California State University, Fresno

*Leadership for Diverse Communities*

**Mathematics Instruction and
Applied Assessment**
**CI 176, Fall 2010**
*[Master Syllabus]*

## Vision:

*The Kremen School of Education and Human Development is a center for academic excellence and collaboration in the fields of education and counseling. Graduates will become community leaders who advocate for high standards and democratic values with attention to professional ethics and diversity.*

*The faculty of the Kremen School of Education and Human Development fosters the development of the following candidate dispositions: Reflection, Critical Thinking, Professional Ethics, Valuing Diversity, Collaboration, and Life-long Learning. Candidates will increasingly reflect these dispositions in their work with students, families, and communities.*

## Course Description:

This course is designed to prepare teacher candidates to plan instruction based on the assessment of students' mathematical understanding and to teach mathematics using multiple strategies and methods in culturally and linguistically diverse elementary classrooms.

*Multiple Subject Program Requirements:*
*This course is a required course in Phase 2 of the Multiple Subject Program. Taken concurrently, Field Study B is designed to provide the necessary classroom access essential for completing the assignments in this course. Teacher candidates not enrolled in Field Study B will need to make special arrangements with the instructor.*

| Course Information | Instructor: |
| --- | --- |
| *Units:* 3 | *Office Number:* |
| *Time:* | *E-mail:* |
| *Location:* | *Telephone:* |
| | *Office Hours* |

**Prerequisites:** Successful completion of Phase 1 of the Multiple Subject Credential Program: CI 171, LEE 172, LEE 173, EHD 174. Students not concurrently enrolled in EHD 178 need to make special arrangements with the instructor.

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## Required Texts and Instructional Materials:

Van de Walle, J., Karp, K. S., & Bay-Williams, J. M. (2010). *Elementary and middle school mathematics: Teaching developmentally* (7th ed.). Boston, MA: Allyn & Bacon.

California Department of Education. (2006). *Mathematics framework for California public schools, kindergarten through grade twelve.* Sacramento, CA: Author. (http://www.cde.ca.gov/ci/ma/cf/) [Content standards can be accessed through TaskStream]

E-mail (The University provides free email accounts to all students.) & access to Blackboard


## Primary Learning Outcomes:

*The learning outcomes are aligned with the Standards of Quality and Effectiveness for Professional Teacher Preparation Programs adopted by the California Commission on Teacher Credentialing (CCTC), the Teaching Performance Expectations (TPE), the National Council for Accreditation of Teacher Education (NCATE) Standards, and the KSOEHD Dispositions: Reflection, Critical Thinking, Professional Ethics, Valuing Diversity, Collaboration, Life-Long Learning.*

CURRICULUM & PLANNING
The teacher candidate will:
- Demonstrate an understanding of the current national and state mathematics content standards and framework and their responsibility for student academic learning outcomes related to the standards. (CCTC 4, 5, 8Aa; TPE 1, 12; NCATE 1.1)
- Sequence instruction based on long-term and short-term goals and connections across mathematics topics. (TPE 1, 4, 9)
- Use knowledge of students' backgrounds, interests, and needs, (e.g. their intellectual, linguistic, ethical, social, personal and physical development) to plan mathematics instruction. (CCTC 5, 6, 9, 12; TPE 4, 7, 9; NCATE 1.4, 4.1)
- Identify characteristics of a secure environment that foster students' positive attitudes, curiosity, flexibility, persistence, effort, creativity, and imagination in mathematics. (CCTC 8Aa; TPE 1, 4)
- Use, select & adapt instructional materials for mathematics, including software and other technology resources. (CCTC 3, 11; TPE 4, 9; NCATE 1.1, 1.3)

INSTRUCTIONAL STRATEGIES
The teacher candidate will:
- Understand the purposes, strengths and limitations of a variety of instructional strategies; apply these instructional strategies based on purpose, lesson content and diverse student needs to address mathematics standards (CCTC 3, 4, 6, 9, 12; TPE 4, 7, 9; NCATE 1.3, 4.1)
- Demonstrate the ability to make mathematics concepts concrete and meaningful by engaging students in exploration of real-world problems and multiple representations (e.g. manipulatives, diagrams, physical models, computer-generated models), encouraging discussions of multiple solution strategies, and providing clear explanations and appropriate academic language. (CCTC 4, 9, 8Aa; TPE 1, 4, 7, 9; NCATE 1.1, 1.4)

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ASSESSMENT

The teacher candidate will:

- Identify, evaluate, adapt, and apply methods to assess children's understanding in mathematics, including assessment strategies such as observation, questioning, student work, scoring guides, written tests, student journals, self-assessment, and portfolios. (CCTC 4; TPE 3; NCATE 1.7)
- Interpret evidence gathered using assessment strategies and use it to pace mathematics instruction and address students' misconceptions and misunderstandings. (CCTC 4, 5, 9; TPE 2, 3, 4; NCATE 1.1, 1.7)
- Manage records related to students' academic progress in mathematics and communicate student progress to students, families, and administrators (CCTC 11; TPE 3)

PROFESSIONAL EDUCATOR

The teacher candidate will:

- Consider personal biases and how they affect teaching and learning mathematics. (TPE 12; NCATE 1.6-Valuing Diversity)
- Examine his or her own pedagogical practices related to mathematics instruction and reflect on the importance of the planning-assessment cycle in implementing mathematics instruction (CCTC 6; TPE 2; NCATE 1.6-Reflection)
- Become acquainted with national, state, and local organizations for mathematics teachers, as well as the conferences, publications, and events that these organizations sponsor. (CCTC 6; NCATE 1.6-Life-long Learning)
- Analyze, discuss, and evaluate professional literature related to mathematics education. (CCTC 6; NCATE 1.6-Critical Thinking)

## Major Assignments and Examinations: (Assignments will be posted on Blackboard)

**Planning and Assessment Portfolio**          (100 points)
(TPE 1, 2, 3, 4, 7, 9; NCATE 1.1, 1.3, 1.7, 4.1)
(Dispositions: Reflection, Critical Thinking, Professional Ethics, Valuing Diversity, Life-Long Learning)
Teacher candidates will develop a "toolkit" for planning and assessment, and reflect on the usefulness of these items. The portfolio may include: (1) resources collected for planning and assessment, (2) assignments related to planning and assessment, and (3) reflections on the use of the items, including connections to other content areas.

Over the semester the teacher candidates will collect different resources for planning and assessment (e.g. observation checklists, examples of questions, rubrics, student work, written tests, report cards, strategies for English Learners, lesson plans, planning resources, internet sources, presentations, journal articles). Some of the resources will be related to specific assignments, such as (a) observing in the classroom, (b) conducting a student interview, (c) developing ideas related to particular content strands, and (d) analyzing student work. Pieces of the portfolio will be turned in throughout the semester.

