

INDIANA WESLEYAN UNIVERSITY
Math Education Teacher Work Sample—2012 NCTM Standards

Administration and Purpose. The Teacher Work Sample (TWS) is planned and administered during the student teaching semester in either the first or second experience. The TWS is a unit of instruction in a subject area that fits within the normal scope and sequence of your regular student teaching duties.

The overarching purpose of the Teacher Work Sample is to determine the degree to which you can teach to student mastery by using assessment data to modify your planned instruction so that all students accomplish planned learning outcomes. The TWS also has these related purposes:

- The demonstration of your ability to create inter-related learning outcomes, instruction and instructional activities and assessments.
- The documentation of your ability to write high-quality assessments: informal assessments to determine student learning progress, and formal assessments to measure the degree to which students have mastered the planned learning outcomes.
- Your ability to use data to make instructional decisions.
- The degree to which you can modify initial instructional plans based on individual student characteristics, and adapt planned instruction based on data analysis of student learning.

Note that you will want to use multiple artifacts from your Teacher Work Sample as evidence in your student teaching portfolio.

Content of Assessment. The Teacher Work Sample is divided into three sections. The first is the instructional plan. You will write a unit of instruction that includes the content you will teach, along with individual lesson plans that cover the scope and sequence of the unit. The second section is the assessment plan. Your plan will include an initial pre-test designed to determine students' knowledge of the planned content before you begin teaching the unit; informal assessments used to monitor student learning progress as you teach the unit; and a post-test to determine your students' mastery of the content at the conclusion of the unit. The final section of the Teacher Work Sample is a discussion of the quality control measures you employed to ensure that your assessments were fair, accurate, consistent, and as free from bias as possible.

The Teacher Work Sample also contains the following alignments:

- National Council of Teachers of Mathematics (NCTM) 2012 standards. The IWU Math Education program is recognized by the NCTM; this assessment is one of several used to affirm the strength of our program by that organization.
- Interstate New Teacher Assessment and Support Consortium (InTASC). The InTASC Standards outline the common principles and foundations of teaching practice that cut across all subject areas and grade levels and that are necessary to improve student achievement. The ten InTASC Standards are incorporated into this assessment, and are divided into four categories:
 - ✓ Learner and Learning (InTASC Standards 1, 2 and 3)
 - ✓ Content (InTASC Standards 4 and 5)
 - ✓ Instructional Practice (InTASC Standards 6, 7 and 8)
 - ✓ Professional Responsibility (InTASC Standards 9 and 10)
- Diversity Thread. Teacher candidates are expected to teach all students well.
- Technology Thread. Teacher candidates are expected to integrate technology into their teaching as a means to improve student learning.

Criterion for Success. *Candidates must achieve a rating of Competent to pass this assessment. For this assessment, Competent is defined as 80% or more of all rubric elements scored as competent or higher. No domain or assessment element may be scored as Needs Improvement*

Indiana Wesleyan University
Mathematics Education—2012 NCTM Standards
Teacher Work Sample

Assignment description. The premise behind this assignment is that teachers need to not only be deliberative and purposeful in designing instruction that enables students to meet learning standards and goals, but they also need to be able to document the degree to which that happens in their classrooms as a result of their teaching. Given that understanding, the purpose of this assignment is to provide pre-service teachers with a deliberate, step-by-step process by which they design a unit of instruction along with an assessment plan designed to measure the growth in student learning that results from the planned instruction.

Tasks and procedures

1. Design an instructional sequence that includes a unit plan, an assessment plan, and a minimum of four lesson plans, which must be part of the unit plan instructional sequence.
2. Design and administer a pre-assessment to students.
3. Aggregate and analyze data from the pre-assessment.
4. Develop and/or adjust instructional plans based on pre-assessment data.
5. Deliver instruction.
6. Design and administer a post-assessment to students.
7. Aggregate and analyze data.
8. Construct a data display showing both pre- and post-assessment data.
9. Write a reflective commentary on the process, focusing how data were used to adapt and modify instruction to meet student-learning deficiencies identified in the assessment process.
10. Provide evidence that you have carried out your plans and have implemented them successfully.

NOTE: You must provide evidence that the following NCTM standards have been met as a result of your planning and teaching within the context of your Teacher Work Sample:

NCTM Standard 5a Verify that secondary students demonstrate conceptual understanding; procedural fluency; the ability to formulate, represent, and solve problems; logical reasoning and continuous reflection on that reasoning; productive disposition toward mathematics; and the application of mathematics in a variety of contexts within major mathematical domains.

