UC 8874 065

CBM003 ADD/CHANGE FORM

☒ Undergraduate Council	or	☐ Graduate/Professional Studies Council
☒ New Course ☐ Course Change 2007		☐ New Course ☐ Course Change
Core Category: ____ Effective Fall ~~2006~~		Effective Fall __

1. Department: Curriculum And Instruction College: EDUC

RECEIVED JUN 07 2006

2. Person Submitting Form: Dr. Jennifer B. Chauvot Telephone: X39864

APPROVED SEP 20 2006

3. Course Information on New/Revised course:
   - Instructional Area / Course Number / Long Course Title:
     CUIN / 4349 / Teaching Geometric Concepts For Grades 6-12
   - Instructional Area / Course Number / Short Course Title (30 characters max.)
     CUIN / 4349 / TEACH GEOMETRY GRADES 6-12
   - SCH: 3.00 Level: SR CIP Code: 1303010004 Lect Hrs: 3 Lab Hrs: 0
4. Justification for adding/changing course: **To meet instructional needs of students**
5. Was the proposed/revised course previously offered as a special topics course? ☐ Yes ☒ No
   If Yes, please complete:
   - Instructional Area / Course Number / Long Course Title:
     ____ / ____ / ____
   - Content ID: ____ Start Date (yyyy3): ____
6. Is this course offered for undergraduate credit only? ☒ Yes ☐ No
7. Authorized Degree Program(s): B.S.
   - Does this course affect major/minor requirements in the College/Department? ☐ Yes ☒ No
   - Does this course affect major/minor requirements in other Colleges/Departments? ☐ Yes ☒ No
   - Are special fees attached to this course? ☒ Yes ☐ No
   - Can the course be repeated for credit? ☐ Yes ☒ No
8. Grade Option: Letter (A, B, C ...) Instruction Type: lecture
9. If this form involves a change to an existing course, please obtain the following information from the course inventory: Instructional Area / Course Number / Long Course Title
   ____ / ____ / ____
   - Start Date (yyyy3): ~~Fall 07~~ Content I.D.: ____
10. Proposed Catalog Description:
    Cr: (3-0). Prerequisites: ~~Admission to Teacher Certification Program~~ Description (30 words max.): Design of appropriate instructional methods, materials, and assessment techniques for teaching geometry concepts in grades 6-12.
11. Dean's Signature [redacted] Date: May 30, 2006

    Print/Type Name: McPherson

[redacted] 4/20/06
C.O.E. UND Studies [redacted]

UNIVERSITY of HOUSTON

College of Education
Department of Curriculum and Instruction
Mathematic Education
Fall 2006

CUIN 4397: Developing Geometric Concepts in Grades 6-12

Instructor: Dr. Jennifer B. Chauvot
Office 123, Farish Hall; 713-743-9864
Home 281-489-2422 (please do not call after 7:30 p.m.)
Email: jchauvot@uh.edu

Course Location: 302B Farish Hall
When: Thursdays, 5-8:00
Office Hours: M & Th 2-5:00 or by appointment.

Required Textbooks: One resource we will use is the Measurement Navigation Series and the Geometry Navigation Series available through the National Council of Teachers of Mathematics (NCTM - http://nctm.org/).

It is in your best interest to join NCTM.

If you are 4-8, you need:

- **Navigating through Geometry in Grades 3-5 (with CD-ROM)** *By M. Katherine Gavin, Louise P. Belkin, Ann Marie Spinelli, and Judy St. Marie*
- **Navigating through Geometry in Grades 6-8 (with CD-ROM)** *By David K. Pugalee, Jeffrey Frykholm, Art Johnson, Hannah Slovin, Carol Malloy, and Ron Preston*
- **Navigating through Measurement in Grades 3-5 (with CD-ROM)** *By Nancy Canavan Anderson, M. Katherine Gavin, Judith Dailey, Walter Stone, and Janice Vuolo*
- **Navigating through Measurement in Grades 6-8 (with CD-ROM)** *By George W. Bright, Patricia Lamphere Jordan, Carol Malloy, and Tad Watanabe*

If you are 8-12, you need:

