Day 2
Math Is Everywhere!

Robeson Community College
Lumberton, NC
May 16th & 17th, 2011

Deann Leoni

Edmonds Community College – Lynnwood, WA
Mathematics Across the Community College Curriculum (MAC³)

DAY 2 Tentative Schedule

- 9:00 -10:15 Work – more designing
  - Pick up from where you left off yesterday
  - Choose a specific assignment to work on together
  - New? See me!
- 10:15-10:30 Break
- 10:30-12:00 Assessing Quantitative Reasoning
- 12:00 – 1:15 Lunch & discussions
- 1:15 – 2:30 More Team Work Time (& prepare presentation)
- 2:30 –2:45 Break
- 2:45– 3:15 Implementation & Challenges
- 3:15 – 4:00 Day 2 Reporting Out, Wrap-up, evaluations

Expectations for Day 2 Reporting

- Each group will do a 2-3 minute presentation on the work they have done today
  - Creating assignments, handouts, assessments
  - Can use my laptop to project (see me for flashdrive if needed)
  - Also share a highlight of your project and/or what you are most excited about as you leave the workshop.

Feedback Cards Responses

2. What do you still need to know in order to implement your MAC project?
    1. How to Assess

3. What questions do you still have about today's topics?

1. How many colleges in North Carolina and nationwide have a MAC project?
    1. See "Current Practices in Quantitative Literacy" Publication (2006)
2. How can we get non-math faculty to buy in?
3. What should I call my handouts so they are not scary to students (e.g. not "statistics")

Post-break Question:

- What assessment methods do you typically use in your courses?
  - Think about this and then share your answer with your partner(s)

CASE IN POINT: Initial Barriers

Erik's Coverage Issue

Monday	Tuesday	Wednesday	Thursday	Friday
Sept. 23 **Assigned:** Investigation #1 Introduction	24 **Due:** Invest. #1 **A:** Hw#1 (1.1/2) 1.1 (Grids/lines)	25 1.2- Calc wrkshp	26 1.3- Ratio/Slope	27 **D:** Hw1 **A:** Hw2 (1.3, Inv2) 1.3, **Pretest**
30 Inv2, 1.4- Slp-int	Oct. 1 **D:** Hw2 **A:** Hw3 (1.4/5) 1.4	2 <*Optional Sec.> 1.5- Regression*	3 1.5 Practice/Hw	4 **D:** Hw3 **A:** Hw4 (1.6, Inv3) 1.6, **Quiz #1**
7 Inv3, 2.1- Grph system	8 **D:** Hw4 **A:** Hw5 (2.1/2) 2.1/2- Systems	9 2.2- Alg. Systems	10 Review	11 **D:** Hw5 **A:** Take-home ex? **Exam I - Lines**
14 2.5- Ineq in 2 var	15 **D:** Take-home?? **A:** Hw6 (2.5, Inv4) 2.5	16 Inv4, 3.1- Solv. Quadr's	17 **D:** Hw6 **A:** Hw7-3.1,Inv5/6 3.1	18 Prof. Devel. Day (No class.)
21 3.2 (Inv's 5 & 6)- Applications	22 **D:** Hw7 **A:** Hw8 (3.3/4) 3.3- Solv by factor	23 3.4- Explore grphs	24 3.3/4- Review, Hw	25 **D:** Hw8 **A:** Hw9 (3.5) 3.5, **Quiz #2**
28 3.5- Cplt. Square	29 **D:** Hw9 **A:** Hw10 (3.6) 3.6- Quadr. Form.	30 3.6	31 Review	Nov. 1 **D:** Hw10 **A:** Hw11 (Inv7) **Exam II – Quads**
4 Inv7, 4.1-Grph Quads	5 **D:** Hw11 **A:** Hw12 (4.1/3) 4.1/3*-Application	6 4.3*/4- Grph soln of Quadr Inequal's	7 4.4-Ineqs/Intervals	8 **D:** Hw12 **A:** Hw13 (4.4) 4.4/5, **Quiz #3**
11 Veteran's Day (No class.)	12 **D:** Hw13 **A:** Hw14(4.5,Inv8) 4.5-Alg. soln of QI	13 Inv8, 5.1- Fns (concpt)	14 5.1- Fn form/notat	15 **D:** Hw14 **A:** Hw15 (5.1) 5.1/2, **Quiz #4**
18 5.2- Fn grph/calc	19 **D:** Hw15 **A:** Hw16 (5.2/3) 5.2/3-Fn classific'n	20 Inv9, Abs value	21 5.4- Dom & Range	22 **D:** Hw16 **A:** Hw17 (5.3/4) 5.6* - Modeling
25 Review	26 **D:** Hw17 **A:**Hw18-Inv10,6.1 **Exam III - Fns**	27 Inv10, 6.1/2- Exp/Roots	28 Thanksgiving (No class.)	29 (No class.)
Dec. 2 6.2/3- Roots, Rat'l Exponents	3 **D:** Hw18 **A:** Hw19 (6.2/3/4) 6.4- Dist. Formula	4 6.5- Simpl. Roots	5 6.5	6 **D:** Hw19 **A:** Hw20 (6.5/6) 6.6- Solv. eqns