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**Mini Unit**     (100 points)
(FORMATIVE ASSESSMENT: TPE 1, 2, & 9, also assesses parts of TPE 3, 4, 7; NCATE 1.1, 1.3, 1.7)
(TEACHING PROJECT COMPONENTS 3 & 6: Assessment Plan & Analysis of Student Learning)
(Dispositions: Reflection, Critical Thinking, Collaboration)

Teacher candidates will utilize the planning-assessment cycle to demonstrate the ability to analyze students' learning related to mathematics content standards and plan appropriate instruction. Teacher candidates will plan and teach a mini mathematics unit (3 to 5 lessons) to a small group of elementary students. Both assessment and planning will be key components.

To prepare for the lessons, teacher candidates will select an appropriate mathematics content standard, research the mathematics content to be taught, pre-assess the students' knowledge related to that standard, and plan and sequence 3 to 5 lessons based on the pre-assessment data and knowledge of the content. The teacher candidate will then teach the lessons to elementary students. During the implementation phase, the teacher candidate will collect student work and adapt the lessons as needed. After the lessons, the teacher candidate will post-assess the students' knowledge, analyze the students' learning, and reflect on the effectiveness of the lessons. An adapted version of the Teaching Sample Project prompt and rubric (a performance assessment in Phase 3) is utilized as the structure for the assignment. The adapted prompt focuses on these elements of the planning-assessment process: Content Analysis & Learning Goals, Assessment Plan, Design for Instruction, Analysis of Student Learning, Reflection & Self-Evaluation. *Plan on teaching this mini unit in the last part of the semester.*

**Field work (Lab)**
Teacher candidates will spend at least 15 hours (an average of one hour per week) observing mathematics instruction, assessing students, planning lessons with the cooperating teacher, and instructing small groups. These activities are related to the Planning and Assessment Portfolio and the Mini Teaching Unit assignments. Part of this time is connected to EHD 178; however additional time outside of EHD 178 will be needed to complete the requirements. The course instructor will coordinate and evaluate the documentation and products from the field work.

**Final Examination or Project**     (50 points)
 (TPE 1, 2, 3, 7; NCATE 1.1, 1.3, 4.1)
(Dispositions: Reflection, Critical Thinking, Professional Ethics, Valuing Diversity, Collaboration)
Teacher candidates will be expected to demonstrate their knowledge of mathematics content standards, students' conceptions and misconceptions, instructional methods, feedback to students, communication with parents, and issues related to mathematics education.

**(Possible) Assignment and Examination Schedule:**

| Date | Assignment | Points |
|---|---|---|
| Week 4 | Part 1 of Planning & Assessment Portfolio | 30 points |
| Week 7 | Part 2 of Planning & Assessment Portfolio | 40 points |
| Week 10 | Part 3 of Planning & Assessment Portfolio | 30 points |
| Week 15 | Mini Teaching Unit | 100 points |

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| Final Exam Week | Final Examination or Project | 50 points |
|---|---|---|

## Course Policies:

**Grading.** The overall grade is determined by calculating the percentage of points earned out of the total possible points:

A = 90% and above; B = 80 to 89%; C = 70 to 79%; D = 60 to 69%; F = below 60%

**Cell Phones.** Out of respect for everyone's learning experience, **cell phones are to be turned off** during class except when an emergency call is expected.

**Confidentiality**. The privacy and identity of children and their families should be protected in all written materials. Therefore when writing about a child, the recommended language is "for the purpose of this study, I will refer to the observed student as *Child A.*"

**\* Subject to Change:** *This syllabus and schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on announcements made while you were absent.*

## Possible Course Schedule\*     [Check Blackboard for changes]

| Session | Topic | Reading Assignments |
|---|---|---|
| 1 | Beliefs about Mathematics & Learning<br>Using Research Data | |
| 2 | Whole Number Operations<br>Multiple Solution Strategies<br>Observing and Listening to Students | Van de Walle: Chapters 1& 2 |
| 3 | Number and Operation Sense<br>Mathematics Content Standards<br>Questioning Techniques | Van de Walle: Chapters 8 & 9 |
| 4 | Base Ten Understanding<br>Context, Representations & Academic Language<br>Examining Student Work | Van de Walle: Chapters 10 & 11 |
| 5 | Estimation & Relational Thinking<br>Prerequisite Knowledge<br>Alternative Algorithms | Van de Walle: Chapters 12  & 13 |
| 6 | Early Fraction Concepts<br>Analyzing Written Tests, Content Validity | Van de Walle: Chapter 5 |
| 7 | Problem Solving Lessons | Van de Walle: Chapter 15 & 3 |

| | Quantitative vs. Qualitative Analysis | Appendix B: Standards for Teaching Mathematics |
|---|---|---|
| 8 | Using, Evaluating, & Adapting Textbooks<br>Aligning Assessment with Outcome | Van de Walle: Chapter 4 |
| 9 | Geometric Thinking<br>Planning/Assessment Cycle<br>Organizing Data & Analyzing Student Learning | Van de Walle: Chapter 20 |
| 10 | Measurement<br>Center Activities | Van de Walle: Chapter 19 |
| 11 | Algebraic Reasoning<br>Equity for All Students<br>Higher Level Thinking | Van de Walle: Chapters 6 & 14 |
| 12 | Rational Numbers<br>Selecting Effective Tasks | Van de Walle: Chapters 16 & 17 |
| 13 | Probability & Data Analysis<br>Using Technology | Van de Walle: Chapters 7 & 21 |
| 14 | Proportional Reasoning<br>Managing Records & Grading | Van de Walle: Chapter 18 |
| 15 | Lessons Learned; Role as Professional Educator<br>Putting it all together | Van de Walle: Review readings & handouts in prep |
| Finals wk | Final Examination | |