- **Navigating through Geometry in Grades 6-8 (with CD-ROM)** *By David K. Pugalee, Jeffrey Frykholm, Art Johnson, Hannah Slovin, Carol Malloy, and Ron Preston*
- **Navigating through Geometry in Grades 9-12 (with CD-ROM)** *By Roger Day, Paul Kelley, Libby Krussel, Johnny W. Lott, and James Hirstein*
- **Navigating through Measurement in Grades 6-8 (with CD-ROM)** *By George W. Bright, Patricia Lamphere Jordan, Carol Malloy, and Tad Watanabe*
- **Navigating through Measurement in Grades 9-12 (with CD-ROM)** *By Masha R. Albrecht, Maurice J. Burke, Wade Ellis, Jr., Dan Kennedy, and Evan M. Maletsky*

- We will also use some activities from the Rice University School Mathematics Project (RUSMP) Geometry Module: http://rusmp.rice.edu/geometrymodule/index.htm, and
- Additional readings will be provided by your peers.

Textbooks/Resources: (recommended)

1) Van de Walle, J. A. (2004). *Elementary and Middle School Mathematics: Teaching Developmentally, 5th edition.* Boston, MA: Pearson Education. ISBN: 0-205-38689-X

2) Serra, M. Discovering Geometry: An Investigative Approach, 3rd edition. Emeryville, CA: Key Curriculum Press. ISBN: 1-55953-460-5

3) NCTM (2000). *Principles and standards for school mathematic.* Reston, VA: National Council of Teachers of Mathematics.

4) The Geometer's Sketchpad - Student Edition, by Key Curriculum Press. - NOTE: Geometer Sketchpad is on the 21 computers located in CITELAB room 326

5) Smith, M. S., Silver, E. A. & Stein, M. K. (2005). *Improving instruction in geometry and measurement: Using cases to transform mathematics teaching and learning*, volume 3. New York: Teachers College Press.

Course Objectives

- To develop/expand knowledge of how children in grades 6-12 develop geometric/measurement concepts and the corresponding instructional practices that facilitate this development.
- To develop skills to evaluate and create instructional resources intended to help children develop geometric/measurement concepts. Candidates will be able to identify components/characteristics of materials that support (or not)
    - Multiple van Hiele levels
    - High levels of student engagement
    - Appropriate use of manipulatives
    - Appropriate use of technology
    - Opportunities for higher order thinking
    - Opportunities for discourse
    - Appropriate assessment strategies
- To develop conceptual understanding of geometric/measurement concepts through participation in problem-solving activities
- To understand the Texas Essential Knowledge and Skills (TEKS) and the Texas Assessment of Knowledge and Skills (TAKS) as it relates to the teaching and learning of geometric/measurement concepts
- To increase awareness of available resources by organizing, synthesizing, and sharing mathematics education literature about the learning and teaching of geometric/measurement concepts

Catalog Description

Design of appropriate instructional methods, materials, and assessment techniques for teaching geometry concepts in grades 6-12.

Course Description and Strategies of Instruction

This course is about teaching and learning geometry (and measurement) concepts, nationally, and in the state of Texas. Our focus will be grades 6-12 although we will visit K-5 Geometry/Measurement curricula as well. Small-group geometry/measurement activities that involve the use of manipulatives and technology, peer presentations, mock lessons, peer evaluations, and writing activities are important instructional strategies that will be utilized in this course.

Program Area Philosophy

The Mathematics Education Program Area promotes principles of socially mediated and constructed learning. Under this umbrella, instructional activities have been designed in such a way that students will engage in personal problem solving and reflection to create meaningful representations of ideas. In participating in these activities students strengthen understanding of course content while developing skills necessary for leadership within mathematics education communities.

Relationship to the College of Education Conceptual Framework

Collaboration is especially emphasized in the daily activities of this course in that candidates will engage in dialogue with peers that will demand appreciation and respect for the diverse perspectives that will naturally emerge through discussions of 1) readings about the learning and teaching of geometry/measurement concepts, 2) evaluation of peer-developed lesson plans and activities that support the development of geometry/measurement concepts and 3) participation in collaborative small-group problem-solving activities that foster conceptual understanding.

