



## Parents Press Play for Practices

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Context

# + Context

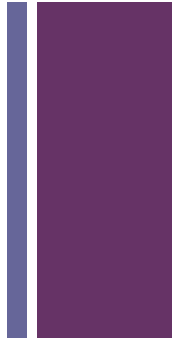


- Promotion of depth of knowledge as opposed to shallow coverage of mathematics content (Shield & Dole, 2012).
- Common Core State Standards for Mathematics were released on a national level with the purpose of providing a “more focused and coherent” set of standards for mathematics (CCSSM, 2010, p. 3).
- School districts across Idaho and around the country are working to begin implementing the Common Core State Standards for Mathematics.
- During this implementation phase, educators, parents, and community members should be aware of the change and know how to best support student learning.

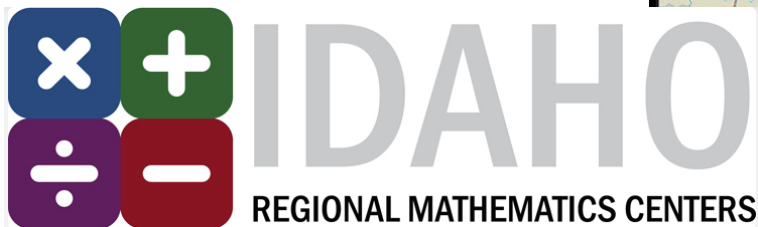
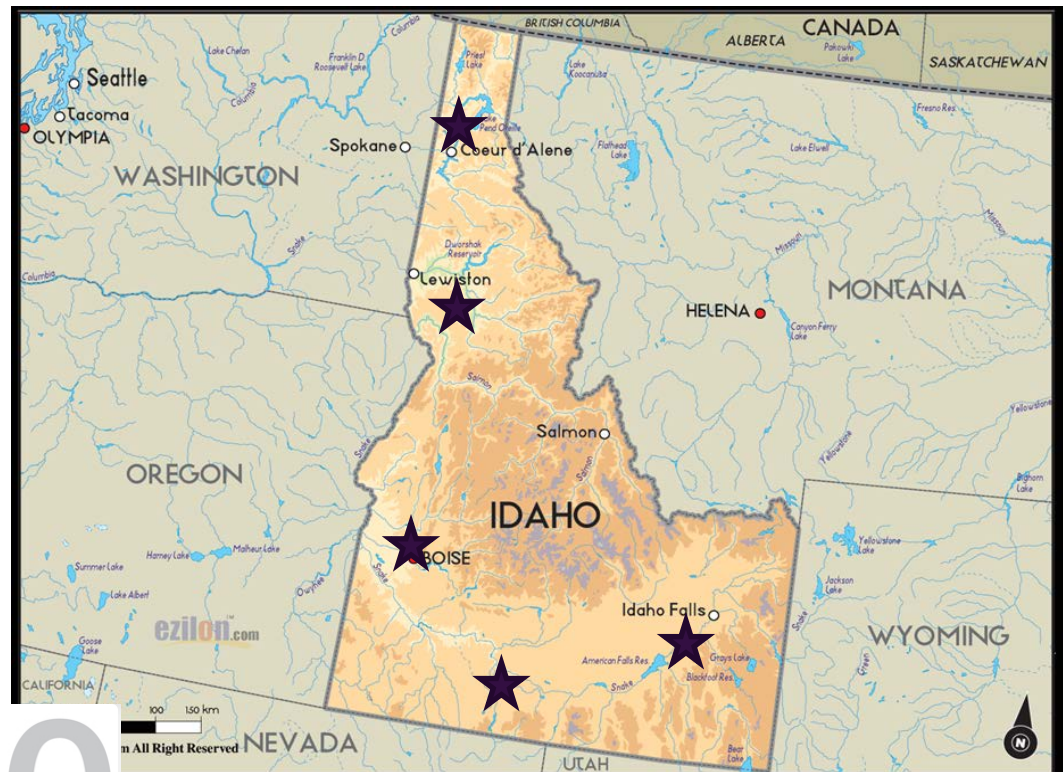


# Supporting Teachers

# + Providing Regional Support



1. Classroom Support
2. School Support
3. District Workshops
4. Regional Academies
5. State-wide Conferences





# Standards for Mathematical Practice



- 1. Make sense of problems and persevere in solving them.
- 2. Reason abstractly and quantitatively.
- 3. Construct viable arguments and critique the reasoning of others.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.