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| Topics Descriptions |
|---|
| **Beliefs about Mathematics and Student Learning**<br><br>Through activities and discussions teacher candidates are asked to examine their own beliefs and biases about mathematics, including their perceptions of their own mathematics knowledge, what constitutes evidence of strong mathematics knowledge, and the usefulness of mathematics in the real world. Research data is used to challenge and inform their beliefs. |
| **Mathematics Content**<br><br>Mathematics topics, covered by the content standards, are addressed throughout the course. Teacher candidates explore the content conceptually through the use of tools, real world contexts, and connections among topics. Teacher candidates are encouraged to use both multiple strategies and multiple representations in their solutions and explanations. Both standard and alternative algorithms are examined, as is appropriate mathematics language. Key ideas and prerequisite knowledge for specific topics are identified through both activities and readings. |
| **Problem Solving Lessons**<br><br>Problem solving lessons represent an effective model for teaching mathematics content, critical thinking and communication skills. Problem solving lessons are modeled by the instructor during the exploration of mathematics topics. These lessons are used to demonstrate instructional strategies, including ways to create a secure and safe environment for students to develop persistence, flexibility, and positive attitudes toward mathematics. Teacher candidates learn the elements of effective problem solving lessons through readings, observations, and discussions, and then are expected to plan and teach a problem solving lesson in their mini unit assignment. |
| **Analyzing Textbooks and Instruction**<br><br>Teacher candidates observe and analyze mathematics instruction using appropriate teaching standards from state and national frameworks. Connections between concrete and abstract representations, questioning techniques, and engagement strategies are highlighted. These principles are then applied to analyzing current textbooks, including their organization, lesson format, and resources. |
| **Assessment**<br><br>Assessment methods and principles are explored throughout the course. Informal and formal methods are presented and analyzed. Videotapes of individual students and classrooms, as well as student work are used to analyze students' conceptual and procedural knowledge. Written tests in different formats are analyzed for alignment with the standards. Their advantages and disadvantages are discussed from the perspectives of both teachers and students. Methods of scoring, including analyzing by correct/incorrect answers, as well as rubrics for qualitative analysis are discussed and applied to sample sets of tests. Both qualitative and quantitative class data sets are displayed and used to perform item and error analyses to provide information for evaluating and planning instruction. |

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**Equity for All Students**

Throughout the course instructional strategies that are effective for most students are modeled and discussed. In addition, instructional strategies that are particularly useful for English learners are highlighted (e.g. graphic organizers, vocabulary development through context and pictures). Ways to differentiate instruction are modeled and discussed, including focusing on big ideas, using parallel problems, and creating open questions, all of which allow students access to the content. Specific strategies for specific groups of students are explored through readings and discussions. Assessment alternatives are explored, with an emphasis on supporting students to show what they know. Teacher candidates apply their knowledge of both assessment and instructional modifications in their mini unit assignment.

**Prerequisite and Prior Knowledge**

The focus on mathematics content, assessment, and instructional strategies lends itself to explorations of children's prerequisite and prior knowledge. Children's conceptions and misconceptions are introduced through student work, analysis of data (both item and error analysis), and content explorations. Questioning techniques, problem posing, and other instructional strategies are presented as methods to develop appropriate conceptions and challenge misconceptions.

**Using Technology**

Technology is incorporated into the exploration of the mathematics content, instructional strategies, and assessment components of this course. Using technology for data analysis, both as part of the mathematics content and as a tool for record keeping and grading is a natural fit. Students explore the use of spreadsheets, tables, and charts for both areas. In addition, software, calculators, and internet resources are examined through activities and their portfolio assignment.

**Role as Professional Educator**

The use of professional resources (e.g. standards, professional journals and organizations) is infused throughout the course through lectures, activities, and assignments. Their beliefs and biases about mathematics learning and teaching are explored continually in discussions.

# University Policies

**Students with Disabilities:** Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in University Center (UC) room 5 (278-2811).

**Honor Code:** "Members of the CSU Fresno academic community adhere to principles of academic integrity and mutual respect while engaged in university work and related activities." You should:
a) understand or seek clarification about expectations for academic integrity in this course (including no cheating, plagiarism and inappropriate collaboration),
b) neither give nor receive unauthorized aid on examinations or other course work that is used by the instructor as the basis of grading,
c) take responsibility to monitor academic dishonesty in any form and to report it to the instructor or other appropriate official for action.

**Cheating and Plagiarism:** "Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work." Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University's policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

**Make Up Policy for Planned and Unplanned Absences:** In the case of an unplanned student absence, papers, tests, and/or homework assignments due during the time the student is absent may be made up only if the student contacts the instructor as soon as practicable after the absence occurs and works out a plan. In the case of authorized absences due to university-sponsored activities, students should expect to submit their work to the instructor on or before the due date, or as arranged with the instructor. This includes papers, tests, and/or homework assignments. See grading policy in syllabus for additional information.

When a student is absent for an extended time period, a viable make-up plan may not be feasible. In these circumstances, other options such as dropping the class for a serious and compelling reason or withdrawal from the university may be appropriate.

**Computers**: "At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services (http://www.csufresno.edu/ITS/) or the University Bookstore. In the curriculum and class assignments, students are presumed to have 24-hour access to a computer workstation and the necessary communication links to the University's information resources."

**Disruptive Classroom Behavior:** "The classroom is a special environment in which students and faculty come together to promote learning and growth. It is essential to this learning environment that respect for the

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rights of others seeking to learn, respect for the professionalism of the instructor, and the general goals of academic freedom are maintained. ... Differences of viewpoint or concerns should be expressed in terms which are supportive of the learning process, creating an environment in which students and faculty may learn to reason with clarity and compassion, to share of themselves without losing their identities, and to develop an understanding of the community in which they live . . . Student conduct which disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class."

**Copyright policy:** Copyright laws and fair use policies protect the rights of those who have produced the material. The copy in this course has been provided for private study, scholarship, or research. Other uses may require permission from the copyright holder. The user of this work is responsible for adhering to copyright law of the U.S. (Title 17, U.S. Code). To help you familiarize yourself with copyright and fair use policies, the University encourages you to visit its copyright web page.

Digital Campus course web sites contain material protected by copyrights held by the instructor, other individuals or institutions. Such material is used for educational purposes in accord with copyright law and/or with permission given by the owners of the original material. You may download one copy of the materials on any single computer for non-commercial, personal, or educational purposes only, provided that you (1) do not modify it, (2) use it only for the duration of this course, and (3) include both this notice and any copyright notice originally included with the material. Beyond this use, no material from the course web site may be copied, reproduced, re-published, uploaded, posted, transmitted, or distributed in any way without the permission of the original copyright holder. The instructor assumes no responsibility for individuals who improperly use copyrighted material placed on the web site.

## _Recommended Professional Journals_

_Teaching Children Mathematics_ (preK-6 focus, mathematics)

_Mathematics Teaching in the Middle School_ (middle school focus, mathematics)

_Educational Leadership_ (general education focus)

_Phi Delta Kappan_ (general education focus)

_Journal for Research in Mathematics Education_ (mathematics education, research focus)

_Elementary School Journal_ (elementary education, research focus)

_American Educational Research Journal_ (general education, research focus)
Bibliography

Mathematics Education (including Mathematics Assessment)

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Burrill, G. F., & Elliot, P. (2006). _Thinking and reasoning with data and chance: 68th NCTM yearbook._ Reston, VA: NCTM.