Learning is emphasized in this class through personal, thoughtful reflections regarding course readings, videos, lesson planning, dialogue with peers, and critiques of peer-developed course products.

Leading is highlighted as students facilitate discussions regarding course readings, share materials from the literature, and participate in providing constructive feedback to peer lesson plans and written work.

Integration of Technology

The use of technology is embedded throughout this course in a number of ways. All students will use e-classroom (described below) to participate in electronic discussions, post readings, and submit written assignments. Furthermore, students are expected to develop lesson plans using word-processing and utilize internet-based mathematics education resources such as those found at http://www.nctm.org/. Also, students will view best-practices videos through http://www.learner.org/index.html. In addition, all

students are expected to communicate by email. Finally, we will use calculators, applets, spreadsheets and other programs such as Geometer Sketchpad in the context of appropriate use in the teaching of geometry/measurement concepts.

Addressing the Needs of Diverse Learners

An important aspect of mathematics education reform is how such reform affects the needs of diverse learners. Therefore this topic will frequently be addressed in class, particularly when examining geometry/measurement activities that attend to multiple van Hiele levels. Furthermore, engagement in dialogue with peers throughout the semester will require attention to the diversity among peers with varying learning preferences and different cultural and ethnic backgrounds.

Special Accommodations

UH adheres to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations for students with disabilities. Students with disabilities should register with Disabled Student Services and contact instructor(s) in a timely manner for appropriate accommodations. For students wishing special accommodations for tests and assignments, please contact the Center for Students with Disabilities at 713-743-5400.

Required Technology

1) We will be using e-classrooms at http://eclassrooms.coe.uh.edu/. The log-in is the same as your CITE Lab log-in. You can establish your account at https://viking.coe.uh.edu/vam/ by clicking on Create or Reactivate My Account. This service is FREE and you are entitled to a substantial amount of printing!

   We will utilize two services through e-classroom: A) e-classroom assignment submission system (EASS) and B) e-classroom electronic discussion system (EEDS)

   A) To access the e-classroom assignment submission system (EASS) go to http://eclassrooms.coe.uh.edu/ and click on the e-classroom assignment submission system icon. At this point you will be asked to log in. You will then see your course listed.

   B) To access the e-classroom electronic discussion system (EEDS), go to http://eclassrooms.coe.uh.edu/ and scroll down and click on Department of Curriculum and Instruction. After you log in, look for the desired course.

   Also, a tutorial for using e-classrooms is available at: http://coe.uh.edu/training/howto.htm

2) You will also need to be able to view video online.

We will be using the videos at http://www.learner.org/index.html . You will need to register, at no cost to you. If you do not have the required technology at home, you can view the assigned videos in the CITE LAB (bring ear phones, or they have ear phones to loan you as well)

You should take care of all technology issues by our next class

Course Evaluation. The following will be assessed to determine your course grade.

Assignment/Activity	Value
A) Reflections/HW	15%
B) Assessment of geometric and measurement concepts	10%
C) Share an article from NCTM	5%
D) Continuing the dialogue: E-classroom discussions (EEDS): Written reflections about different readings and/or class discussions	5%
E) Mock lesson and Self-critique	15%
F) Critiques of peer-developed lessons/activities	10%
G) Cartoon Corner Assignment, In the News Assignment, van Hiele Assignment	15%
H) Collection of Professional Resources/Articles	15%
I) Professional Attributes	10%

Descriptions of Assignments/Activities

Reflections/HW (submit through EASS). For selected assigned readings and videos (as indicated by *), you will 1) provide a bulleted list of what you perceive to be the Big Ideas of the reading (or respond to questions regarding the video), 2) include ideas expressed in the reading/video that surprised you, 3) provide a brief explanation of why it surprised you, and 4) integrate your own experiences/ideas and additional readings (in or out of this course) that may be relevant. Finally, 5) please pose at least one question that you feel would be meaningful for the class to discuss. Submit this assignment through EASS, and bring a copy to class as a way to be prepared for the class discussion.