# + SMP Analysis

Summer Academy

Name: \_\_\_\_\_

Grade Band: \_\_\_\_\_

Mathematical Practice	What this may mean:	Implications for Teaching	What does this look and sound like?
<p><b>#3 - Construct viable arguments and critique the reasoning of others</b></p> <p>Mathematically proficient students <b>understand</b> and use stated assumptions, definitions, and previously established results in <b>constructing arguments</b>. They make conjectures and build a logical progression of statements to <b>explore the truth</b> of their conjectures. They are able to <b>analyze</b> situations by breaking them into cases, and can recognize and use <b>counterexamples</b>. They <b>justify</b> their conclusions, <b>communicate</b> them to others, and <b>respond</b> to the arguments of others. They <b>reason</b> inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to <b>compare</b> the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and-if there is a flaw in an argument—<b>explain</b> what it is. Elementary students can <b>construct</b> arguments using concrete referents such as objects, drawings, <b>diagrams</b>, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can <b>listen</b> or <b>read</b> the arguments of others, <b>decide</b> whether they <b>make sense</b>, and <b>ask</b> useful questions to <b>clarify</b> or improve the arguments.</p>	<p>"know" has been replaced by <b>substance (verbs)</b></p> <p>Explicit teaching of thinking strategies</p> <p>Students will advocate learning for themselves</p> <p>Higher expectations for students &amp; teachers / need to be collaborative</p> <p>Teacher/learners k-12</p> <p>Collaboration is key</p> <p>Across grades &amp; content areas.</p>	<p>explicitly teach "thinking" assessing process</p> <p>validating all learning paths</p>	<p>collaborate</p> <p>create mentors</p>
		<p><b>Implications for Learning</b></p> <p>Are students moving along continuum - Mile Deep / Inch Wide allows for learning, thinking, reasoning success.</p>	

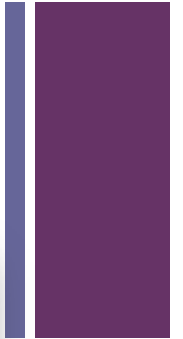
Implications for teaching:

~~Not~~ Helping kids recognize relationships between concrete & abstract to move kids along the thinking, learning continuum.

(models) (symbols)

# + Lingerin Question....

- What about the parents?
- How do we support our children?







# Supporting Parents

# + Post Falls, Idaho



- 27,574 people
- The median income for a household in the city was \$39,061, and the median income for a family was \$42,758
- About 7.1% of families and 9.4% of the population were below the poverty line, including 13.4% of those under age 18 and 7.5% of those age 65 or over.

# + What Parents Said...

- Recent survey findings indicate parents in Kootenai County, Idaho:
  - 1) Occasionally have a difficult time helping their children with mathematics homework (Storrs, Hormel, & Mihelich, 2012).
  - 2) 49% of Kootenai county parents said their “own math and science knowledge made it ‘occasionally’ difficult to help their child with homework” (p. 75).
  - 3) 58% of parents in Post Falls, Idaho, “felt they didn’t have enough time to be involved in their child’s education” (p. 75).
  - 4) 5) Do not know how to support their children with learning mathematics
- As a result, a project was designed and implemented to provide support to parents of students in grades K-6 through familiarization with the *Standards of Mathematical Practice* in the Common Core State Standards for Mathematics.



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Project

# + Intent



- The intent was that with increased knowledge about the Standards for Mathematical Practice, parents would increase their confidence to help their children with mathematics homework.
- Specifically, the project focused on two mathematical practices:
  - 1) Problem Solving: “Make sense of problems and persevere in solving them,” and
  - 2) Models: “Model with mathematics” (CCSSM, 2010, p. 7).

# + Project Design

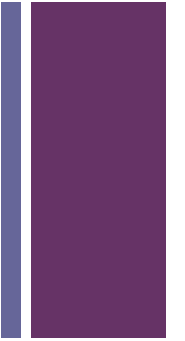


- Aimed for a project that could initially be implemented by university personnel, but that could transfer to use by teachers with students.
- Wanted the project to be specific to the population it would serve
  - How can we design a project that will make a connection with parents?
  - How can we make the mathematics in the community relevant?