NCTM Standard 5b Engage students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.

Instructional Plan.

NCTM Standard 3b Analyze and consider research in planning for and leading students in rich mathematical learning experiences.

NCTM Standard 3d Provide opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.

NCTM Standard 3e Engage students in learning by selecting high-quality tasks, identifying and responding to their misconceptions, and by employing a range of questioning activities.

Considerations and required elements:

1. Student characteristics. Discuss the characteristics of students in your classroom that must be addressed in your instructional and assessment plans. Include factors such as age, gender, race/ethnicity, special needs, achievement/developmental levels, unusual cultural or community characteristics, languages other than English, and other factors that should be considered in the design of instruction and assessment. *This description must express your knowledge of diversity, specifically how the students in your class differ in their development and approaches to learning.*
2. Unit Plan. Include the lesson plans that include the pre-test and the post-test. Also include 2 or more additional lesson plans that show how instruction was implemented using pre-test data.
3. Lesson Plans. A minimum of 4 lesson plans that include the elements described in the assessment plan instructions. The lessons may be spread over more than 4 class periods and/or days.
4. Reflection and self-analysis. Use the lesson plan post-lesson self-analysis questions to guide your reflections and responses.
 - a. Provide examples of instructional decision making based on pre-assessment data and on students' learning or responses during the lessons. Analyze the feasibility of implementing the strategies you chose based on student pre-test data.
 - b. Describe the instructional strategies and activities that contributed most to student learning. Describe why you think these strategies and/or activities were effective in helping your students reach the learning objectives of the lesson(s).
 - c. Describe what you believe were the two greatest barriers to learning for your students in this unit. Focus only on factors you can control.
 - d. Discuss the assessment options you considered for your Teacher Work Sample, and provide rationale for the assessment instruments you chose to develop.
 - e. Describe how you utilized your pre- and post-test assessment results to guide future instruction.

Assessment Plan.

NCTM Standard 3f. Plan, select, and implement formative and summative assessments reflecting mathematical knowledge, skills, understanding, and performance that are essential for all students

1. *Pre-test.* Considerations and required elements:
 - a. aligned with unit plan standards and learning objectives;
 - b. appropriate for the level and subject area;
 - c. clear criteria for assessment of student performance. If the assessment of student performance is subjective, a rubric must be developed that includes the essential elements of the performance, and descriptors of unacceptable, acceptable, and exemplary levels for each element.
 - d. Data analysis and description. The pre-test data must be aggregated and displayed in a form that can be readily analyzed and described, and from which conclusions can be drawn about student understanding and mastery of the learning outcomes.

NOTE: the pre-test must be included as part of the TWS instructional sequence.

2. *Formative Assessment.* Considerations and required elements:
 - a. informal assessments designed to monitor student learning and mastery of knowledge and skill outcomes during instruction.
 - b. formative assessments may include questions and answers (checking for understanding), games, guided and individual practice assignments, among others.

NOTE: The formative assessment element of the assessment plan must be included as a separate, stand-alone element in the assessment plan.

3. *Post-test.* Considerations and required elements:
 - a. To ensure that accurate conclusions can be drawn about the degree to which student learning has increased as a result of the instructional intervention, the post-test must be either the same as or equivalent to the pre-test.
 - b. Data analysis and description. The post-test data must be aggregated and displayed in a form that can be compared to pre-test data, allowing for ready analysis and description of the differences. *NOTE: see Reporting Results, below.*

NOTE: The post-test must be included in a lesson plan in the TWS instructional sequence.

4. *Quality control.* The last section of the assessment plan requires an analysis of the planned assessments to ensure that they are fair, accurate, consistent, and free from bias.
 - a. *Fairness.* Assessments are fair when they assess what students have been taught, and when the assessments and scoring criteria are accurately described and clearly understood. Respond to the following prompts:
 - 1.) Using alignment charts or curriculum maps, document how students have been taught the knowledge and/or skills upon which they will be tested.
 - 2.) Using assessment descriptions and scoring rubrics, document how students understand what is expected of them on the assessments in your assessment plan.
 - b. *Accuracy.* Assessments are accurate when they measure what they are designed to measure. Respond to the following prompts:
 - 1.) Using alignment charts or maps, document how assessments are aligned with unit goals and standards and learning objectives.
 - 2.) Demonstrate that the complexity of the assessment is similar to the standard(s) with which it is aligned, and that the cognitive demands and skill requirements are similar.
 - 3.) Demonstrate that the level of effort or degree of difficulty is consistent with the standard(s) and is reasonable for students at this age/developmental level.
 - c. *Consistency.* Assessments are consistent when they produce dependable results or results that would remain constant on repeated trials. Respond to the following prompt:
 - 1.) using your observations of students' performances in similar situations, and/or by using comparisons of results from assessments administered in

