2/27/13

Note: The colored words indicated changes from the current framework on the website. The **green** are my proposed wording changes. The **blue** are the change decisions discussed in our previous e-mail. The next page also shows inconsistencies between the text and the table. It also provides labels for talking about the various levels. (Is it correct to only capitalize the first letter of each level?)

**Mathematical Understanding for Secondary Teaching**

Mathematical proficiency

Conceptual understanding

Procedural fluency

Strategic competence

Adaptive reasoning

Productive disposition

Historical and cultural knowledge

Mathematical activity

Mathematical noticing

**Observing** structure of mathematical systems

**Discerning** symbolic form**s**

**Detecting** **the** form of an argument

Connect**ing** within and outside mathematics

Mathematical reasoning

Justifying/proving

Reasoning when conjecturing and generalizing

Constraining and extending

Mathematical creating

Representing

Defining

Modifying/transforming/manipulating

Integrating strands of mathematical activity

Mathematical work of teaching

**Analyze** mathematical ideas

Access and understand the mathematical thinking of learners

Know and use the curriculum

Assess the mathematical knowledge of learners

Reflect on the **mathematics in one’s practice**

**Mathematical Understanding for Secondary Teaching**

Mathematical Proficiency (*Component*)

Conceptual understanding (*~~Aspect~~, Strand*)

Procedural Fluency (*~~Aspect~~, Strand*)

Strategic Competence (*~~Aspect~~, Strand*)

Adaptive Reasoning (*~~Aspect~~, Strand*)

Productive Disposition ~~(~~*~~Aspect~~, Strand*)

Historical and Cultural Knowledge (*~~Aspect~~, Strand*)

Mathematical Activity (Component) May need to improve grammatical consistency of the sub strands

Mathematical Noticing (*~~Category~~, Strand*)

*[No name for the following level, but references made to characteristics and examples] Should these be gerunds or at least show activity of noticing?*

Observing Structure of mathematical systems

Discerning Symbolic form

Detecting Form of an argument

Connecting within and outside mathematics

Mathematical reasoning (*~~Category,~~ Strand*)

Justifying/proving

Reasoning when conjecturing and generalizing

Constraining and extending

Mathematical Creating (*~~Category~~, Strand*)

Representing (*Activity*)

Defining (*Activity*)

Modifying/transforming/manipulating (*Activity*)

Integrating strands of mathematical activity

Mathematical Work of Teaching (*Component*)

[Indirectly, the following level is characterized as *proficiencies*, but we do not want to call them proficiencies.]

Don’t change the text, but refer to this level as Strands also.

(e-mail 2/22/13 JK)

**Analyze** Mathematical Ideas (Strand)

[table: Probe Mathematical Ideas]

Access and Understand the Mathematical Thinking of **Students** (Strand)

[table: **Learners**-we should be consistent with 4th item]

Know and Use the Curriculum (Strand)

Assess the Mathematical Knowledge of **Learners** (Strand)

Reflect on the Mathematics in One’s Practice (Strand)

[table: Mathematics of Practice]