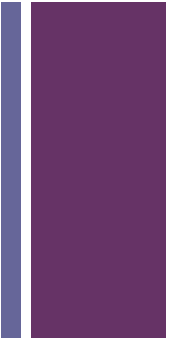


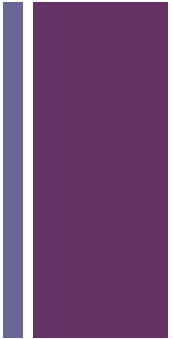
















# + Pilot Project



- Idea was to see how it went/what we would change/how we could make it better
- Embark on creating a technologically delivered tutorial about the Standards for Mathematical Practice
- Tested the process and video with parents and asked them questions so we would understand how it was received.

# + Key Questions



- Does participation in an online video tutorial improve parent knowledge about the *Standards for Mathematical Practice*?
- Does participation in an online video tutorial about the *Standards for Mathematical Practice* increase parents' perceptions of their ability to support their children with mathematics homework?
- Is an on-line tutorial an effective delivery method with this demographic of parents?



# Questions Asked Before Watching



- Rate your knowledge about the following

	Very Poor (1)	Poor (2)	Fair (3)	Good (4)	Very Good (5)
The mathematics your child learns in school (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The mathematics your child needs to know (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Common Core State Standards for Mathematics (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Mathematical Practices in the Common Core State Standards for Mathematics (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# + Tutorial

- The video tutorial may be accessed at the following site:  
[http://youtu.be/uQ\\_4bO4SN58](http://youtu.be/uQ_4bO4SN58)
- The survey, including the video tutorial, may be accessed at the following site:  
[https://uidahoed.qualtrics.com/SE/?SID=SV\\_d9UNOD4vOK\\_QCCG1](https://uidahoed.qualtrics.com/SE/?SID=SV_d9UNOD4vOK_QCCG1)

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The video tutorial begins with a few short questions about your understanding of helping your child learn mathematics.

Rate your knowledge about the following:

	Very Poor	Poor	Fair	Good	Very Good
The mathematics your child learns in school	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The mathematics your child needs to know	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Common Core State Standards for Mathematics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Mathematical Practices in the Common Core State Standards for Mathematics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# + Tutorial



[http://youtu.be/uQ\\_4bO4SN58](http://youtu.be/uQ_4bO4SN58)

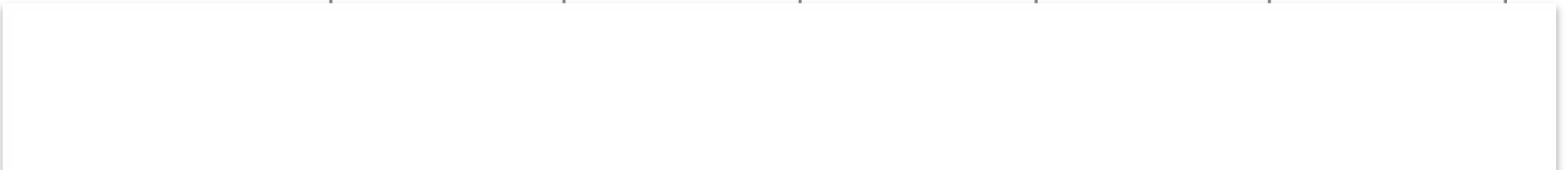
# + After Viewing



- What was the most helpful portion of the video?
- What would have been helpful to include in the video?
- What was the least helpful portion of the video?



	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
This video helped me learn about the Common Core State Standards for Mathematics (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I now have at least one new idea for helping my child learn mathematics (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to know more about how to help my child learn mathematics (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would like to know more about the Common Core State Standards for Mathematics (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
From watching the video, I am able to help my child with mathematics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



# + Additional Questions



- What else would you like to know to support your child with the new Common Core State Standards?
- To what extent did watching this video help you understand how to help your child with mathematics?
- The following questions are designed to get your feedback on the format of this tutorial.