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Cuoco, A. (Ed.). (2001). *The roles of representation in school mathematics*. Reston, VA: National Council of Teachers of Mathematics.

Great Source Education Group. (1999). *Math at Hand: A Mathematics Handbook.* Wilmington, MA: Houghton Mifflin.

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Gregory, G. H. & Chapman, C. (2002). *Differentiated instructional strategies: One size doesn't fit all.* Thousand Oaks, CA: Corwin Press, Inc.

Hiebert, J., Carpenter, T. P., Fennema, E., Fuson, K. C., Human, P., Murray, H., Olivier, A., & Wearne, D. (1997). *Making sense: Teaching and learning mathematics with understanding.* Portsmouth, NH: Heinemann.

Kilpatrick, J., Swafford, J., & Findell, B. (Eds.) (2001). *Adding it up: Helping children learn mathematics.* Washington, DC: National Academy Press.

Knuth, E. J., Alabali, M. W., Hattikudur, McNeil, N. M., & S., Stephens, A. C. (2006). The importance of equal sign understanding in the middle grades. *Mathematics Teaching in the Middle School, 13*(9)*,* 514-519.

Leinwand, S. (2009). *Accessible mathematics: 10 instructional shifts that raise student achievement.* Portsmouth, NH: Heinemann.

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Polya, G. (1945). *How to solve it: A new aspect of mathematical method.* Princeton, NJ: Princeton University.

Small, M. (2009). *Good questions: Great ways to differentiate mathematics instruction.* New York: Teachers College Press.

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Stigler, J.W., & Hiebert, J. (2004). Improving mathematics teaching. *Educational Leadership, 61*(5), 12-17.

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Assessment

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# Mini Unit (Mathematics)

## CI 176, Fall 2010

Successful teachers support learning by designing instructional units that employ a range of strategies and build on their students' strengths, needs, and prior experiences.  This Mini Unit is a performance assessment in which teacher candidates provide credible evidence of their ability to facilitate learning by meeting each Teaching Performance Expectations (TPE) listed below. The TPEs being evaluated in the Mini Unit are:

- Specific Pedagogical Skills in Mathematics (TPE 1)
- Monitoring Student Learning During Instruction (TPE 2)
- Interpretation and Use of Assessments (TPE 3)
- Making Content Accessible (TPE 4)
- Learning About Students (TPE 8)
- Instructional Planning (TPE 9)
- Professional Growth (TPE 13)

## Overview

In this assignment, you are required to (a) plan and teach three to five cohesive lessons with a small group of students, (b) assess students' learning related to the mathematics content standards, and (c) document your teaching and your students' learning by completing all sections of this assignment. Your CI 176 instructor will use this written documentation as a basis for evaluating your performance on the TPEs using the Mini Unit rubric.

## General Directions

Use each section of the Mini Unit to document the planning, implementation, and reflection stages for teaching a unit of study.  Before you teach the unit, you will: (a) select appropriate content standards and research the topic for your unit, (b) identify learning outcomes based on state-adopted mathematics standards, (c) create an assessment plan designed to measure student performance before (pre-assessment), during (formative assessment) and after instruction (post-assessment or summative assessment), and (d) plan your instruction.  After you teach the lessons, you will:  (a) analyze student learning and (b) evaluate your teaching related to student learning.

## Components of the Mini Unit

## Teaching Processes

The Mini Unit is divided into five sections. The instructions in each section delineate the reporting requirements and list the TPEs evaluated in that section.

1) **Content Analysis and Learning Outcomes** *(What should I teach?)*

2) **Assessment Plan** *(How will I know what students have learned?)*

3) **Design for Instruction** *(What activities, problems, and questions will engage students?)*

4) **Analysis of Student Learning** *(What did students learn? Did they meet the standard?)*

5) **Reflection and Self-Evaluation** *(What worked best? What might I do differently?)*

## Scoring Rubric and Evaluation

The rubric for this assignment (located at the end of the directions) focuses on the qualities inherent in each of the TPEs being assessed. Four levels of proficiency are described in each row of cells. For this assignment, your grade will be based on the first three levels of this rubric (Does Not Meet Expectations, Meets Expectations, and Meets Expectations At A High Level). The fourth level (Exceeds Expectations) describes expectations for an experienced teacher.

# Format

The successful completion of the task requires submission of a document that is easy for the evaluator to score. Applying these guidelines to the paper format will help to improve the readability of the Mini Unit.

- Ownership. Complete a cover page that includes (a) your name, (b) date submitted, (c) grade level(s) taught, (d) subject taught (i.e. Mathematics), (e) topic of your unit (e.g. Money), and (f) university course number (CI 176).

- Collaboration. It is possible to collaborate on any or all of the first three sections of the mini unit with all parties submitting the same documentation for the section. At the beginning of each section done collaboratively, list the names of all collaborators.

- Table of Contents. Provide a Table of Contents that lists the five main sections (e.g. Content Analysis and Learning Outcomes, Assessment Plan), page numbers and attachments in your Mini Unit document.

- Narrative length. A suggested page length for your narrative and documentation is given at the end of each component section. (Longer does not mean better.)

- Margins and font. The narrative sections should be double-spaced in 12-point font, with 1-inch margins. (Some sections, e.g. lists, tables, lesson plans, may be single spaced.) Select a font that is easy to read.

- Documentation. Certain sections may require charts, tables, graphs and assessment instruments to support your narrative (see section requirements). These items may be included within your narrative or attached at the end of the document. Within your narrative, reference the specific documentation you are including (e.g. Table 1, Appendix A) so the reader can find it.

- Bibliography and Credits. You will keep track of the resources you use in this project and cite them in a separate section at the end of your narrative under *Bibliography and Credits*. The American Psychological Association (APA) style is a recommended format for your references.

- Anonymity. In order to preserve the anonymity of students in your classroom, do not include the actual names of the school, teacher, or students in the Mini Unit. It is acceptable to use pseudonyms or identifying codes rather than the actual names.

- Readability. Check spelling and punctuation. Use good quality paper and a printer with clear characters.

- Submission. The Mini Unit should be stapled or clipped in the upper left hand corner. Do not put your work in a binder or other kind of folder. Include the entire SCORING RUBRIC for feedback.

# 1) Content Analysis and Learning Outcomes

**Teaching Process Standard**
*The teacher sets significant, challenging, varied and appropriate learning outcomes.*

**Teaching Performance Expectations:**

> Specific Pedagogical Skills in Mathematics (TPE 1)
> Instructional Planning (TPE 9)

**Overview**

In this section you will: (1) Select appropriate content standard(s) and describe the content for the Mini unit. (2) Develop at least two mathematics learning outcomes for the Mini unit, and show how the learning outcomes connect to the California Mathematics Content Standards. (3) Provide a rationale for your choice of learning outcomes.