similar circumstances, document the degree to which the results from this assessment are consistent with these other findings.

- d. Freedom from bias. Assessments are free of bias when contextual distractions are removed from the testing situation and when they are free of racial and ethnic stereotypes, poorly conceived language and task situations, and other forms of insensitivity that might interfere with student performance. Respond to the following prompts:
 - 1.) Describe the conditions under which the assessment is administered, taking into consideration
 - a.) extraneous noise levels, lighting conditions, any condition that would cause student discomfort, and the functionality of any equipment necessary for the assessment situation.
 - b.) technical considerations, such as proper instructions, well-worded questions, and appropriate materials reproduction.
 - 2.) Document the review process that determined that the assessment is free of racial and ethnic bias, stereotypes, poorly written or ungrammatical test questions, unfair task situations, and other forms of bias.

Reporting Results Documentation of Candidate Effect on Student Learning.

NCTM Standard 5c Collect, organize, analyze, and reflect on diagnostic, formative, and summative assessment evidence and determine the extent to which students' mathematical knowledge, skills, understandings, and performance have increased as a result of their instruction

Focusing question. How will you organize, describe and present your Teacher Work Sample data to demonstrate the degree to which your instruction resulted in improved student learning?

The purpose of the culminating data display is to document the growth that occurred in student learning as a result of your instruction. It might be helpful to remember your audience as you plan and develop this section. Initially, your audience is your student-teaching supervisor who will use the information you present here to assign a final grade to your Teacher Work Sample. Ultimately, however, your audience might well be a principal to whom you present this work as part of your application for a teaching position. One of the things the principal wants to know about you and all prospective candidates is whether or not you have the ability to produce expected student learning outcomes in the students entrusted to you. The work you do here might well be your best opportunity to separate yourself from other applicants and demonstrate you are the best-of-the-best, prepared for the teaching position you really want. Proceed accordingly.

Minimum expectations for this section: data must be included in a table or graph for each student's pre- and post-test results. Pre- and post-test results may be reported in separate data tables, but your ultimate goal is to document the extent to which student learning improved as a result of your instruction, so your task is to present the results thoroughly, yet as clearly and concisely as possible. Required elements include:

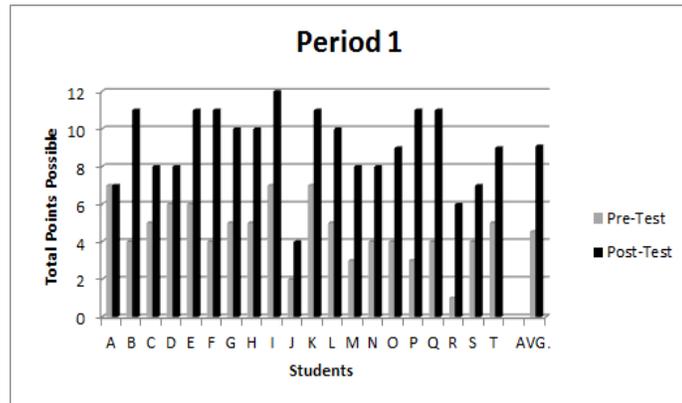
- a. Pre/post test instrument(s);
- b. Data table(s) comparing pre-test scores and post-test scores for individual students;
- c. Summary statistical tables and/or charts showing:

- (1) Initial percent of mastery for individual students on the pre-test;
- (2) Final percent of mastery for individual students on the post-test;
- (3) Average degree of improvement for all students from pre-test to post-test;
- (4) Number and percentage of students whose learning increased, stayed the same, or decreased.