Angi's Evaluation Methods

Exit Assessment – Rubric Sample

"P"
Pass

Self-Assessment – The reflective letter demonstrates an awareness of strengths and weaknesses of the portfolio essays, and there may be some analysis. The writer's discussion of the portfolio shows a general understanding of good writing and uses examples from the portfolio to support the claims.

First Priority--Overall Patterns:

Purpose and Audience--The writer's theses and purposes are generally apparent; she or he demonstrates awareness of audience, but may not consistently succeed in establishing credibility or engaging the audience. The writer attempts complexity suitable to a college-level audience.

Topic control--Focus and sense of direction are generally clear.

Organization--The overall plans of the essays are apparent with reasonable beginnings, middles, and ends; some information may be misplaced; some transitions may be unclear or lacking.

Development--Most elements of the theses are supported with sufficient evidence. In most cases, the writer uses specific details, sound logic and appropriate rhetorical techniques to explore the subject. Some points may remain vague.

Responsiveness to the Assignment -- Essays generally meet the expectations set out by the assignments.

Second Priority--Overall Patterns:

Sentence Structure--Most sentences are complete, clear, and correctly structured. For the most part, sentences are logically coherent and demonstrate appropriate use of coordination and subordination.

Mechanics--The portfolio may contain mechanical errors, but the student appears generally capable of handling mechanics, and the meaning is still clear.

Diction--Accurate but relatively conventional word choice. The writer demonstrates control of standard written English.

Voice--The tone and distance are generally appropriate to the content, contexts, and audiences.

Economy--Clear but occasionally redundant and/or obvious; some deadwood or digression.

Assessment

- Grade for the course – does the math "count"?
- Program or Degree Assessment
- Rubrics
- Self Assessment

Rubrics

Criteria	*1 Unacceptable*	*2 Weak*	*3 Satisfactory*	*4 Excellent*
Understands the problem	**Sufficient evidence is not present** that the student understood key ideas and concepts in the assignment	**Some evidence is present** that the student understood the assignment's key ideas and concepts	**Evidence is present** the student understood the key ideas and concepts in the assignment	**Evidence is present that the student fully understood** the assignment, demonstrating mastery of all concepts and interrelated ideas
Communicates Quantitative Information	**Does not communicate** the quantitative information clearly	Communicates in a manner that indicates only **a partial understanding** of the quantitative information.	**Can communicate** quantitative information in one of the methods mentioned to the right with **only minor** misinterpretations.	**Can communicate fully** quantitative information verbally, numerically, algebraically and or graphically
Extracts quantitative information	**Cannot identify and understand** the quantitative information in various formats	**Partially extracts** quantitative information from various formats	**Can extract and use** quantitative information in one of the methods mentioned to the right with **only minor** misinterpretations.	**Identifies and uses** the information given in various formats such as graphs, tables, geometric