**Directions:**

❑ **CONTENT ANALYSIS**

- **Content standards.** Begin your analysis by reviewing the appropriate state mathematics content standards and select one or more standards for the focus of this assignment. List the relevant standards at the beginning of this section.

- **Resources.** Use at least four resources to identify the important mathematics generalizations, concepts, and facts that should be included in your mini-unit. These resources may include the elementary mathematics textbook, master teacher, course readings, Internet, journal articles, and other mathematics books. Keep in mind what is appropriate for the developmental and academic levels of your students. (Keep track of the resources you use—including people resources—to list them in your bibliography.)

- **Content outline or graphic organizer.** Organize and report these important mathematics ideas (not the learning outcomes, lesson objectives, nor activities) in a content outline or graphic organizer (e.g. map, web, flowchart) to show the content you will teach. You may need to include definitions or examples to clarify your terms and key concepts. Someone else should have enough information from your content outline or graphic organizer to understand the content you will teach.

❑ **LEARNING OUTCOMES**

Use a table (similar to the one shown at the end of this section) to list two or more mathematics learning outcomes that will guide the planning and assessment of your unit.

- **Mini-Unit Learning Outcomes.** These outcomes should be written in terms of student learning and define what you expect students to know and be able to do at the end of the unit. (Note: these are not lesson objectives.) The outcomes should be:

  - *significant* (i.e. reflect the big ideas or structure of the discipline),

  - *challenging* (i.e. students will learn something they do not already know),

  - *varied* (i.e. include different levels or types of learning),

  - *appropriate* (i.e. grade/age specific),

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- *observable*, and *measurable* (i.e. you can provide evidence that learning has occurred).
- [Note: You may use the same language as the standards, if appropriate.]
- **Alignment with Standards.** For each outcome, write out the related state-adopted mathematics content standard.

❑ **RATIONALE**

Write two to three paragraphs explaining why your learning outcomes are appropriate. Your rationale should address the following questions: How do these outcomes align with the content standards? How do these outcomes fit into long-term plans for mathematics instruction (e.g. what topics have been taught before and what topics will be taught after this unit that connect to this topic)? What do your students already know (pre-requisite knowledge/skills) that will help them learn what you have planned?  Why are these outcomes important for your students to learn?

Format for Mini-Unit Learning Outcomes Table

| UNIT LEARNING OUTCOMES | RELATED STANDARD(S) *[include content area, # & text]* (e.g. Mathematics ($2^{nd}$ grade), Number Sense,  5.1 Solve problems using combinations of coins and bills.) |
|---|---|
| Learning Outcome 1: *[state your outcome in terms of student learning]* | |
| Learning Outcome 2: *[state your outcome in terms of student learning]* | |

**Documentation:** content outline/graphic organizer (1-2 pages), table of outcomes (½ page), rationale for outcomes (1 page)

# 2) Assessment Plan

**Teaching Process Standard**
*The teacher uses multiple assessment modes and approaches aligned with learning goals to assess student learning before, during and after instruction.*

**Teaching Performance Expectations:**

Specific Pedagogical Skills in Mathematics (TPE 1)
Monitoring Student Learning During Instruction (TPE 2)
Interpretation and Use of Assessments (TPE 3)

**Overview**
In this section you will: (1) Select, adapt, or develop a pre-assessment, formative assessment, and summative assessment to assist in planning and sequencing the mini unit, to monitor student progress toward the learning outcomes, and to measure student learning. (2) Describe in detail the pre- and summative assessments, scoring, and evaluation criteria for at least <u>one</u> of your learning outcomes.

**Directions:**

- ❑ **PRE-ASSESSMENT AND SUMMATIVE ASSESSMENT**

  - **Learning Outcome.** Select one (or more) of your learning outcomes you will assess before and after instruction. Identify the learning outcome(s) you have chosen to address by stating the exact wording of it.

  - **Pre-assessment.** This Learning Outcome must be pre-assessed using a method that results in <u>an individual score for each student in your small group</u>. The score may be based on a rubric, point system, or percentage. The pre-assessment may utilize prior work, interviews, or written assessments. Describe the pre-assessment by including:
    - (a) the exact tasks, items, questions, or methods used;
    - (b) the exact wording of the oral or written directions given to the students;
    - (c) possible assessment adaptations for English Learners and other students (even if you have no English Learners in your classroom);
    - (d) the criteria for scoring or analyzing each item, including appropriate responses and scoring methods (e.g. rubric, point system, item weights, observation check list, rating scales); and
    - (e) the criteria for determining whether each student's performance meets the learning outcomes you expect <u>by the end of the unit</u> (e.g. Students will demonstrate understanding of ___ by scoring at least a 3 on the 4-point rubric).

    *NOTE: Annotated copies of the assessment instruments may be used to fulfill many of the requirements for the descriptions. An outline format or chart may also be used.*

  - **Summative assessment.** The summative assessment (post-assessment) for the Learning Outcome should be aligned with the pre-assessment so the individual scores can be easily compared to show the growth made by each student in your small group relative to the outcome. (Using the same or similar formats is one way to accomplish this requirement.) The summative assessment may go beyond what was assessed in the pre-assessment. Describe the summative assessment for the Learning Outcome by including:
    - (a) the exact tasks, items, questions, or methods used;

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(b) the exact wording of the oral or written directions given to the students;

(c) possible assessment adaptations for English Learners and other students (even if you have no English Learners in your classroom);

(d) the criteria for scoring or analyzing each item, including appropriate responses and scoring methods (e.g. rubric, point system, item weights, observation check list, rating scales); and

(e) the criteria for determining whether the students' performance meets the learning outcomes you expect <u>at the end of the unit</u> (e.g. Students will demonstrate understanding of ___ by scoring at least a 3 on the 4-point rubric).

*NOTE 1: Annotated copies of the assessment instruments may be used to fulfill many of the requirements for the descriptions. An outline format or chart may also be used.*

*NOTE 2: If the summative assessment is identical to or has only minor changes from the pre-assessment you may just state "it is the same as the pre-assessment" or only describe the changes you made.*

❑ **FORMATIVE ASSESSMENT**
- Describe at least one formative assessment you plan to use. The formative assessment may include classroom assignments, documented observation, class discussion, problem solving, quizzes, or other lesson assessments. The formative assessments may be related to any of your unit learning outcomes.
- Comment on:
  - o the alignment between the formative assessment and the learning outcomes, and
  - o how you will use the information to plan instruction.

