

Small group: Nesrin Cengiz, Hala Ghousseini, Angie Sutter

Ideas from brainstorm related to inverse trig functions prompt

Unit circle might be useful in thinking about inverse trig functions

How might inverse be illustrated via the unit circle?

Are trig identities a possibility?

Trig functions manipulated in certain ways (e.g., functions of $\theta - \pi/2$)

What is the meaning of inverse of a function?

Reflection over $y=x$ (transformations)

LARGE GROUP DISCUSSION OF FOCI for the inverse trig functions prompt

(I did not capture the list of potential foci that was written on the whiteboard.)

JimFey- What are the different ways in which inverse is used in mathematics?

AngieSutter- Ideas related to trig: Unit circle, trig identities, graphs of trig fcn's, phase shift, ...

GeoffBirky -What does the -1 mean?

CosFi - Sine squared is multiplicative; sine to negative one is in the functional domain

KathyH - What's the sort of object the inverse is operating on?

BradFindell - f^2 of x vs. f of x^2

CosFi- Graphs, 1-1, inverses and one-to-oneness

BradFindell- Inverse and identity

JimFey- right triangle trig vs functions of real variables; in right triangle view it's all about ratios and reciprocal is a very natural thing to arise

MarkThames - Composition

JeremyKilpatrick - Metacomment about foci being elaborated more than the list of topics on the board

BradFindell- Focus as mathematical exposition that a teacher could give to another teacher; not to give to a student; this collection (on the board) of mathematical points might be crafted into several foci

GlendaLappan- Is there a single focus that weaves together all of these mathematical ideas? What are the bounds on this?

??- Trying to get at the mathematical essence of what is in the prompt?

MarkThames- Some of these are important pedagogically; others are more remote pedagogically. We might move into math that doesn't maintain the pedagogical connection. Not a Q of straying into pedagogy; math for a pedagogical purpose. Not just what is pedagogical knowledge.

JanineRemillard- In relation to how many are needed: Some things would keep coming up; each of these prompts has a "pivotal focus" that is critical to what is interesting about that prompt. There also are "surrounding" mathematical foci that are not the "pivotal" focus related to this prompt.

IrisWeiss- covering the terrain vs. getting enough to direct the development of the framework

We should stop when we have categories of the situation without writing the complete commentary.

"Covering the domain" vs. "being generative of the framework".

Once you have a framework, the commentary will relate to the framework

BradFindell-As we write the foci and commentary, we unpack the ideas and uncover ideas that we hadn't realized were there.

IrisWeiss- What's the cycle? How far do you go till you develop the framework?

[SMALL GROUP generation of prompts]

[SMALL GROUP discussion of lenses]

LARGE GROUP DISCUSSION OF LENSES FOR FRAMEWORK:

IrisWeiss- It would be useful to be able to search a matrix by descriptors

Use the matrix as illustrative (you wouldn't try to fill the matrix completely)

Using objects as the initial entry point would be more acceptable to mathematicians

KathyHeid-Three approaches all in one database

RoseZbiek- Different structure for different audiences?

IrisWeiss- These are the options; one also needs a set of values to go with it (to allow one to choose which are important)

MarkThames- Alternative lens: Tying the uses of this to pedagogical purposes

Metaphor of applied mathematics – problems in the field of application define the field

What are the major mathematical problems of teaching? (mathematical tasks of teaching), for example, Error analysis, generating a definition for a particular audience, ...

We don't have suggestions for the "important" group of mathematical problems for teaching.

TerryGrant-How is that from teachers' mathematical activities?

IrisWeiss- We don't have the universe of those (referring to the mathematical activities for teaching slide from our presentation). Straying too far from the uses of this makes it seem unauthentic.

LARGE GROUP RE: CONTACTS FOR PROMPTS:

IrisWeiss- PD developers Driscoll, Mumme,
PD videos

JimFey- Assessment (inspect students' responses to open-ended responses)
AP calc, AP stat, TIMSS,

KathyHeid- Are there teachers who might be alert to this?

JimFey- Field-test teachers in CorePlus (focus on students' difficulties)

JeremyKilpatrick- Curriculum Center?

Dan Chazan and Patricio Herbst talk to teachers about what can be turned into animations.

IrisWeiss- MSP net (Asking mathematicians for examples of "whatever we want")

Email to Iris to get access info for MSP Net

Jim Lewis, Bill Haver, ... might be mathematicians who actively think about working with teachers.

Park City Math Institute, Gail Burrill
Sharon Senk (int'l studies PTEDS, TEDS study)

JeremyKilpatrick- Where should we be headed with our work?

JimFey- Write a book as an alternative to the Usiskin/Stanley book? This is different from that, but is an advanced perspective for teaching, that would be useful in working with PSTs.

IrisWeiss- Try out the lenses one at a time with different audiences

MarkThames- Articulating more fully how you're working methodologically.

Coordination of the mathematical perspective and the teaching perspective. Who should we invite to help us? How are you maintaining the coordination of those perspectives?

Take the extremes (mathematicians and teachers in the same room).

What is the *method* for generating these situations?

JeremyKilpatrick- Ideas for usage of the prompts and the situations?

IrisWeiss- NSF's learning progressions should be picked up by the publishers

Would we encourage curric developers to incorporate these commentaries into their materials? Be sure to put a copyright on it.

Get a reference to our work in an NSF solicitation

PatWilson- Mathematicians are interested in student confusion as a starting point for thinking about their courses.

IrisWeiss- "Stealth PD" for mathematicians

BradFindell- Generally unproductive to introduce the framework at the start. Do activity, then mention the framework. (IrisWeiss- as in developing the concept before you name it)

Start with something that meets the audience's needs.

MarkThames- Use in courses? BradFindell- Foci are not written for PSTs. Doctoral seminar for teachers could use the Situations/Prompts/Foci

Develop shadow courses for PSTs' content courses that use these ideas. Align the situations to the courses PSTs take and do a one-hour shadow course.

A contact person for potential prompts (from Nesrin Cengiz):

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