	Strongly Disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
Learning how to help my child through an online format is helpful (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would prefer to go to a class to learn to help my child (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Watching a video is a helpful method for learning to support my child (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video tutorials are convenient (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

# + Delivery Method



- What would be your preferred delivery method for learning how to help your child?
  - Online Tutorial
  - In person class or workshop
  - Letter from school
  - Other

# + Key Questions

- 94 took part in survey and tutorial
- 151 additional people watched the video
- Does participation in an online video tutorial improve parent knowledge about the *Standards for Mathematical Practice*?
- Does participation in an online video tutorial about the *Standards for Mathematical Practice* increase parents' perceptions of their ability to support their children with mathematics homework?
- Is an on-line tutorial an effective delivery method with this demographic of parents?



# + Parent Thoughts

Statistic	This video helped me learn about the Common Core State Standards for Mathematics	I now have at least one new idea for helping my child learn mathematics	I have a better understanding of the Standards for Mathematical Practice
Min Value	2	2	1
Max Value	5	5	5
Mean	4.07	4.37	4.00
Variance	0.52	0.44	0.75
Standard Deviation	0.72	0.66	0.87
Total Responses	41	41	41

- Table 1. Survey responses on a scale of 1-5, ranging from strongly disagree (1), to neither agree nor disagree (3), to strongly agree (5).



# + Parent Responses

- For the statement, “This video helped me learn about the Common Core State Standards for Mathematics”, the mean value was 4.07, with 83% of respondents indicating they agreed or strongly agreed that the video helped them learn about the Common Core State Standards for Mathematics.
- For the statement, “I now have at least one new idea for helping my child learn mathematics”, the mean value was 4.37 with 95% of respondents agreeing or strongly agreeing that they now have at least one new idea.
- For the statement, “I have a better understanding of the Standards for Mathematical Practice,” the mean value was 4.00, with 80% of respondents agreeing or strongly agreeing to this statement.



# 1. Make sense of problems and persevere in solving them

- Using examples and showing ways that kids might work out each problem.”
- “How the instructor ‘broke down’ the problems.”
- “Example real life problems.”
- “The examples. Showing me how many mathematical problems are all around us in the community.”
- “Tips on making everyday math problems.”
- “The breakdowns on how to explain math problems to your child. It helps them think of it in different ways.”
- “Knowing the questions to ask to help develop problem solving skills.”
- “Problem solving portion; breaking it down and giving examples.”
- “Explaining step by step how to help child with math problems.”
- Two main themes are evident in these data: 1) Parents valued the examples of problem solving, 2) Parents valued knowing how to work through each part of problems to encourage problem solving.





## 4. Model with mathematics.”



- “Modeling of math explanation.”
- “How to Model a problem.”
- “The modeling mathematics examples.”
- “The concept of modeling.”
- “Definitions of modeling.”
- “Giving examples of models.”
- “The explanation of math modeling. My son has been doing it for a while, but I did not know why. Thank you.”
- One main theme is evident in these data: 1) Parents valued understanding the meaning, concept, and examples of mathematical modeling.

# + Parent Thoughts

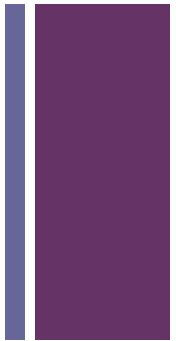


Statistic	Learning how to help my child through an online format is helpful	I would prefer to go to a class to learn to help my child	Watching a video is a helpful method for learning to support my child	Video tutorials are convenient
Min Value	2	1	2	3
Max Value	5	5	5	5
Mean	4.12	2.51	4.12	4.46
Variance	0.51	1.56	0.36	0.35
Standard Deviation	0.71	1.25	0.60	0.60
Total Responses	41	41	41	41

- Table 2. Survey responses on a scale of 1-5, ranging from strongly disagree (1), to neither agree nor disagree (3), to strongly agree (5).

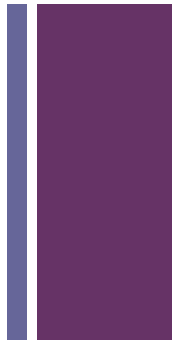
# + Parent

- For the statement, “Learning how to help my child through an online format is helpful”, the mean value was 4.12, with 90% of respondents indicating they agreed or strongly agreed that an online format was helpful.
- For the statement, “I would prefer to go to a class to learn to help my child,” the mean value was 2.51, with 59% of respondents disagreeing, 20% of respondents neither agreeing nor disagreeing, and 21% of respondents agreeing.
- For the statement, “Watching a video is a helpful method for learning to support my child,” the mean value was 4.12, with 93% of respondents indicating they agreed or strongly agreed that an online format was helpful.
- For the statement, “Video tutorials are convenient,” the mean value was 4.46, with 95% of respondents indicating they agreed or strongly agreed about the convenience of video tutorials.