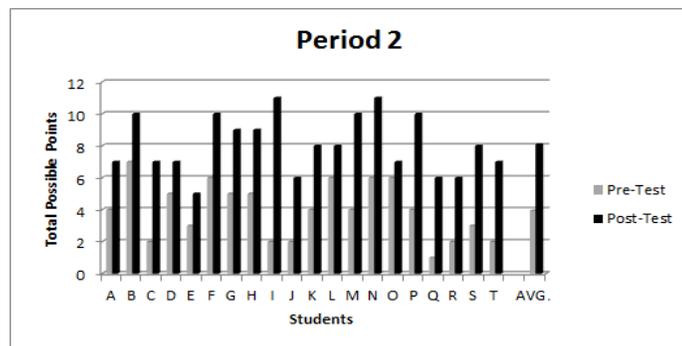
NOTE: The following two pages show you how to set up your tables in Microsoft Excel in order to produce the charts necessary for your data display.

Period 1		
Students	Pre-Test	Post-Test
A	7	7
B	4	11
C	5	8
D	6	8
E	6	11
F	4	11
G	5	10
H	5	10
I	7	12
J	2	4
K	7	11
L	5	10
M	3	8
N	4	8
O	4	9
P	3	11
Q	4	11
R	1	6
S	4	7
T	5	9
AVG.	4.5	9.1

This page shows how to construct display charts in Microsoft Excel from your pre- and post-test data.

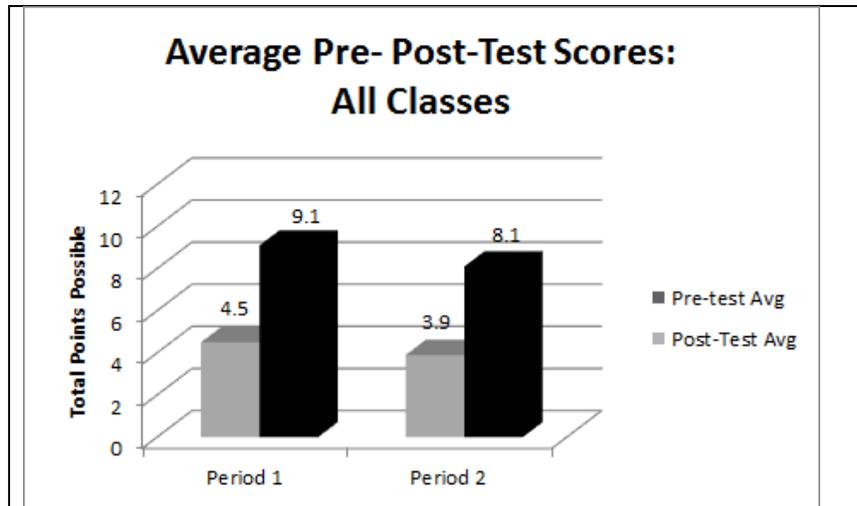


Period 2		
Students	Pre-Test	Post-Test
A	4	7
B	7	10
C	2	7
D	5	7
E	3	5
F	6	10
G	5	9
H	5	9
I	2	11
J	2	6
K	4	8
L	6	8
M	4	10
N	6	11
O	6	7
P	4	10
Q	1	6
R	2	6
S	3	8
T	2	7
AVG.	3.9	8.1

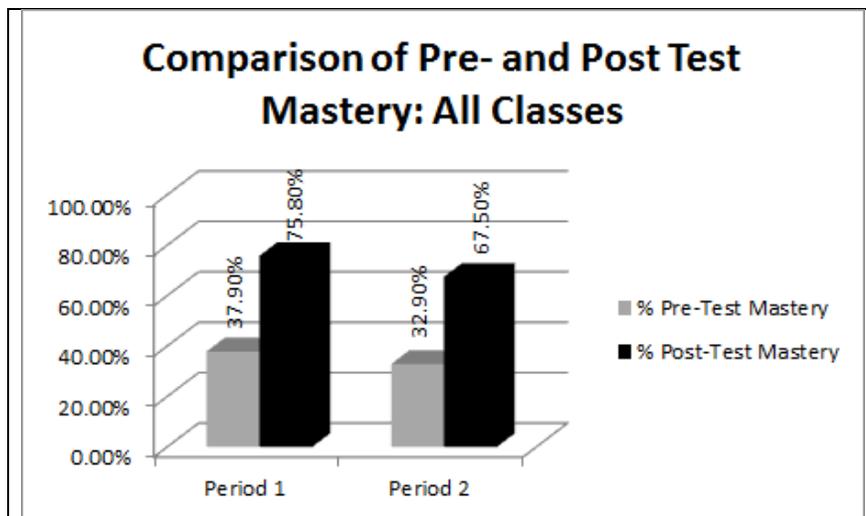


This page shows you how to construct simple data tables to (a) create a chart comparing class averages for pre- and post-tests, and (b) create a chart showing the percent of class mastery for both pre- and post-tests for both classes.

