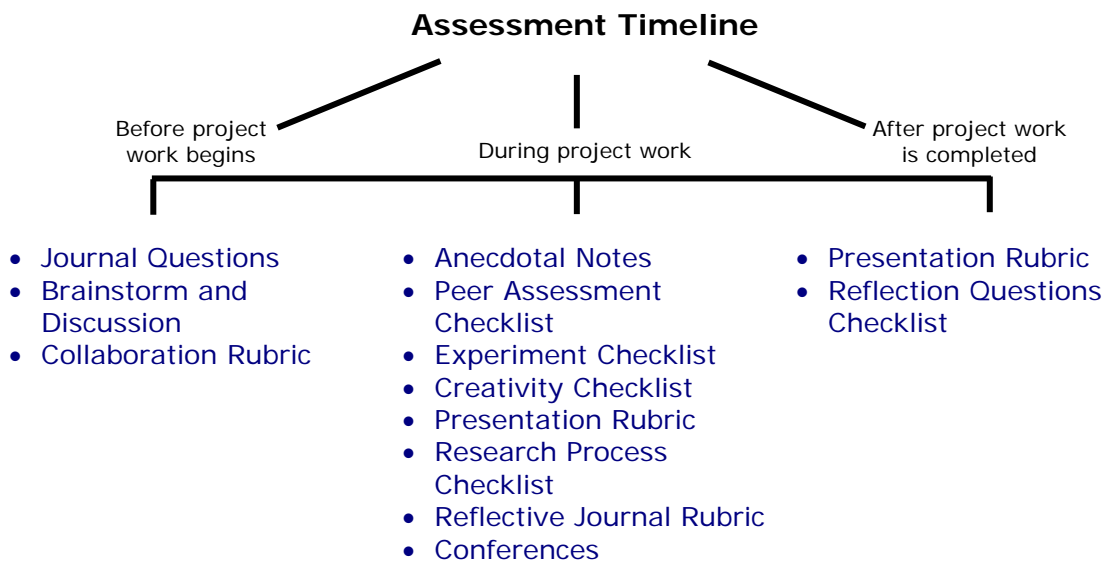
Lesson 2: Assessment Plan

Activity 2: Effective Assessment Timelines

Estimated Time: 20 minutes

Create an Assessment Timeline for your project. Remember to plan assessments throughout the project that meet all five purposes:

- Gauging Student Needs
- Encouraging Collaboration and Self-Direction
- Monitoring Progress
- Checking Understanding and Encouraging Metacognition
- Demonstrating Understanding



Module 4: Assessment Development

Lesson 2: Assessment Plan

Activity 3: Assessment Methods and Purposes (Optional)

Estimated Time: 20 minutes

To complete your Assessment Plan for your unit, develop a table of assessment strategies that aligns to the Assessment Timeline you created in [Activity 2](#).

As you think through the purpose and process for each assessment, you may need to modify your Assessment Timeline to best meet each of your goals and objectives.

You may want to review the **Guiding Questions** document in the **Module 4** section of the **Resources** tab to help you write your Assessment Plan.

Table of Assessment Strategies

Assessment	Process and Purpose of Assessment
Journal Questions	At the beginning of the project, my students use journal questions to reflect on their past learning and to set goals for this project.
Brainstorm and Discussion	I use questioning and student brainstorming to determine how much students know about geometry concepts related to building structures before starting the project and to connect to their personal lives.
Collaboration Rubric	My students use the rubric to monitor their collaboration skills as they work together on the project. I review with students during conferences and prompt students to refer to