Assessment of geometric and measurement concepts. There will be at least three (30-minute) geometry and measurement quizzes throughout the semester. These assessments will address a balance of procedural knowledge and conceptual understanding that a 6 -12 grade student should be able to demonstrate. The specific content will relate to class activities, assigned readings and related TAKS items.

Share an article from NCTM: Collect articles from, *Teaching Children Mathematics, Mathematics Teaching in the Middle School or the Mathematics Teacher* or other relevant journals that fit the categories provided below. These are available electronically through the library or at nctm.org, if you have a membership. Choose one article that you would like to share with the class. At a designated time (see syllabus) you will have up to 20 minutes to lead a discussion regarding the article. **You must make the article available to the class one week before your designated time.** If you have an electronic copy (pdf), post it on EEDS. Make sure pictures and figures can be seen in the electronic copy. If you have a hard copy, you will need to bring enough copies **the week before your designated time.** Your peers and I will evaluate your role as lead discussant using the attached Feed back Form. The categories are:

- An article about a geometry/measurement lesson appropriate for a middle school mathematics classroom
- An article about a geometry/measurement lesson that is appropriate for a high school mathematics classroom
- An article about the van Hiele model and applications to instruction
- An article about proof.
- An article about using Geometer Sketchpad or Cabri in the Geometry classroom.
- An article about assessment of geometry/measurement concepts.
- An article about using manipulatives in teaching geometry.

Continuing the dialogue: E-classroom discussions about readings and/or class discussions: Each week you will initiate and/or respond to discussions on EEDS.

Mock Lesson and Self-critique. On one occasion (see schedule) you will teach a 30-minute lesson, one involving the use of technology OR the use of manipulatives in teaching geometry/measurement concepts. Your lesson should contain all of the components and meet the criteria as indicated on the attached Lesson Plan Feedback form. You will need to hand in one hard copy of your lesson (in its entirety), along with your self-critique to me, and should post an electronic version of the lesson on EEDS for your peers. We will evaluate and discuss your lesson based on the feedback form.

Cartoon Corner Assignment and Corresponding Critiques. The *Mathematics Teaching in the Middle School* journal has a feature called Cartoon Corner. Use examples from the journal as a model for this assignment: Find a cartoon, and write corresponding questions. The corresponding questions need to address geometry/measurement concepts and should require higher order thinking. Make three copies of this assignment and bring them to class on the due date. You will evaluate two other peer-developed cartoon corners - these evaluations are due the following week.

In the News Assignment and Corresponding Critiques. Examples of this assignment are provided on EEDS. Find an article in a newspaper or magazine and write corresponding questions that address geometric/measurement concepts and require higher order thinking. Make three copies of this assignment and bring them to class on the due date. You will evaluate two other peer-developed in-the news assignments - these evaluations are due the following week.

van Hiele Assignment and Corresponding Critiques: Provide your study tool for the van Hiele levels. Also provide an activity that would be appropriate for students at different levels (at least two). Describe how a student at each level would approach the problem. Make three copies of this assignment and bring them to class on the due date. You will evaluate two other peer-developed activities - these evaluations are due the following week.

Collection of Professional Resources/Articles You will create this throughout the course. You can organize it in any way you want; it should consist of the activities/readings we have used in class PLUS whatever other materials you have that are relevant to teaching Geometry. At a minimum, your binder should have:

- **A table of contents** with corresponding tabs for quick reference
- **A van Hiele section.** This section will include
  - Your (modified) study tool for understanding the van Hiele levels
  - The assigned readings about the van Hiele model
  - Additional articles you may have located regarding the van Hiele model
- **Assigned readings.** Include your reflection (see above), if it was assigned for that reading.
- **Supplementary articles:** Include at least one article that addresses the topics listed above. As with the assigned readings, each article should be accompanied by a reflection.
- **Your mock lesson:** this should be modified, based on your implementation and feedback received
- **A collection of 10 geometry/measurement favorite activities** - write a one page reflection describing why you selected these activities and how you see yourself using them.
- **Identify a video** - from learner.org that we did not view. Write a paragraph for why future classes should view this video

Professional Attributes - It is department policy to evaluate students on professional attributes (see attached evaluation form).