	Period 1	Period 2
Pre-test Avg	4.5	3.9
Post-Test Avg	9.1	8.1



	Period 1	Period 2
% Pre-Test Mastery	37.90%	32.90%
% Post-Test Mastery	75.80%	67.50%



Mathematics Education Teacher Work Sample Design and Assessment Rubric

NOTE: InTASC progressions have been added to this Teacher Work Sample assessment rubric. These progressions describe the increasing complexity and sophistication of teaching practice for each core standard across the three developmental levels: Progression 1 is approximately equal to IWU practicum 1 expectations; Progression 2 is approximately equal to IWU practicum 2 expectations; and Progression 3 is approximately equal to student teaching expectations. Please use the following descriptors to assess the InTASC Progressions embedded in the TWS:

<p>InTASC Progressions Legend</p> <p><u>Emerging Competence:</u> The candidate demonstrates awareness of the Progression expectations and occasionally includes them in his or her planning, but has not yet reached a level of consistency that would indicate a rating of competence.</p> <p><i>Or...</i></p> <p>The candidate incorporates some Progression elements, but omits or underemphasizes others in his or her Teacher Work Sample materials.</p> <p><u>Competent.</u> The candidate regularly and consistently incorporates Progression expectations in his or her Teacher Work Sample materials.</p> <p><u>Outstanding.</u> The candidate's depth of insight and quality of work is distinctly superior to normally-accepted standards.</p>
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Instructional Plan

	Needs Improvement	Emerging Competence	Competent	Outstanding
<p>Student Characteristics</p> <p>InTASC Standard 2 Diversity</p>	<p>Student characteristics are not included in the instructional plan and/or the characteristics are not well considered or written.</p>	<p>Student characteristics are included in the instructional plan, but the correlation with unit standards, goals, and learning activities could be stronger.</p>	<p>All student characteristics relevant to the planned unit of instruction are included. Student characteristics are considered in terms of unit standards, goals, and learning activities.</p>	<p>The student characteristics section is thorough and complete; consideration of students' special learning needs is highly correlated with the standards, goals, and learning activities of the instructional unit.</p>
<p>Unit Plan</p>	<p>The unit plan is poorly developed and does not address the expectations and requirements of the Unit Plan Design and Assessment Rubric.</p>	<p>The unit plan needs additional work to meet the expectations and requirements of the Unit Plan Design and Assessment Rubric.</p>	<p>The unit plan meets the expectations of the Unit Plan Design and Assessment Rubric.</p>	<p>The unit plan exceeds the expectations of the Unit Plan Design and Assessment Rubric.</p>
<p>Research of mathematical learning experiences</p> <p>NCTM 3b</p>	<p>The candidate does not consider research in planning for students' learning experiences.</p>	<p>The candidate considers research in planning for students' mathematical learning experiences.</p>	<p>The candidate analyzes and considers research in planning for and leading students in rich mathematical learning experiences.</p>	<p>The candidate analyzes and considers multiple sources of research in planning for and leading students in rich mathematical learning experiences.</p>
<p>Variety of instructional strategies</p> <p>NCTM 3c</p> <p>InTASC Standard 2 Diversity Technology</p>	<p>The candidate's lesson plan(s) incorporate an insufficient number of strategies; differentiated instruction for diverse populations, and mathematics-specific and instructional technologies are not included in lesson plan(s).</p>	<p>The candidate's lesson plan(s) incorporate a limited number of strategies; differentiated instruction for diverse populations, and mathematics-specific and instructional technologies is included.</p>	<p>The candidate's lesson plan(s) incorporate a variety of strategies, differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.</p>	<p>The candidate's lesson plan(s) incorporate a variety of strategies designed to meet the learning needs of his or her students, including differentiated instruction for diverse populations, and mathematics-specific and instructional technologies in building all students' conceptual understanding and procedural proficiency.</p>
<p>Opportunities to communicate about mathematics</p> <p>NCTM 3d</p>	<p>The candidate does not provide students with opportunities to communicate about mathematics.</p>	<p>The candidate provides students with limited opportunities to communicate about mathematics.</p>	<p>The candidate provides students with opportunities to communicate about mathematics and make connections among mathematics, other content areas, everyday life, and the workplace.</p>	<p>The candidate provides students with frequent opportunities to communicate about mathematics and make connections among mathematics, other content areas and everyday life.</p>

Instructional Plan, con't.