Assessment	Process and Purpose of Assessment
	the rubric during group work.
Anecdotal Notes	I record notes from observations and interactions with individuals and groups, and from the conferences to provide documentation for the final assessment.
Peer Assessment Checklist	My students use the checklist to help guide the process of providing feedback on their classmates' portfolios.
Experiment Checklist	My students use the checklist to monitor their progress when designing and conducting their experiments and to give other team members feedback.
Creativity Checklist	My students use the checklist during group work and journal writing to think about how they are using creativity skills such as fluency, flexibility, risk-taking, and elaboration.
Presentation Rubric	My students use the rubric to ensure they have met the project expectations and to help them produce high-quality work. Peers use the rubric to provide feedback to their classmates. I use the rubric to assess portfolios, presentations, research, mathematical understanding, and collaboration skills.
Research Process Checklist	My students use the checklist to monitor their research on bridge designs, such as searching, sorting, organizing, and analyzing the information they find.
Reflective Journal Rubric	My students use the rubric to assess the quality of their reflections, thinking processes, and recording of new learning. I also want them to monitor how well they are progressing toward achieving their goals.
Conferences	I schedule meetings with groups and individuals to probe for content understanding so I can identify misconceptions and gaps to address in instruction. I answer any questions students may have and monitor their progress on the project.
Reflection Questions Checklist	At the end of the unit, my students use the checklist to help guide their reflections on areas of strength, areas needing improvement, and setting new learning goals. I review the reflections to analyze student understanding, metacognitive abilities, and growth throughout the unit.

Module 4: Assessment Development

Lesson 3: Assessment Instruments

Activity 3: Rubric and Checklist Adaptation

Estimated Time: 30 minutes

1. Adapt a rubric or checklist that you selected in *Module 2, Lesson 4, Activity 2* or [Module 3, Lesson 5, Activity 1](#). Use *Assessing Projects* to adapt an assessment in your personal library, or modify an assessment in your Course Folder using a word processor.
2. Describe how you adapted the assessment and how you will use it in your classroom.

I used sections of the Assessing Projects research rubric, multimedia presentation rubric, persuasive speech rubric, and collaboration checklist. I added specific content about the bridges project and portfolio requirements.

Module 4: Assessment Development

Lesson 4: Module Review

Activity 1: Modules Summary

Estimated Time: 10 minutes

Reflect on your learning from Module 4 and record your reflections.

Creating the assessment timeline was very helpful to see the big picture of all the different types of assessment that would happen during this unit. I'm very happy with the rubric I created for the bridges project. I think it will help students focus on the important requirements of the project and clearly shows the different levels. Going through the specific steps for adapting a rubric helped me keep in mind all of the important characteristics of an effective rubric. I'll definitely use this process again.

Module 5: Assessment in Action

Lesson 1: Student Roles in Assessment

Activity 1: Increased Student Responsibility (Optional)

Estimated Time: 15 minutes

Considering your students and their experiences with peer assessment, what concerns do you have about transitioning them to be successful assessors? List your concerns and brainstorm solutions.

Concerns	Solutions
Taking the process seriously	Include the assessment process in the project grade
Accurately assessing	Model how to assess a sample with the assessment instrument; demonstrate a think-aloud
Providing helpful feedback during peer review	Provide a checklist/guidelines for peer review

Module 5: Assessment in Action

Lesson 1: Student Roles in Assessment

Activity 2: Peer Feedback

Estimated Time: 30 minutes

1. Review the **Tips for Student Feedback** document.
2. Create a resource to support or scaffold peer assessment, such as a checklist, presentation, tips sheet, dialog for modeling, and so on. You may modify any of the resources you viewed in this activity for use in your own classroom. Consider using collaboration and self-direction resources from the *Assessing Projects* library as well.
3. Describe how you will use the support material.

I created a peer assessment checklist that includes items for both how to conduct a peer review as well as the content they need to assess for this particular unit. I used my Bridges Presentation Rubric and several collaboration checklists for ideas on the content. Students will be required to turn in the checklist with their comments for my review. I think it will be very helpful for them to understand the process and to get useful feedback from each other.

Module 5: Assessment in Action

Lesson 2: Self-Assessment

Activity 2: Supporting Metacognition (Optional)

Estimated Time: 30 minutes

1. Review the **Metacognition** document.
2. Consider the resources you could use to support self-assessment and metacognition in your classroom. Identify an assessment instrument you have already created, modify any of the samples you have viewed, or use the *Assessing Projects* application to create one.
3. Describe how you will use the support material.

I created a Reflection Process form for students to use and update throughout the unit. It has them identify and think through their learning goals and the “evidence” that shows they have met those goals. It also has a section at the end on what they have learned, which they will complete at the end of the unit. I hope that this form will help them along the path of more reflective and self-directed learners. It will also help to provide an additional assessment for me to evaluate the unit and assess the students’ learning.