(Tentative) Daily Outline

Day 1	• Introductions/Course Syllabus • NCTM and the "Big Ideas" of Geometry: Shape, Location, Transformations, and Visualization • The van Hiele Levels • Roping in Quadrilaterals • Geodee's Sorting Scheme (Begin Word Wall) Homework: 1) Read chapters 1&2 of Fuys, D. Geddes, D., & Tischler, R. (1988). 2) Read Crowley, M. L. *The van Hiele Model of the Development of Geometric Thought.* 3) Malloy, C. (2002). *The van Hiele Framework* 4) Create a study tool that will help you understand the van Hiele levels and the five phases for progressing from one level to the next. Bring this study tool class next week.

Day 2	• van Hiele • Lesson critique • Where are we now? • Constructing Geometric Figures in Coordinate Space Homework: 1) Read/study pp. 58 - 71 of Fuys, D. Geddes, D., & Tischler, R. (1988) - modify your van Hiele study tool as needed 2) Read Sharp, J. M. & Holberg, K. B. (2001). And then there was Luke: The geometric thinking of a young mathematician. *Teaching Children Mathematics, 3,* 432-439. - submit a reflection to EASS 3) Malloy, C. E. (1999). Reflections on practice: Perimeter and area through the van Hiele model. *Mathematics Teaching in the Middle School, 5,* 87-90. 4) View **5. The Largest Container** Seventh- and eighth-grade students work on geometry and measurement as they attempt to create the largest container from a single sheet of paper. At http://learner.org/resources/series33.html - respond to the questions at the end of the video; submit to EASS

Day 3	• Sharp, J. M. & Holberg, K. B. (2001) • Malloy, C • Video • Geometer Sketchpad and other technologies - Moyer and Bolyard • Mathematical Goat Homework: 1) Skim: Moyer, P.S. & Bolyard, J. J.. Exploring representation in the middle grades. *Austrailan Mathematics Teacher, 58*(1), pp. 19-25. 2) Read articles from classmates 3) Read Van de Walle (2004). Ch 19 Developing Measurement Concepts - submit a reflection through EASS
Day 4	• 30 - minute Geometry quiz • Van de Walle • Student articles • Mock Lessons • Activity Homework: 1) Read Scanlon, R. M. (2003) - submit a reflection through EASS 2) Review the K-12 geometry/measurement TEKS at http://www.tea.state.tx.us/teks/index.html 3) Review various TAKS exams at http://www.tea.state.tx.us/student.assessment/resources/release/#pdf 4) Read articles from classmates 5) Cartoon Corner assignment due next week

Day 5	• Student articles • Scanlon (2003). • K-12 Geometry/Measurement TEKS analysis, poster session and discussion • TAKS item analysis • Mock Lessons Homework: 1) Read articles from classmates 2) Read Giganti, P. & Cittadino, M. J. (1990). The art of tessellation. *Arithmetic Teacher,37,* 6-16. - submit reflection through EASS 3) Critique of cartoon corners due next week

Day 6	• Giganti, P. & Cittadino, M. J. (1990) • Student articles • Mock Lessons • Activity Homework: 1) Read articles from classmates 2) Olson, A. T. (1975). Conic Sections. *Mathematics through Paper-folding* 3) View video: **4. Building Viewpoints** Seventh-graders learn about spatial sense and geometry from a blueprint of ancient buildings. They then create their own three-dimensional models and draw them from different viewpoints. At http://learner.org/resources/series33.html - respond to the questions at the end of the video; submit to EASS

Day 7	• Video • Student articles • Mock Lessons • Paper folding (and other technologies) and Geometry Homework: 1) Read articles from classmates 2) Read Keiser, J. M. (2000). The role of definition. *Mathematics Teaching in the Middle School, 5,* 506-11. - submit a reflection to EASS

Day 8	• Keiser, J. M. (2000). • Student articles • Mock Lessons • Activity (Angle Measure) Homework: 1) Read articles from classmates 2) View video: **9. Finding Proof** Students are introduced to the historical context of proofs and to Greek mathematician Thales, who sought proof for mathematical conclusions. At http://learner.org/resources/series34.html - respond to the questions at the end of the video; submit to EASS 3) Pohl, V. (1987). Visualizing three dimensions by constructing polyhedra. *Learning and teaching geometry, K-12.* Yearbook of the National Council of Teachers of Mathematics, pp. 144-54. 4) In the News assignment due next week