	Needs Improvement	Emerging Competence	Competent	Outstanding
<p>Student engagement and communication</p> <p>Data source: classroom observation</p> <p>NCTM 3e</p>	The candidate does not engage or communicate with students effectively.	The candidate's engagement of and communication with students is hindered by inconsistently selecting high quality tasks, being slow to identify and respond to their misconceptions, and by ineffective questioning strategies.	The candidate engages students by selecting high quality tasks, identifying and responding to their misconceptions, and by employing a range of questioning strategies.	The candidate regularly and consistently engages students in meaningful learning by selecting high quality tasks, identifying and responding to their misconceptions, and by employing a range of questioning strategies.
<p>Learning opportunities grounded in mathematics education research</p> <p>NCTM 4b</p>	The learning opportunities included in the candidate's lesson plan(s) are not developmentally appropriate, are not grounded in mathematics education research, or do not engage students actively in building new knowledge from prior knowledge and experiences.	The candidate considers mathematics education research in the planning and creation of learning opportunities, but opportunities are not consistently developmentally appropriate or are inadequate for enabling students to build new knowledge from prior knowledge and experiences.	The candidate plans and creates developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.	The candidate regularly and consistently plans and creates developmentally appropriate, sequential, and challenging learning opportunities grounded in mathematics education research in which students are actively engaged in building new knowledge from prior knowledge and experiences.
<p>Reflection and Self-Evaluation</p> <p>InTASC Standard 9</p>	The reflection and self-evaluation section is not included or is poorly developed.	The reflection and self-evaluation section is included, but not all self-answer questions are addressed and/or the analysis could be developed in more depth.	The reflection and self-evaluation section is well developed; all LP self-answer questions are addressed in the response.	The reflection and self-evaluation section is exemplary for the depth of thought and the level of analysis of the instructional and assessment issues involved in the TWS process.

Assessment Plan

	Needs Improvement 1	Emerging Competence 2	Competent 3	Outstanding 4
<p>Pre-test Post-test</p> <p>InTASC Standard 6</p>	The pre-test and post-test assessments are haphazardly developed; little thought has been given to alignment with lesson objectives; assessments are not appropriate for the knowledge and/or skills being assessed.	Pre- and post-test assessments are included in the assessment plan; the alignment between assessments and lesson objectives is weak and/or the assessments may not be appropriate for the knowledge and/or skills being assessed.	The pre-test post-test assessments are well developed, are aligned with lesson objectives, and are appropriate for the knowledge and/or skills being assessed.	The pre- and post-tests are skillfully developed and are highly correlated with lesson objectives. The alignment between assessments and lesson objectives is strong and clear.

	Needs Improvement	Progression 1	Progression 2	Progression 3
<p>Formative Assessment</p> <p>InTASC 6.1</p> <p>The candidate uses, designs or adapts multiple methods of assessment to document, monitor, and support learner progress appropriate for learning goals and objectives.</p>	<p>The candidate does not use formative assessments; Or... He or she does not use data to draw conclusion about learner progress toward learning objectives.</p>	<p>The candidate</p> <ul style="list-style-type: none"> • Uses, designs or adapts a variety of formative assessments; <p>And...</p> <ul style="list-style-type: none"> • Uses data from multiple types of assessments to draw conclusions about learner progress toward meeting learning objectives and uses this analysis to meet learner needs. 	<p>Progression 1 And...</p> <p>The candidate</p> <ul style="list-style-type: none"> • Provides learners with multiple ways to demonstrate performance; <p>And...</p> <ul style="list-style-type: none"> • Uses data to guide the design of differentiated learning experiences and assessments. 	<p>Progression 2 And...</p> <p>The candidate</p> <ul style="list-style-type: none"> • Uses formative classroom assessments to maximize the development of knowledge, critical thinking, and problem solving skills; <p>And...</p> <ul style="list-style-type: none"> • Gathers additional data needed to better understand what is affecting learner progress.
		<p>EC C O</p>	<p>EC C O</p>	<p>EC C O</p>

Assessment Plan, con't.

