Implementation of the Common Vision through the Eyes of the Teaching Practitioner

Welcome to the Webinar! Let’s get to know each other while we wait for the official start.

Please answer the questions below in the “Chat,” located at the bottom of your screen.
❖ switch from panelists to all panelists and attendees

Where are you from? and what attracted you to enroll in this webinar?
Implementation of the Common Vision through the Eyes of the Teaching Practitioner

August 19, 2020

Presenters
Annette Cook, Denise Lujan, Julie Phelps & Nancy Sattler

Sponsored by the National Math Summit
Webinar Recording Policy

❖ AMATYC is recording the webinar

❖ AMATYC retains the right to show it again and to distribute it.

❖ By participating, you are agreeing that your contributions become part of the recording
Housekeeping

- Please make sure that you are muted.
- Open the chat by clicking on chat at the bottom of your screen.
- Click on the arrow to switch from panelists to all panelists and attendees so that everyone will be able to view your comments.
- We will have limited time to address questions. Type your question in the chat. We will save the chat and be able to address questions not answered during the webinar at a later date.
- We expect to have approximately 300 attendees in this webinar. Be open to new ideas and kind in their comments to others.
Upcoming 4th National Mathematics Summit
June 14 & 15, 2021
Westgate Resort and Casino
Las Vegas, NV

Planning Leadership Team
Annette Cook, Paul Nolting, Julie Phelps and Nancy Sattler

Steering Committee
Christina Cobb and Denise Lujan (NOSS)
Rochelle Beatty, Kathryn Van Wagoner, and Laura Watkins (AMATYC)
Connie Richardson and Paula Talley (Charles A. Dana Center)
Ann Edwards (Carnegie Math Pathways/WestEd)
April Strom (MAA)
Implementation of the Common Vision through the Eyes of the Teaching Practitioner

August 19, 2020

Presenters

Annette Cook, Denise Lujan, Julie Phelps & Nancy Sattler

Sponsored by the National Math Summit
National Math Summit History

• First Summit held in 2013, Anaheim, CA pre-conference to AMATYC
• Second Summit held in 2016, Anaheim, CA pre-conference to NADE
• Third Summit held in 2018, Orlando, FL pre-conference to AMATYC
• Collaborative of
  • American Mathematical Association of Two-Year Colleges (AMATYC),
  • National Organization for Student Success (NOSS, formerly NADE),
  • Carnegie Math Pathways,
  • Charles A. Dana Center,
  • Mathematical Association of America (MAA), and
  • Paul Nolting.
Common Vision Project

Document: A Common Vision for Undergraduate Mathematical Sciences Programs in 2025

Collaborative of

• American Mathematical Association of Two-Year Colleges (AMATYC),
• American Mathematical Society (AMS),
• American Statistical Association (ASA),
• Mathematical Association of America (MAA), and
• Society for Industrial and Applied Mathematics (SIAM).
The Status Quo is Unacceptable

CALL TO ACTION

• update curricula,

• articulate clear pathways between curricula driven by changes at the K–12 level and the first courses students take in college,

• scale up the use of evidence-based pedagogical methods,

• find ways to remove barriers facing students at critical transition points (e.g., placement, transfer), and

• establish stronger connections with other disciplines.
Today’s Focus

• scale up the use of evidence-based pedagogical methods
• find ways to remove barriers facing students at critical transition points (e.g., placement, transfer)
Evidenced-Based Pedagogical Strategies

Nancy Sattler- Terra Community College & Walden University
nsattler@terra.edu or nancyjoan.sattler@mail.waldenu.edu

Julie Phelps - Valencia College
jphelps@valenciacollege.edu
Evidence-based practices

- Student collaboration (use of groups)
- Metacognition (awareness of one’s own thought process)
- Problem Representation (use of multiple representations and strategies)
- Application (project-based learning)
- Understanding Student Thinking (formative assessment)
- Computer Based Learning (self-based instruction; use of technology)
- Use of Zoom technology for synchronous online learning
- Use of Instructional Tools like Desmos online classroom
Student Collaboration

**Assignment:** Try your hand at creating a video with another student over a mathematics concept covered the past two weeks. An example could be a video similar to the quadratic rap that can be found at [http://www.youtube.com/watch?v=dBtUetKJzOU](http://www.youtube.com/watch?v=dBtUetKJzOU). Share your video with the class in the dropbox provided here. Click on "Attachments" to upload your file or place your file in google docs and provide the link in the dropbox.
**Metacognition: Student Self-Assessment**