**Documentation:** description of pre- and summative assessments for the Learning Outcome (2 pages and/or annotated copies of assessment instruments, including scoring rubrics/keys), and a description of formative assessments (1 page)

# 3) Design for Instruction

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**Teaching Process Standard**

*The teacher designs instruction for specific learning outcomes and student characteristics and needs.*

**Teaching Performance Expectations:**

> Specific Pedagogical Skills in Mathematics (TPE 1)
> Monitoring Student Learning During Instruction (TPE 2)
> Interpretation and Use of Assessments (TPE 3)
> Making Content Accessible (TPE 4)
> Learning About Students (TPE 8)
> Instructional Planning  (TPE 9)

**Overview**

In this section you will: (1) Summarize the results of your pre-assessment and indicate how the results will influence your planning. (2) Provide lesson plans for your 3 to 5 lesson unit. At least one of the lessons <u>must use a problem-solving format</u>. (3) Complete the Instructional Strategies Matrix. (4) Include a rationale for the lessons that demonstrates your ability to plan appropriate instruction.

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**Directions:**

- ❑ **SUMMARY OF THE RESULTS OF THE PRE-ASSESSMENT**
    - **Results of pre-assessment.**  Summarize the results of the pre-assessment related to your selected learning outcome(s) for the students in your small group. What knowledge do students have prior to instruction? What evidence supports your conclusions? Tables or graphs may help you analyze your results and support your summary.
    - **Implications for planning.** Describe how the pre-assessment data will influence your instructional design (e.g. selection of activities, more/less time spent on an outcome, building prerequisite knowledge, differentiated instruction) and/or modification of the learning outcomes (e.g. If students demonstrate an understanding of an outcome, you might change or eliminate it.). Be specific.

- ❑ **LESSON PLANS  (3 to 5 lessons)**

    Your lesson plans should reflect a variety of instructional strategies/techniques, including instructional strategies specific to mathematics (i.e. TPE 1A - use of context or manipulatives, student discussion, multiple strategies and representations). At least one of the lessons <u>must use a problem-solving format</u> (as described in Chapters 4 and 5 of the Van de Walle textbook). The lessons may be designed and taught to a small group.

    - **Detailed lesson plans.** Use any appropriate lesson plan format. The following items must be part of each lesson plan: (a) lesson objective(s) stated in terms of student learning (which is not the same as teaching objectives) & related unit learning outcome; (b) related California Mathematics Content Standards; (c) materials; (d) flow of the lesson (e.g. sequence of lesson, what students will do, the mathematics problems you are posing); and (e) how you will assess student learning in the lesson.
    - **Instructional Strategies Matrix.** Select 3 instructional strategies (e.g. think-pair-share; use of manipulatives; graphic organizers) that you used in your lessons. On the matrix (see example below): (a) List the 3 instructional strategies. (b) Briefly describe one example of how you used

this strategy. (c) State your purpose in using this instructional strategy. (Why did you think this strategy would meet the learning needs of your students?) (d) Describe what type of student benefited. (Do not list the student's name, but identify the students' learning needs.)

- **Rationale.** Include a rationale for teaching these lessons. Your rationale should include: (a) how the lesson content relates to your learning outcome(s) and (b) how the lesson design has been influenced by your knowledge of your students' knowledge and needs. Be specific.

## Instructional Strategies Matrix

| Strategy | Description | Purpose | Who Benefited |
|---|---|---|---|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Documentation**: Summary of pre-assessment (1-2 pages); lesson plans (2 pages per lesson); Instructional Strategies Matrix (1 page); rationale as part of lesson plans or a separate section covering all lessons (1 page)

# 4) Analysis of Student Learning

**Teaching Process Standard**
*The teacher uses assessment data to profile student learning and communicate information about student progress and achievement.*

**Teaching Performance Expectations:**

> Specific Pedagogical Skills in Mathematics (TPE 1)
> Interpretation and Use of Assessments (TPE 3)

**Overview**

In this section you will: (1) Organize your assessment data (e.g. pre-assessment, summative assessment and formative assessment) to determine students' progress related to the unit's learning outcomes. (2) Analyze student learning by comparing pre-assessment and summative assessment data, as well as, using formative assessment data.

**Directions:**

❑ **GROUP ANALYSIS**

- **Data.** Organize the data from the pre- and summative assessment to show student learning related to the learning goal. (You only need to include the small group of students you taught, or "target" students if you taught the whole class.) Tables or graphs are useful to highlight patterns of learning.

- **Analysis of learning.** Use evidence from the pre-, summative, and formative assessments (and references to tables or graphs) to describe what each student learned. Describe the extent to which your students made progress toward the learning criterion you identified for the learning outcome. (How many students met the learning outcome? How many students made progress? How many students showed no progress?) Use examples from individual students to support your analysis.

- **Conclusions.** Draw conclusions about students' learning based on the analysis of data. Are there detectable patterns in the content knowledge students gained or did not gain? Did all students in your small group learn the same things to the same degree? Why or why not?

**Documentation:** Analysis and Conclusions (2 pages), tables/graphs (1-2 pages), plus student work if appropriate

# 5) Reflection and Self-Evaluation

**Directions:**

❑ **REFLECTION ON INSTRUCTION AND STUDENT LEARNING**

- **Effective instruction.** What instructional strategies and activities do you think contributed most to student learning? Why? Support your comments with the evidence discussed in the Analysis of Student Learning section.

- **Mathematics knowledge.** How do you think your own level of mathematics knowledge influenced the success of this unit? What areas in your mathematics knowledge would you like to improve?

- **Changes.** If you had an opportunity to teach this mini unit again, what are at least 2 things you would do differently? Why? Consider your learning outcomes, instruction, assessment, and other factors under your control. Support your comments with the evidence discussed in the Analysis of Student Learning.

**Documentation:** reflection on instruction (2-3 pages)

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# Content Analysis and Learning Outcomes
## Rubric