	Needs Improvement	Progression 1	Progression 2	Progression 3
InTASC 6.2 The candidate uses assessment to engage learners in their own growth.	The candidate does not engage learners in examining samples of quality work; <i>Or...</i> He or she does not maintain records of learner performance.	The candidate • Engages each learner in examining samples of quality work; provides learners with assignment criteria to guide performance; <i>And...</i> • Makes digital and/or other records of learner performance to monitor each learner's progress.	Progression 1 <i>And...</i> The candidate • Engages learners in generating criteria for quality work; identifies key areas in the criteria on which to give individual feedback; <i>And...</i> • Makes digital and/or other records of performance available to learners so that they can monitor their progress and identify areas where they need additional practice and support.	Progression 2 <i>And...</i> The candidate • Engages learners in giving peers feedback on performance using criteria generated collaboratively; guides learners to identify how specific performance elements contribute to effectiveness; <i>And...</i> • Engages learners in analyzing their own records and work samples with regard to their progress toward learning objectives and to set new goals.
	Needs Improvement	Progression 1	Progression 2	Progression 3
InTASC 6.3 The candidate implements assessments in an ethical manner and minimizes bias to enable learners to display the full extent of their learning	The candidate does not match learning goals with assessment methods or give learners multiple practice assessments; <i>Or...</i> He or she does not implement assessments in the way they were intended to be used.	The candidate • Matches learning goals with assessment methods and gives learners multiple practice assessments to promote growth; <i>And...</i> • Engages in ethical practice of formal and informal assessment implementing various kinds of assessments in the way they were intended to be used.	Progression 1 <i>And...</i> The candidate • Prepares learners for the content and cognitive demands of assessment formats; <i>And...</i> • Modifies assessments and testing conditions to enable all learners to demonstrate their knowledge and skills.	Progression 2 <i>And...</i> The candidate • Uses multiple assessment methods to scaffold individual learner development toward the learning objectives; <i>And...</i> • Works with others to minimize bias in assessment practices to ensure that all learners have a variety of opportunities to demonstrate their learning.

	Needs Improvement	Emerging Competence	Competent	Outstanding
Quality Control InTASC Standard 6	Some quality control elements are missing and/or some elements are poorly or incompletely addressed.	Each quality control element is addressed in the assessment plan. Some elements are underdeveloped; additional thought and reflection is necessary to ensure high-quality assessments.	Each quality control element—fairness, accuracy, consistency, and freedom from bias—is included in the assessment plan. Thoughtful consideration is given to the quality and appropriateness of each assessment.	Each quality control element is addressed in depth; it is evident that considerable thought and effort has gone into ensuring that the assessments are fair, accurate, consistent, and free from bias and are of high quality.

Assessment Plan, con't.

	Needs Improvement	Emerging Competence	Competent	Outstanding
Documentation of Candidate Effect on Student Learning InTASC Standard 6	The candidate demonstrates limited ability to use data to improve student learning. Data tables comparing post-test to pre-test learning results indicate 1. < 25% of students' scores improved from pretest to posttest; OR 2. average improvement for all students was less than 10% or final class mastery < 50% on posttest.	The candidate demonstrates potential ability to improve student learning. Data tables comparing post-test to pre-test learning results indicate 1. 25-49% of students' scores improved from pretest to posttest; AND 2. average improvement for all students exceeded 10%, or final class mastery exceeded 50% on posttest.	The candidate demonstrates the ability to improve student learning. Data tables comparing post-test to pre-test learning results indicate 1. 50-74% of students' scores improved from pretest to posttest; AND 2. average improvement for all students exceeded 15% or final class mastery exceeded 75% on posttest.	The candidate demonstrates significant ability to improve student learning. Data tables comparing post-test to pre-test learning results indicate 1. 75-100% of students' scores improved from pretest to posttest; AND 2. average improvement for all students exceeded 20% or final class mastery exceeded 85% on posttest.
Reporting Results InTASC Standard 8	Significant elements are missing in this section. Data tables and descriptions are not clear; students' pre-test and post-test scores are not paired or are not displayed appropriately. Group summary statistics are missing.	Most elements are included, Data tables and descriptions are confusing and/or not consistently clear; group summary statistics are included in the final report.	All required elements in this section are included. Data tables and descriptions are clear and appropriate; students' pre-test and post-test scores are paired; group summary statistics are appropriate and well-displayed.	All required elements are included; additional elements document an extended analysis of student-learning data. Group summary statistics include results of analyses to determine significance of paired pre- and post-test data.
Integration of technology InTASC Standard 8 Technology Thread	The candidate does not use technologies to plan the TWS unit of study; no technology integration is apparent, even when it is apparent that such integration would be useful to improve teaching and learning.	The candidate uses technologies to plan the TWS unit of study; the results are not consistently appropriate or useful.	The candidate uses appropriate technologies to plan the TWS unit of study.	Technological resources are used to investigate content and pedagogical materials and strategies; technology-based resources, materials and strategies are an integral part of the TWS.