Day 9	• 30 - minute Geometry quiz • Video • Pohl, V. (1987). • Student articles • Mock Lessons Homework: 1) Read articles from classmates 2) Read Friedlander, A. & Lappan, G. (1987). Similarity: Investigations at the Middle Grades Level. *Learning and Teaching Geometry,* Yearbook of the National Council of Teachers of Mathematics, pp. 136-43 3) Schifter, D. (1999). Learning Geometry: Some insights drawn from teacher writing. *Teaching Children Mathematics, 5,* 360-66. - submit a reflection to EASS 4) Critiques of in the news assignment due next week

Day 10	• Friedlander, A. & Lappan, G. (1987). • Schifter, D. (1999). • Student articles • Mock Lessons Homework: 1) Read articles from classmates 2) Usnick, V. E., Lamphere, P. M. & Bright, G. W. (1992). A generalized area formula. *Mathematics Teacher, 85,* 752-54 3) **6. Staircase Problem** Students are challenged to identify a pattern and then find a rule that determines the pattern. At http://learner.org/resources/series34.html - respond to the questions at the end of the video; submit to EASS

Day 11	• Usnick, V. E., Lamphere, P. M. & Bright, G. W. (1992). • Student articles • Video • Mock Lessons • Activity (Area Formulas) Homework: 1) Read articles from classmates 2) Read Lobato, J. & Thanheiser, e. (2002). Developing understanding of ratio-as-measure as a foundation for slope. *Making Sense of Fractions,*

	Ratios and Proportions. Yearbook of the National Council of Teachers of Mathematics, pp. 162-75. - submit a reflection to EASS 3) Van Hiele assignment due next week
Day 12	• Student articles • Mock Lessons • Lobato, J. & Thanheiser, e. (2002). • Viewing Tube Activity Homework: 1) Read Wilson, M. R. & Shealy, B. E. (1995). Experiencing Functional Relationships with a Viewing Tube. *Connecting Mathematics Across the Curriculum.* Yearbook of the National Council of Teachers of Mathematics, pp. 219-224 2) **8. Properties of Parallelograms** Geometry from a synthetic perspective and mathematical structure are the focus of this program where students create parallelograms. Students are encouraged to use mathematical vocabulary as they explain how their work illustrates the properties of a parallelogram. At http://learner.org/resources/series34.html - respond to the questions at the end of the video; submit to EASS
Day 13	• 30 - minute Geometry quiz • Viewing Tube Activity continued • Activity Homework: 1) Read Moskal, B. M. (2000). Understanding student responses to open-ended tasks. *Mathematics Teaching in the Middle School, 5,* 500-505. 2) **10. Exploring Congruence** Students focus on geometry from a synthetic perspective and mathematical structure as they draw triangles using specific measurements. At http://learner.org/resources/series34.html - respond to the questions at the end of the video; submit to EASS
Day 14	• Moskal, B. M. (2000) • Video • Activity • Activity
Day 15	Course wrap up

Reading List

All of these readings are either available through the Navigation Series or will be posted on EEDS

Crowley, M. L. *The van Hiele Model of the Development of Geometric Thought.*

Friedlander, A. & Lappan, G. (1987). Similarity: Investigations at the Middle Grades Level. *Learning and Teaching Geometry,* Yearbook of the National Council of Teachers of Mathematics, pp. 136-43

Fuys, D. Geddes, D., & Tischler, R. (1988). The van Hiele model of thinking in geometry among adolescents. *Journal for Research in Mathematics Education. Monograph, Vol. 3,* 1-196. (Only Chapters 1&2 and pp. 58-71) - available on EEDS

Giganti, P. & Cittadino, M. J. (1990). The art of tessellation. *Arithmetic Teacher,37,* 6-16.

Keiser, J. M. (2000). The role of definition. *Mathematics Teaching in the Middle School, 5,* 506-11.