**Assignment:** Make corrections on your test and complete this grid documenting your errors.

<table>
<thead>
<tr>
<th>Error</th>
<th>Problem #</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect Addition/Subtraction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incorrect Multiplication/Division</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used Wrong Operation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dropped a Negative Sign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did Not Distribute Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not Distribute Negative One</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copied Incorrectly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used Wrong Slope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mistake in Formula</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did Not Follow Directions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used Wrong Least Common Denominator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did Not Use Requested Method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incomplete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forgot the O.I. in F.O.I.L.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancelled Incorrectly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factored Incorrectly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Indicate)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assignment: Summarize sections 6.1 and 6.2 of your book. Explain how each section depended on previous sections of your book. Choose a problem to work from the assigned homework for each section assigned and show the solution. Submit your work as a WORD file or a pdf file through the dropbox. The grade that you will receive for this assignment will be dependent on your written summary and the complexity of the problem you have submitted.
3.1 Composite Functions

This section uses a lot of concepts that have occurred in previous sections, like solving word problems that include two functions. A composite function is two equations that plug into each other, using \((f(g))(x)\) also written \(f \circ g\). We are asked to find Domains in this section which have been discussed in multiple of the previous sections, to find the domain, set the denominator of the equation to 0, you also can’t have any negative numbers under square roots. A lot of the section is just manipulating equations using algebraic fundamentals.

In Problems 23–38, for the given functions \(f\) and \(g\), find:

(a) \(f \circ g\)  
(b) \(g \circ f\)  
(c) \(f \circ f\)  
(d) \(g \circ g\)

35. \(f(x) = x^2 + 1; \; g(x) = \sqrt{x - 1}\)

\(f(x) = x^2 + 1 \quad g(x) = \text{square root of } x - 1\)

\(F \circ g = \text{square root of } (x - 1)^2 + 1 = x - 1 + 1 = x\) domain \((-\infty, \infty)\)

\(G \circ f = \text{square root of } x^2 + 1 - 1\) domain \((-\infty, \infty)\)

\(F \circ f = \left(x^2 + 1\right)^2 + 1 = x^4 + 2x^2 + 2\) domain \((-\infty, \infty)\)

\(G \circ G = \text{square root another square root under } x - 1\) and the -1 is under one square root domain 2 \(\leq x\)
6.2 One-to One Functions; Inverse Functions

A one-to-one function is a function where every x has just one y. There are four different ways to find a one-to-one function graphing, a map, a set of ordered pairs, or an equation. A function has to pass the horizontal line test to be a one-to-one function. Inverse functions build on the last section of Composite Functions, instead of plugging in equations to each other, plug in y for x and solve for y, then find the domain in the same way as if they were a composite function. The domain of one is the range of its inverse and it works the other way around too.

53. \( f(x) = 4x + 2 \)

\[ f(x) = 4x+2 \quad 4y+2=x \quad y=(x-2)/4 \quad f^{-1}(x) = (x-2)/4 \]

\[ f(f^{-1})(x) = 4(x-2)/4 + 2 = x - 2 + 2 = x \] so it is inverse because they both equal x
Application/Understanding Student Thinking

Assessment:

Show how trigonometry can be used in your job or at home by creating and solving two word problems, one using the sine law and one using the cosine law.
Computer Based Learning

❖ Use of My Math Lab for Homework

4.5.101 Question is graded. Grade: 0 of 5 pts

How much time will be needed for $30,000 to grow to $34,484.23 if deposited at 4% compounded quarterly? For calculating use the formula $A = P \left(1 + \frac{r}{k}\right)^{kt}$.

The amount $30,000 will grow to $34,484.23 in 3.5 year(s). (Do not round until the final answer. Then round to the nearest tenth as needed.)

Use the formula $A = P \left(1 + \frac{r}{k}\right)^{kt}$, where $P$ is the principal, $r$ is the interest rate in decimal form, $k$ is the number of times the interest is compounded per year, and $t$ is the number of years the money is invested. Check your calculations carefully and round only at the last step.
Zoom Technology for synchronous online sessions

❖ Julie’s Awesome Mathematics Sessions (JAM)
  ➢ What does it look like?
  ➢ Zoom Tools use
    ■ Welcome slide as participants arrive
    ■ Zoom breakout rooms, whiteboard and/or share screen
    ■ Annotate features
    ■ Instructor cloning
Welcome!

In the meantime...