Module 5: Assessment in Action

Lesson 3: Assessment Management

Activity 1: Assessment Management Strategies

Estimated Time: 15 minutes

1. Describe how you will organize and track student assessment data.

I am going to use a spreadsheet that summarizes the various assessment data for each student. I will use a printed form as I conduct observations and conferences, but then transfer that data onto the spreadsheet.

2. Describe how you will help your students organize their assessment data.

I am going to use a spreadsheet that summarizes the various assessment data for each student. I will use a printed form as I conduct observations and conferences, but then transfer that data onto the spreadsheet.

Module 5: Assessment in Action

Lesson 3: Assessment Management

Activity 2: Assessment Routines (Optional)

Estimated Time: 15 minutes

What assessment activities do you want to routinely occur in your classroom? What technology do you think could help support those activities?

Routine Assessment Activities	Technology
Learning logs	I have been using notebooks for student learning logs, but I'd like to experiment with using blogs. They would be easier to review and students could access them from any Internet-connected computer.
Project rubrics and checklists	I can provide the rubrics electronically to my students so they can access and post their self-assessments on their digital portfolios.
Digital portfolios	I'm sold on having students create wikis to organize their projects and reflect their learning. Parents are more involved, too.
Online polls	Use to get an overall summary of student and parent feedback at the end of the unit.

Module 5: Assessment in Action

Lesson 4: Use of Assessment Data

Activity 2: Reflection and Goal Setting

Estimated Time: 15 minutes

Review your ideas for tracking and organizing student assessment data from [Module 5, Lesson 3, Activity 1](#). How will you and your students use the information from the assessment data?

1. Consider how students can use the assessment information to:
 - Reflect on their learning
 - Modify their goals or actions
 - Revise their work
 - Build on their 21st century skills, and so on

Describe what you will have your students do with the assessment data they collect and organize.

Use the reflection form for goal setting and reflecting on their learning—and use it to direct the content on their digital portfolio. I'd also like to have one overarching portfolio that collects the learnings, reflections, and assessments over the full course of the year. This portfolio could show not only the development of their mathematical understanding but also their 21st century skills.

2. Determine how you will use the assessment data to:

- Modify instruction
- Determine proficiency
- Plan future units, and so on

Plan how you will use student assessment data that you organize and track.

Besides adjusting instruction as we go, the reflection forms will be reviewed to evaluate the effectiveness of the unit and modify for next year. The digital portfolios will be a significant factor in determining proficiency. The effective components of the unit will be adapted and used in other units.

Module 5: Assessment in Action

Lesson 5: Grading in a 21st Century Classroom

Activity 2: Grading Systems (Optional)

Estimated Time: 10 minutes

What strategies will you use to assign grades to student work and processes?

I'm going to try the Student Distribution model for project grading where I give a total number of points to the group and they distribute the points based on individual effort. They will need to justify their decisions. I think it will help with accountability. I will grade the final project, in-progress effort (like peer-assessment), and key assignments during the unit. I'm interested to see how it will work to not grade every assignment.

Module 5: Assessment in Action

Lesson 6: Module Review

Activity 1: Module Summary

Estimated Time: 10 minutes

Reflect on the learning from this module.

I was worried about how I was going to pull all the assessment data together. Now I have a pretty clear plan on how I'm going to track and organize the data, as well as use it for grading purposes. It was interesting to see all the different options for grading group and individual work for team projects. It will be even more interesting to see how allowing student input into individual grades actually works out. Turning the rubric into a scoring guide for a grade was easier than I thought it would be.

Course Wrap-Up Summary

Activity 1: Course Reflection

Estimated Time: 20 minutes

Revisit the goals you set for assessment in your classroom from [Module 1, Lesson 4, Activity 1](#). Write about your progress toward those goals.

I've started to review all my units again and identify specific 21st century skills for each so that a broad range will be met by the end of the year. I have also started to move to online blogs as learning logs and I've set up a conferencing schedule and plan to do for observations.

What new goals do you have for assessment in your 21st Century classroom? What goals do you have for your students?

Create assessment plans for the rest of my units to include on-going assessment and new assessment instruments. Include assessment of 21st century skills.

Create a plan and expectations for an overarching digital portfolio that will encompass the entire year.

Have my students use rubrics and other assessment instruments throughout a unit and build in more peer- and self-assessment and support reflection activities.