NCTM STANDARDS

	Needs Improvement	Emerging Competence	Competent	Outstanding
Formative and summative assessments NCTM 3f InTASC Standard 6	The candidate does not plan, select, and implement formative and summative assessments.	The candidate plans formative and summative assessments, but his or her implementation does not consistently reflect essential mathematical knowledge, skills, understanding, and performances.	The candidate plans and implements formative and summative assessments reflecting essential mathematical knowledge, skills, understanding, and performances.	The candidate plans and implements formative and summative assessments reflecting essential mathematical knowledge, skills, understanding, and performances, and uses the resulting data to modify instruction to improve learning outcomes for all students.
Monitoring student progress Data source: planning documents; classroom observation NCTM 3g	The candidate does not monitor students' progress adequately or effectively.	The candidate monitors student progress, but does not consistently or effectively use the results to make instructional decisions.	The candidate monitors students' progress, makes instructional decisions, and measures students' mathematical understanding and ability using formative and summative assessments.	The candidate's regular monitoring of students' progress, and use of formative and summative assessments to measure their mathematical understanding results in effective instructional decisions and improved student learning.

NCTM STANDARDS, CON'T

	Needs Improvement	Emerging Competence	Competent	Outstanding
Students' conceptual understanding NCTM 5a	The candidate's students do not demonstrate conceptual understanding and fluency in mathematical procedures; they do not use logical reasoning to solve problems or have productive dispositions toward mathematics.	The candidate's students have limited understanding and fluency in mathematical procedures; their use of logical reasoning to solve problems is inconsistent; they have productive dispositions toward mathematics, but do not consistently reflect on their work.	The candidate's students demonstrate conceptual understanding and fluency in mathematical procedures; they use logical reasoning to solve problems; they have productive dispositions toward mathematics and reflect on their work; they apply mathematics in a variety of contexts within major mathematical domains.	The candidate's students demonstrate a highly-developed conceptual understanding and fluency in mathematical procedures; they consistently use logical reasoning to solve problems; they have enthusiastic dispositions toward mathematics and regularly reflect on their work; they apply mathematics in a variety of contexts within major mathematical domains.
Student engagement in developmentally appropriate activities NCTM 5b	The candidate does not engage students in developmentally appropriate mathematical activities and investigations.	The candidate's mathematical activities and investigations are not consistently developmentally appropriate, or do not require active engagement of all students.	The candidate engages students in developmentally appropriate mathematical activities and investigations that require active engagement and include mathematics-specific technology in building new knowledge.	The candidate regularly and consistently engages students in developmentally appropriate mathematical activities and investigations that require the active engagement of all students and includes mathematics-specific technology in building new knowledge.
Documentation of student learning NCTM 5c INTASC 6	The candidate does not collect summative assessment evidence or determine the extent to which students' mathematical knowledge, skills, understandings, and performance have increased as a result of his or her instruction	The candidate collects formative, and summative assessment evidence, but does not consistently use the resulting data to determine the extent to which students' mathematical knowledge, skills, understandings, and performance have increased as a result of his or her instruction.	The candidate collects, organizes, analyzes, and reflects on diagnostic, formative, and summative assessment evidence and determines the extent to which students' mathematical knowledge, skills, understandings, and performance have increased as a result of his or her instruction.	The candidate systematically collects, organizes, analyzes, and reflects on diagnostic, formative, and summative assessment evidence and uses the resulting data to modify instructional processes and activities to enable all students to meet expected learning outcomes.

Revised: June 6, 2017
2012 NCTM Standards
2013 InTASC Standards