Lobato, J. & Thanheiser, e. (2002). Developing understanding of ratio-as-measure as a foundation for slope. *Making Sense of Fractions, Ratios and Proportions.* Yearbook of the National Council of Teachers of Mathematics, pp. 162-75.

Malloy, C. E. (1999). Reflections on practice: Perimeter and area through the van Hiele model. *Mathematics Teaching in the Middle School, 5,* 87-90.

Malloy, C. (2002). The van Hiele Framework.

Moskal, B. M. (2000). Understanding student responses to open-ended tasks. *Mathematics Teaching in the Middle School, 5,* 500-505.

Moyer, P.S. & Bolyard, J. J. (????). Exploring representation in the middle grades. *Austrailan Mathematics Teacher, 58*(1), pp. 19-25.

Olson, A. T. (1975). Conic Sections. *Mathematics through Paper-folding,* p. 33

Pohl, V. (1987). Visualizing three dimensions by constructing polyhedra. *Learning and teaching geometry, K-12.* Yearbook of the National Council of Teachers of Mathematics, pp. 144-54.

Sharp, J. M. & Holberg, K. B. (2001). And then there was Luke: The geometric thinking of a young mathematician. *Teaching Children Mathematics, 3,* 432-439.

Scanlon, R. M. (2003). Sweet-tooth geometry. *Mathematics Teaching in the Middle School, 8,* 466-469.

Schifter, D. (1999). Learning Geometry: Some insights drawn from teacher writing. *Teaching Children Mathematics, 5,* 360-66.

Usnick, V. E., Lamphere, P. M. & Bright, G. W. (1992). A generalized area formula. *Mathematics Teacher, 85,* 752-54

Van de Walle, J. A. (2004). *Elementary and Middle School Mathematics: Teaching Developmentally, 5th edition.* Boston, MA: Pearson Education. (Chapter 19: Developing Measurement Concepts).

Wilson, M. R. & Shealy, B. E. (1995). Experiencing Functional Relationships with a Viewing Tube. *Connecting Mathematics Across the Curriculum.* Yearbook of the National Council of Teachers of Mathematics, pp. 219-224

Lead Discussant Feedback Form (NCTM article)

Lead Discussant's name: _____ Date _____Reading: _____
Your name: _____

The purpose of this form is to provide constructive feedback to the lead discussant about the article chosen and his or her role as a facilitator. Use the following statements to guide your thinking.

The article you chose was relevant to teaching geometry/measurement concepts.

The structure of the discussion allowed everyone to participate.

The discussion brought out ideas about teaching that I had not thought about before.

Other comments:

An overall strength involving your role as lead discussant was:

Something to work on:

Lesson Plan Feedback Form

Lesson by: _____
Evaluation by: _____

Components:

I – incomplete (Not provided or I have questions),
S – satisfactory (Met requirements)

	LESSON OVERVIEW
	Learning objectives clearly stated
	Relevant TEKS listed
	Materials needed
	INSTRUCTOR'S NOTES
	Introductory activity is provided
	Intended lesson structure (individual work; small-group work; whole-class discussion ...) is provided
	Intended examples and solutions are provided
	Appropriate assessment strategies are indicated
	Documents that would be used to create overhead transparencies, if applicable, are provided
	A corresponding homework assignment, if applicable, is provided
	Items pertinent to the lesson that might be uses on a unit test are provided
	Relevant TAKS items are provided
	Handouts that the students will receive are provided
	Resulting student products are provided, if applicable (posters, word wall items, ...

Criteria:

1. Examine the introductory activity. Place an X on the line below that best describes your thoughts regarding the activity.

Intro activity was effective in initiating students into the lesson _____ Intro activity was not effective in initiating students into the lesson

Rationale: _____
_____

2. Place an X on the line below that best describes your thinking in terms of student engagement of the lesson provided.

Instructional strategies support student engagement _____ Instructional strategies do not support student engagement

Rationale: _____
_____

3. Place an X on the line below that best describes your thinking in terms of the use of manipulatives and/or technology

The use of manipulatives and/or technology was appropriate for the intended objectives _____ The use of manipulatives and/or technology was not appropriate for the intended objectives

Rationale: _____
_____

4. Place an X on the line below that best describes your thinking in terms of the presence of opportunities for higher order thinking,

Opportunities for higher order thinking were evident in the lesson _____ Opportunities for higher order thinking were not evident in the lesson.