Solves the problem	**Does not demonstrate** the ability to apply a mathematical operation to the problem or understand the mathematical operation presented.	**Partially demonstrates** ability to apply a mathematical operation to the problem or understand the mathematical operation presented.	Demonstrates the ability to **correctly apply** a mathematical operation to the problem or the one presented with only **minor flaws** (ie, calculation errors, or logic)	**Demonstrates the ability to correctly apply to the problem** arithmetic, algebra, geometry, statistics or some other mathematical application or demonstrates an understanding of the mathematical procedure already applied.
Evaluates the results	**Fails to interpret** the findings/reach a conclusion	**Provides an inadequate interpretation** of the findings and **does not reach** a logical solution to the problem	**Provides an adequate interpretation** of the findings and solves the problem	**Provides an adequate interpretation** of the findings by offering alternative solutions, by making correct inferences, or by applying the solutions to real life.

Scores of: (5-8) = 1, (9-12) = 2, (13-16) = 3, (17-20) = 4 Standard: 100% of RCC graduates will score 2 or better and 67% will score 3 or better.

AAC&U
QUANTITATIVE LITERACY VALUE RUBRIC

	Capstone 4	Milestones 3	2
Interpretation *Ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words)*	Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. *For example, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future events.*	Provides accurate explanations of information presented in mathematical forms. *For instance, accurately explains the trend data shown in a graph.*	Provides somewhat accurate ex information presented in mathe but occasionally makes minor e computations or units. *For insta explains trend data shown in a graph miscalculate the slope of the trend lin*
Representation *Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)*	Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding.	Competently converts relevant information into an appropriate and desired mathematical portrayal.	Completes conversion of infor resulting mathematical portraya appropriate or accurate.
Calculation	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Calculations are also presented elegantly (clearly, concisely, etc.)	Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem.	Calculations attempted are eith represent only a portion of the required to comprehensively so
Application / Analysis *Ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis*	Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work.	Uses the quantitative analysis of data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions from this work.	Uses the quantitative analysis of for workmanlike (without inspi ordinary) judgments, drawing p conclusions from this work.
Assumptions *Ability to make and evaluate important assumptions in estimation, modeling, and data analysis*	Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate. Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions.	Explicitly describes assumptions and provides compelling rationale for why assumptions are appropriate.	Explicitly describes assumption
Communication *Expressing quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized)*	Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it with consistently high quality.	Uses quantitative information in connection with the argument or purpose of the work, though data may be presented in a less than completely effective format or some parts of the explication may be uneven.	Uses quantitative information, effectively connect it to the arg of the work.

Others

Bloom's Taxonomy

- ***Knowledge***: arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce state.
- ***Comprehension***: classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate,
- ***Application***: apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write.
- ***Analysis***: analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test.
- ***Synthesis***: arrange, assemble, collect, compose, construct, create, design, develop, formulate, manage, organize, plan, prepare, propose, set up, write.
- ***Evaluation***: appraise, argue, assess, attach, choose compare, defend estimate, judge, predict, rate, core, select, support, value, evaluate.

Self-Assessment of Graphing

Implementing

- Implementation Details Worksheet

1. Break up your goals into small tasks
2. Identify people and work time (specific/general)
3. Identify specific resources
4. Identify perceived challenges

Challenges

- Yours???

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  - Creating assignments, handouts, assessments
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  - Also share a highlight of your project and/or what you are most excited about as you leave the workshop.

In Conclusion . . .

- Questions, comments, concerns?
- Evaluations
- Keep in touch

Deann Leoni dleoni@email.edcc.edu
www.mac3.amatyc.org

Thank you for participating!