Mute yourself
Minimize background noise when you are not speaking

Chat
Use the Zoom group chat to ask questions

Test Audio
Test Speaker & Microphone

Zoom Etiquette

★ Minimize distractions in your environment
   Easier to focus

★ Be mindful of background noise
   When unmuted, avoid activities that create additional noise

★ Participate!
   Ask questions in the chat and turn on your camera to help us build a sense of community
Welcome Slide (option 2)

Welcome! Let’s get to know each other while we wait for the official start.
Please answer the questions below in the “Chat,” located at the bottom of your screen.
❖ switch from panelists to all panelists and attendees

When we are able to travel again, where would you like to go?
ZoomTools

- Zoom breakout rooms, whiteboard and/or share screen
- Annotate Features
- Instructor Cloning
ZoomTools

- Zoom breakout rooms, whiteboard and/or share screen
- Annotate Features
- Instructor Cloning
Desmos Modeling Tools

- Desmos Lessons (can be done synchronously and asynchronously)
  - Examples…
    - Desmos Classroom Activities
Removing Barriers that Prevent Student Success at Critical Transition Points

Denise Lujan - UTEP, NOSS President - dlujan@thenoss.org
Annette Cook - Shelton State CC (retired) and NOSS Executive Asst. & Conference Manager - acook@thenoss.org

Poll question coming up!
Student Success & Retention

❖ “Recent trends have seen retention increasingly recognized as the responsibility of all educators on campus—faculty and staff—even when there are specialized staff members solely dedicated to improving retention on campus” (Berger et al., 2012, p.9).

❖ “The best teachers believe that learning involves both personal and intellectual development and that neither the ability to think nor the qualities of being a mature human are immutable. People can change, and those changes represent true learning” (Bain, 2004, p. 83).
Student Success & Retention

❖ “Retention is used as a key indicator of institutional effectiveness” (Seidman, 2012, p. 28).
❖ “What happens in our classrooms is not the only factor to consider, but it is one that has a significant impact on students’ retention, persistence, and success at a college or university” (Gabriel, 2018, p. 9).
Critical Transition Points for Students

❖ Placement
❖ Advising
❖ Registration dates
❖ Financial Aid dates and requirements
❖ Drop dates
❖ Knowledge of transfer requirements
❖ Traumatic life experiences
Sample Barriers

- Assumptions that students (and instructors at times) understand campus lingo
- Institutional personnel working in silos
- Lack of student engagement and belonging
Possible Solutions for Removing Barriers

❖ Barrier: Assumptions that students (and instructors at times) understand campus lingo
❖ Possible Solution: Teaching students our lingo
  ➢ “One surprising barrier to college success: Dense higher education lingo” (The Hechinger Report: Covering Innovation and Inequality in Education, June 14, 2019)
❖ Examples: College Knowledge
  ➢ Students (see handout; academic probation/suspension, etc.)
  ➢ Instructors (SAP: Satisfactory Academic Progress, Veteran’s benefits, tutoring information, etc.)
Possible Solutions for Removing Barriers

❖ Barrier: Institutional personnel working in silos
❖ Possible Solution: Collaboration and responsibility to share information across departments
  ➢ “Making meaningful change involves multiple stakeholders working together.” (AMATYC’s IMPACT, p. 103.)
❖ Examples: Community Resource list, quarterly meetings with academic department and student support staff
Possible Solutions for Removing Barriers

❖ Barrier: Lack of student engagement and belonging
❖ Possible Solution: Agency/community/belonging
  ➢ “...reasons for persisting usually included one common element: a strong, early connection to someone at the college. Students generally benefit from having a personal network for academic and social support.” (AMATYC’s IMPACT, p. 58)
❖ Examples: Agency/community/belonging
  ➢ Purposely creating your course to include engagement activities throughout
  ➢ Communication between instructors and advisors
Our Challenge to You

❖ Is your college too worried about having college-ready students instead of being a student-ready college? (AMATYC’s IMPACT, p. 104)

❖ The “sink or swim” and “right to fail” philosophies must go. To remove barriers, we must believe that students have the right to succeed.

❖ “Stimulating student success requires the entire college to work together…” (AMATYC’s IMPACT, p. 102)

“Be the change you wish to see in the world.”

--Mahatma Gandhi
Resources

Questions??
September 18, 2 p.m. ET
Tools and Strategies for Engaging Developmental Mathematics Students in Online and Virtual Environments
Presenters: Christina Cobb and Kathryn Van Wagoner

October 21, 2 p.m. ET
Advancing equity in mathematics pathways in the era of the pandemic
Presenters: Connie Richardson, Ann Edwards & Helen Burn

November: Professional Development & Department Issues in a Pandemic
January: Student Engagement
Nancy Sattler- Terra Community College & Walden University
nsattler@terra.edu or nancyjoan.sattler@mail.waldenu.edu

Julie Phelps - Valencia College jphelps@valenciacollege.edu

Denise Lujan - UTEP, NOSS President - dlujan@thenoss.org

Annette Cook - Shelton State CC (retired) and NOSS Executive Asst. & Conference Manager - acook@thenoss.org

- Webinar recording and reference links will be emailed to all participants.
- Go to my.amatyc.org to see our library on this topic, engage in conversations and much more.

The National Mathematics Summit is sponsored by AMATYC, NOSS, and Paul Nolting. Supporting partners include: Charles A. Dana Center, Carnegie Math Pathways/WestEd, and the MAA.