Rationale: _____
_____

5. Place an X on the line below that best describes your thinking in terms of opportunities for students to communicate mathematical thinking to peers and the teacher.

Opportunities for students to communicate were evident in the lesson _____ Opportunities for students to communicate were not evident in the lesson

Rationale: _____
_____

6. Place an X on the line below that best describes your thinking in terms of opportunities for students to make connections between different representations concepts.

Opportunities for students to make connections were evident in the lesson _____ Opportunities for students to make connections were not evident in the lesson

Rationale: _____

_____

7. Place an X on the line below that best describes your thinking in terms of the lesson "wrap-up"

Instructional strategies were effective in "wrapping up" the lesson _____ Instructional strategies were not effective in "wrapping up" the lesson.

Rationale: _____

_____

8. Place an X on the line below that best describes your thinking in terms of the homework assignment, if applicable.

The hw assignment was appropriate for this lesson. _____ The hw assignment was not appropriate for this lesson

Rationale: _____

_____

9. Place an X on the line below to indicate your rating of the unit exam items.

Mostly conceptual. Students must understand material to do well. _____ Mostly procedural or rule-based. Students need to know rules to do well.

Rationale: _____

_____

10. This lesson meets the needs of diverse learners because _____

_____

_____

Cartoon Corner Feedback

Author's name _____
Your Name _____

The questions address geometry/measurement concepts and require higher order thinking:

(No)1 2 3 4 5 6 7 8 9 10(yes)

Rationale _____
_____

Comments: Describe the context in which you would use this cartoon corner (grade level, as a homework, warm up, test item, etc) or explain why you would not use this cartoon corner with students:

_____
_____
_____

In the News Feedback

Author's name _____
Your Name _____

The questions address geometry/measurement concepts and require higher order thinking:

(No)1 2 3 4 5 6 7 8 9 10(yes)

Rationale _____
_____

Comments: Describe the context in which you would use this news article (grade level, as a homework, warm up, test item, etc) or explain why you would not use this news article with students: _____
_____
_____
_____

Van Hiele Assignment Feedback

Author's name _____

Your Name _____

1) Students at different van Hiele levels could engage in this activity: Yes or No

Rationale _____

_____

2) I agree with the levels you identified for this activity: Yes or No

Rationale _____

_____

3) I agree with your descriptions regarding how students at different levels would approach this activity

Rationale _____

_____

Professional Attributes Evaluation (see below for scale)

- **Demeanor**: The student demonstrated positive attitudes in interactions with teachers at UH and the Quest2 school site.
- **Demeanor**: The student demonstrated positive attitudes in interactions with their peers at UH and the Quest2 school site.
- **Demeanor**: The student demonstrated positive attitudes in interactions with the UH professor, the mentor teacher, UH advisors and graduate assistants.
- **Demeanor**: The student demonstrated positive attitudes in interactions with children.
- **Responsibility**: The student completed assigned tasks in a responsible manner.
- **Maturity**: The student displayed maturity and pose in task completion and human-human interactions.
- **Cooperation**: The student displayed a positive willingness to work with peers, site teachers, and faculty.
- **Flexibility**: The student displayed a willingness and ability to adapt to changes in events, conditions, activities, and tasks.
- **Appearance**: The student's dress was appropriate and professional.
- **Attendance and Punctuality**: The student was regular and punctual.
- **Initiative**: The student displayed independence in starting and completing activities, products, and tasks.
- **Patience**: The student displayed an ability to be patient in activities and/or in human-human interactions.
- **Tactfulness**: The student displayed the ability to recognize and compensate for the feelings and self-esteem of others.
- **Enthusiasm**: The student displayed energy and enthusiasm for the Quest activities.
- **Reflectivity**: The student displayed the ability to reflect, evaluating his/her own experience in terms of process and product and resulting in personal and/or professional growth.

For example ...

PROFESSIONAL ATTRIBUTES FOR _____