# What Would Be Your Preferred Way to Learn to Help your Child?



#	Answer	Response	%
1	Online Tutorial	28	68%
2	In person class or workshop	3	7%
3	Letter from school	6	15%
4	Other	4	10%
	Total	41	100%

- Figure 1. Responses to question, “What would be your preferred delivery method for learning how to help your child?” (n=41)
  - Those who indicated “other” (n=4) indicated a (1) website, (2) online tutorial with follow-up workshop, (3) handout, and (4) all of the mentioned categories.



**Making This Work**



# + STEP ONE: SET A GOAL

- The initial step is to decide on a goal that is specific to the selected students or school. This could be a content goal that students are struggling to learn or it could be related to the Standards for Mathematical Practice.
- Either way, it is important that the person designing the tutorial defines the goal of the tutorial by considering what parents should know and understand by the end of the tutorial.





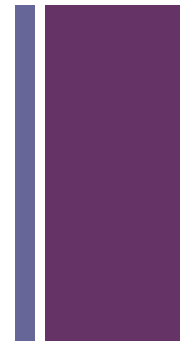
# STEP TWO: GATHER COMMUNITY DATA



- Go out into the community and take photographs of anything that could be related to mathematics
- This will make the tutorial more meaningful for parents and will help them understand how they can support their children on a daily basis.




# STEP THREE: ASSEMBLE PROJECT



- Once the tutorial goal is solidified and the photographs have been taken, the next step is to begin assembling a few slides that make connections between the photographs and the intended learning outcome.

## Model in Mathematics



Game Number	Total Cost
1	\$0.25
2	\$0.50
3	\$0.75
4	\$1.00



# STEP FOUR: CREATE VIDEO FILE



- Add an audio voiceover to explain the slides and set them up to transition automatically on a timer or create a video.
- Once this is completed, the project should be saved as a video file or uploaded to the internet, using a video site or a classroom or school website.



# STEP FIVE: DISSEMINATE



- Share the link with parents.
  - Parents will be supported to know more about how to assist their children and will be able to learn the intended goals at a time that is convenient, given their varying schedules.
  - If parents in the selected community do not have regular access to the internet, another option would be to print the slides with accompanying annotated notes and send them home with the students in the class.

# + Things to Remember



- It doesn't have to be perfect the first time around.
- Realize the gains in helping “a little” and don't focus on trying to change all misconceptions
- Make the focus meaningful to the audience

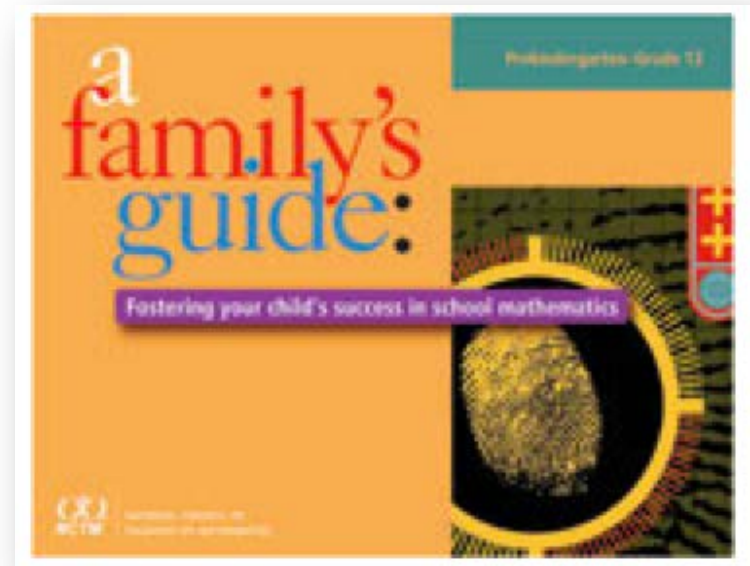


# Supporting Parents



# + Resources

- **A Family's Guide: Fostering Your Child's Success in School Mathematics**
- **NCTM Website for Parent Resources :**  
<http://www.nctm.org/resources/families.aspx>





Questions or Comments