**Teaching Process Standard**: *The teacher sets significant, challenging, varied and appropriate learning outcomes.*
**TPE 1 –** *Specific Pedagogical Skills in Mathematics***; TPE 9 –** *Instructional Planning*

| Rating →<br>Indicator ↓ | Does Not Meet Expectations | Meets Expectations | Meets Expectations at High Level | Exceeds Expectations |
|---|---|---|---|---|
| **Clarity and Variety of Learning Outcomes** | Outcomes are not stated in terms of observable student learning, may be stated as activities or teaching outcomes rather than learning outcomes. | At least one outcome is stated in terms of observable student learning. Outcomes may reflect a limited variety of types and/or levels of learning. | At least two outcomes are stated in terms of observable student learning. Outcomes reflect some variety in type and/or level of learning. | All outcomes are stated in terms of student learning. Outcomes reflect several types or levels of learning, with an emphasis on higher level thinking. |
| **Appropriate-ness For Students** | Rationale does not connect outcomes to students' prior experiences or knowledge. Fails to justify appropriateness of the outcomes for students. | Rationale connects outcomes to students' prior experiences and knowledge. Justifies general appropriateness of outcomes for students at that grade level. | Rationale connects outcomes to students' prior experiences and knowledge, as well as, to future instruction and usefulness. Justifies general appropriateness of outcomes for students in this class. | Rationale connects outcomes to students' prior experience and knowledge, future instruction and real life application. Justifies appropriateness of outcomes for these specific students. |
| **Significance and Alignment with Mathematics Standards** | Outcomes are not aligned with appropriate math content standards. Outcomes do not represent "big ideas" or the structure of mathematics. | At least one outcome is aligned with appropriate math content standards and represents "big ideas" or the structure of mathematics. | At least two outcomes are explicitly aligned with appropriate math content standards and represent "big ideas" and the structure of the mathematics. | All outcomes are explicitly aligned with appropriate math content standards. Rationale clearly describes how they represent "big ideas" or the structure of the mathematics. |
| **Mathematics Content Analysis \*\*** | Analysis shows a lack of knowledge of mathematics. Math content appears to contain inaccuracies. Content seems to be viewed more as isolated skills and facts rather than as part of a larger conceptual structure. | Analysis shows beginning knowledge of mathematics. Math content appears to be mostly accurate. Shows some awareness of the big ideas or the structure of mathematics, though focus is primarily on factual information. | Analysis includes math concepts, facts, and some generalizations congruent with the "big ideas" or the structure of mathematics. Math content appears to be accurate. | Analysis identifies the interrelatedness of math concepts, facts, and generalizations congruent with the "big ideas" or the structure of mathematics. Math content appears to be accurate. |

*** Key indicator for a section, weighted more than others.*

Score for this section: CONTENT ANALYSIS & LEARNING OUTCOMES _____/15

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# Assessment Plan
## Rubric

**Teaching Process Standard**: *The teacher uses multiple assessment modes and approaches aligned with learning outcomes to assess student learning before, during and after instruction.*

TPE 1 – *Specific Pedagogical Skills in Mathematics;* **TPE 2 –** *Monitoring Student Learning;* **TPE 3 –** *Interpretation & Use of Assessment*

| Rating → Indicator ↓ | Does Not Meet Expectations | Meets Expectations | Meets Expectations at High Level | Exceeds Expectations |
|---|---|---|---|---|
| **Congruence with Learning Outcomes. Math Standards, and Content** ** | Content and methods of assessment lack congruence with learning outcomes, math standards, and cognitive complexity. | Some assessment methods are congruent with learning outcomes and math standards in content and cognitive complexity. | Most assessment methods are congruent with learning outcomes and math standards in content and cognitive complexity. | All assessments are clearly congruent with the learning outcomes and math standards in both content and cognitive complexity. In addition, clear evidence of advance planning to assess common misconceptions. |
| **Variety in Methods of Assessment** | The assessment plan includes assessment of only one type of learning; uses only one method of assessment (e.g. paper & pencil test); and does not assess students before, during, and after instruction. | The assessment plan includes two of the following elements: assessment of different types or levels of learning; multiple methods of assessment; assessment of students before, during, and after instruction. | The assessment plan includes assessment of different types or levels of learning; uses multiple assessment methods; and assesses student performance before, during and after instruction. | The assessment plan clearly identifies assessment of different types or levels of learning; uses multiple assessment methods, including those requiring an integration of knowledge, skills, and reasoning; and assesses student performance before, during and after instruction. |
| **Clarity of Assessment Methods and Standards for Performance** ** | Items or prompts are poorly written or missing; directions and procedures are confusing; scoring procedures are missing, unclear or inaccurate. No clear criteria for measuring student performance relative to the learning outcomes. | Some items or prompts are clearly written; some directions and procedures are clear; some scoring procedures are explained. Some criteria for measuring student performance are linked to the learning outcomes. | Most items or prompts are clearly written; directions and procedures are clear; scoring procedures are explained. Criteria for measuring student performance are clear and linked to the learning outcomes. | All items or prompts are clearly written; directions and procedures are clear to students; scoring procedures are valid and clearly explained. Criteria for measuring student performance are explicitly linked to the learning outcomes. |
| **Adaptations Based on the Needs of Students** | Assessment adaptations are missing or inappropriate to meet the needs of EL or other students. | Some assessment adaptations for EL or other students are generally appropriate. | Variety of assessment adaptations appropriate to EL and other identified students' needs. | Assessment adaptations are appropriate and specifically designed to meet the needs of individual EL and other students. |

Score for this section: ASSESSMENT PLAN _____/20

# Design for Instruction
## Rubric

*Teaching Process Standard*: **The teacher designs instruction for specific learning outcomes, student characteristics and needs, and learning contexts.**

**TPE 1** – *Specific Pedagogical Skills in Mathematics;* **TPE 2** – *Monitoring Student Learning During Instruction;* **TPE 3** – *Interpretation and Use of Assessments;* **TPE 4** – *Making Content Accessible;* **TPE 8** – *Learning About Student;* **TPE 9** – *Instructional Planning*

| Rating → Indicator ↓ | Does Not Meet Expectations | Meets Expectations | Meets Expectations at High Level | Exceeds Expectations |
|---|---|---|---|---|
| **Use of Data and Knowledge of Prerequisite Skills to Select Appropriate and Relevant Activities** | Few, vague, or inappropriate implications noted for the results of the pre-assessment. Lessons are in conflict with the results of the pre-assessment and prerequisite skills for the learning outcomes. | Recognizes the need to use pre-assessment data in planning instruction. Lessons show some attention to pre-assessment results and prerequisite skills for the learning outcomes. | Pre-assessment data are used to inform planning. Lessons are in alignment with the learning needs of the students and prerequisite skills for the learning outcomes. | Instruction has been designed with reference to pre-assessment data and prerequisite skills. Activities appear productive and appropriate for each student. |
| **Alignment with Learning Outcomes and Mathematics Standards** | Few lessons, activities, and resources are explicitly linked to learning outcomes and math standards. Not all learning outcomes are covered in the design. | Most lessons are linked to learning outcomes and math standards. Some alignment of activities to learning outcomes. | All lessons are explicitly linked to learning outcomes. Alignment of most activities and resources with learning outcomes is clear. | All lessons, learning activities, and resources are explicitly aligned with learning outcomes. Alignment of activities and resources is clearly identified. |
| **Use of a Variety of Instruction, Activities, Assignments, and Resources** | Little variety of instruction, activities, and assignments. Heavy reliance on textbook or single resource (e.g., workbook). | Some variety in instruction, activities, or resources. Problem solving lesson is minimally integrated into the unit. | Use of a variety of teaching methods and activities. Problem solving lesson(s) are integrated into the unit. Selected materials contribute to learning. | Multiple strategies used within each lesson. Activities and materials are varied, with clear contribution to learning. Problem solving lesson(s) develop both concepts & skills. |
| **Use of Instructional Strategies Specific to Mathematics \*\*** | Uses exclusively teacher-directed instructional strategies focusing on information retention, computation, and procedural knowledge. Displays limited knowledge of strategies for specific mathematics content. | Uses at least one instructional strategy especially appropriate for mathematics (e.g. context, manipulatives, student discussion, multiple strategies and representations). Instruction addresses math concepts, as well as procedures. Limited focus on problem solving and applications to real life situations. | Uses at least two instructional strategies especially appropriate for mathematics (e.g. context, manipulatives, student discussion, multiple strategies and representations). Instruction focuses on math concepts, procedures, and problem solving strategies. Emphasizes applications to real life situations. | Uses many instructional strategies specific to math to encourage content learning and critical thinking. Helps students develop an understanding of the complex relationship between math concepts. Integrates content standards from other subject areas, when appropriate. |

Score for this section: DESIGN FOR INSTRUCTION _____/30

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# Analysis of Student Learning
## Rubric

**Teaching Process Standard:** *The teacher uses assessment data to profile student learning and communicate information about student progress and achievement.*

TPE 1 – *Specific Pedagogical Skills in Mathematics;* TPE 3 – *Interpretation & Use of Assessment*

| Rating → Indicator ↓ | Does Not Meet Expectations | Meets Expectations | Meets Expectations at High Level | Exceeds Expectations |
|---|---|---|---|---|
| **Clarity and Accuracy of Data and Summary** | Organized displays of data are missing or inaccurate. Description of data is missing or does not accurately reflect the data. | Organized displays of data are mostly complete and accurate, but may not be the most appropriate for the type of data. Description of data is mostly accurate. | Organized displays of data are complete and appropriate for the type of data. Description of data is complete and generally accurate. | Organized displays of data represent the ability to develop a system to accurately record and maintain information about student progress and achievement. Description of data is complete, clear and accurate. |
| **Alignment with Learning Outcomes \*\*** | Analysis of student learning is not aligned with learning outcomes and math standards. . | Analysis of student learning is partially aligned with learning outcomes and math standards. | Analysis is generally aligned with learning outcomes and math standards. | Analysis is fully aligned with learning outcomes and provides a comprehensive profile of student learning, including relevant scores <u>and</u> a description of what was learned. |
| **Interpretation of Data \*\*** | Interpretation of data is inaccurate or missing. Conclusions are missing or unsupported by data. Interpretation of student learning is incomplete. | Interpretation is technically accurate, though conclusions may not be fully supported by data. Interpretation of student learning focuses on procedural understanding. | Interpretation is meaningful, and appropriate conclusions are drawn from the data. Interpretation of student learning includes some comments on both conceptual and procedural understanding. | Interpretation is substantive, and strong conclusions are drawn from the data. Interpretation of student learning, which focuses on both conceptual and procedural understanding, is clear enough for students, parents, and administrators. |

Score for this section: ANALYSIS OF STUDENT LEARNING _____/20

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# Reflection and Self-Evaluation
## Rubric

*Teaching Process Standard*: The teacher analyzes the relationship between his or her instruction and student learning in order to improve teaching practice.

**TPE 9 –** *Instructional Planning;* **TPE 13 –** *Professional Growth*

| Rating → Indicator ↓ | Does Not Meet Expectations | Meets Expectations | Meets Expectations at High Level | Exceeds Expectations |
|---|---|---|---|---|
| **Insights on Effective Instruction and Assessment ∗∗** | Provides no rationale for why some activities or assessments were more successful than others. No evidence of seeing connections among learning outcomes, instruction, assessment results, and mathematics knowledge OR connections are irrelevant or inaccurate. | Identifies successful activities or assessments and explores reasons for their success (no use of theory or research). Evidence of seeing some connections between learning outcomes, instruction, assessment, or mathematics knowledge. | Identifies successful activities and assessments and provides plausible reasons (based on implied theory or research) for their success. Clear evidence of seeing connections between two or more of the following: learning outcomes, instruction, assessment, mathematics knowledge. | Identifies successful activities and assessments and provides plausible reasons (based on explicit theory or research) for their success or lack thereof. Clear evidence of seeing connections among learning outcomes, instruction, assessment, and subject mathematics knowledge. |
| **Implications for Future Teaching** | Provides no ideas or inappropriate ideas for redesigning learning outcomes, instruction, or assessment. | Provides ideas for redesigning learning outcomes, instruction, or assessment. Rationale could be expanded to support why these changes would improve student learning in mathematics. | Provides at least two suggestions for redesigning learning outcomes, instruction, or assessment and explains why these modifications would improve student learning in mathematics. | Provides more than two ideas for redesigning learning outcomes, instruction, <u>and</u> assessment, connects these suggestions to assessment data, and explains why these modifications would improve student learning in mathematics. |

Score for this section: REFLECTION AND SELF-EVALUATION _____/10

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| SECTION | Possible Points | Instructor Assessment |
|---|---|---|
| **Content Analysis and Learning Outcomes**<br><br>TPE 1 – *Specific Pedagogical Skills in Mathematics*<br>TPE 9 – *Instructional Planning* | 15 pts | |
| **Assessment Plan**<br><br>TPE 1 – *Specific Pedagogical Skills in Mathematics*<br>TPE 2 – *Monitoring Student Learning*<br>TPE 3 – *Interpretation & Use of Assessment* | 20 pts | |
| **Design for Instruction**<br><br>TPE 1 – *Specific Pedagogical Skills in Mathematics*<br>TPE 2 – *Monitoring Student Learning*<br>TPE 3 – *Interpretation & Use of Assessment*<br>TPE 4 – *Making Content Accessible*<br>TPE 8 – *Learning About Student*<br>TPE 9 – *Instructional Planning* | 30 pts | |
| **Analysis of Student Learning**<br><br>TPE 1 – *Specific Pedagogical Skills in Mathematics*<br>TPE 3 – *Interpretation & Use of Assessment* | 20 pts | |
| **Reflection and Self-Evaluation**<br><br>**TPE 9 – *Instructional Planning***<br>**TPE 13 – *Professional Growth*** | 10 pts | |

## FORMATTING GUIDELINES *

| | | |
|---|---|---|
| **Cover Page/Table of Contents** | 1 pt | |
| **Narrative Length** | 1 pts | |
| **Bibliography and Credits** | 2 pts | |
| **Readability** | 1 pts | |
| **TOTAL** | 100 pts | |

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