

Audience

The participants for the three day Professional Development on Problem Solving in Mathematics will be student teachers from the Michigan State fifth year program. These teachers are currently student teaching or about to teach in a K-8 classroom setting. The PD will be held in a Lansing School District elementary school. The PD will not be geared toward a specific socioeconomic status but will provide information valuable for all first time teachers regardless of their placement. The student teachers will have varied placements, whether it is in a city school, rural or suburban setting. The PD will be geared towards educating and giving strategies for problem solving instruction of learning disabled students and general education students in grades K-8. The participants will be provided the basic supplies, such as pens, pencils, paper, hand-outs, poster paper, sticky notes, markers, and highlighters. The school where the PD will be held will have projectors and materials for the professional development presentations. A computer lab will also be available for hands-on technology experience.

Goals

- The ultimate goal is for teachers to learn strategies that will improve student understanding of problem solving in mathematics.
- The three segments of professional development will give educators concepts, ideas, and practices that will better assist them in supporting all students with varying ability levels.
- Teachers will leave the professional development with a better understanding of why problem solving is difficult for learning disabled students.

- Teachers will have multiple strategies that can be implemented in their classrooms across the grade levels of K-8.

Day 1 Rationale:

The purpose and goal behind the first segment of our Professional Development seminar is to introduce the topic, problem solving strategies for K-8 students with learning disabilities, as well as focus on strategies that can be implemented across grades K-2nd. I decided to start the seminar by stressing the importance of *why* teachers should be implementing effective problem solving strategies with their students with learning disabilities. It is important for teacher to understand what common difficulties these students have and why strategies can help them become successful at problem solving.

The second part of my introduction involves teachers sharing the problem solving strategies they are already using within their own classrooms. The reason why I decided to include this activity at the very start is so that teachers can reflect on their own teaching. I wanted them to think about what strategies they are using so that they can think about how they will implement the new strategies. This will also help the teachers make reflections throughout the rest of my segment by relating new information to their previously taught strategies.

The next portion of my PD plan discusses specific strategies that teachers can use within K-2nd instruction and also stressing the importance of *why* these strategies are effective with LD students as well as all learners. I found an interesting article that I plan on e-mailing to all the teachers prior

to this PD seminar so that they are prepared to discuss the contents within it. The reason why I wanted to use this article and have this discussion is because teachers are probably already using a lot of these strategies but are not realizing the effectiveness of them. I want them to realize that it doesn't take too much additional planning to really meet the needs of all their learners.

The next part of my PD plan involves a video of a first grade teacher who is implementing effective problem solving strategies within her lesson. I wanted to show a video because it is much more beneficial to actually see the strategies being taught rather than just hearing or reading about them. I especially liked this video because the teacher gives a rationale behind why she is doing what she is doing throughout the lesson. This teacher did a great job of providing a plethora of materials to use as well as giving her students choices, which are great motivational techniques teachers should use in their teaching.

I decided to include a lesson planning portion to my PD plan so that the teachers can actually work with each other and get practice at creating an effective problem solving lesson plan to use with their own students. After reading an article about specific strategies and then watching a video of a teacher implementing these strategies, I wanted teachers to be able to apply what they have learned by creating their own lesson. I have chosen to have each group present their lessons so that everyone can share each other's ideas and learn new ways of teaching that they can use in their own classrooms.

The problem solving journals portion of my PD plan was included because I wanted teachers to see how easy it is for even Kindergarteners to become proficient problem solvers. With the use of pictures and sight words, these young students can learn to read and solve problems on their own. I wanted teachers to also see that they can make these journals as simple or complex as they choose to, but that every grade level can benefit from solving word problems on a daily basis.

The last portion of my PD plan involves using technology by showing teachers beneficial websites that they can use with their students to build their problem solving skills. Many of the websites I have provided are aligned towards each state's math standards, making it more reasonable for teachers to use these resources. Every child loves to play on the computer, so why not incorporate math into their computer experiences where they won't even realize how much fun learning can be.

Assessment Rationale:

Throughout Day 1, teachers will be completing both formative and summative assessments that will be used to check for understanding and to check for the effectiveness of the material I am presenting. Teachers will complete the formative assessments as various times throughout the seminar, the first time being right after the introduction and group activity. I will post an assessment board on the ELMO which consists of eight different response choices that the teachers can choose from. Some of the choices include "Strategies I gained today...", "One question I have is...", "One idea I will explore further is...", etc. Every teacher is going to gain something

different out of each activity, which is why I thought the assessment board would be a great formative tool to use throughout my seminar. It allows teachers to think about each activity in their own way and choose a response that best relates to their own ideas. These responses will not only help the teachers reflect on what strategies they are taking away from the seminar, but also it will help me to see which strategies were effective as well as which areas could be changed in the future.

The summative assessment that I will be using is a questionnaire that will be given to the teachers while they are exploring technology. I will ask that they complete the two questionnaires before leaving for the day. They will be giving me feedback about what they found to be most beneficial, least beneficial as well as effective strategies they are taking away from the day. There is also a second part to the questionnaire where they are asked to rank particular statements pertaining to the first day of this PD seminar. This questionnaire is again really going to help me see what parts went well and what parts might need to be eliminated or changed for future PD planning.

Objectives for Day 1:

- a. Participants will gain new knowledge of the importance of implementing problem solving strategies across all grade levels, K-8.
- b. Participants will learn effective problem solving strategies to use with students with learning disabilities.
- c. Participants will learn how to plan an effective problem solving lesson plan that incorporates important strategy components.
- d. Participants will learn about beneficial resources that are available on the internet for both students and teachers.

Resources:

These are great resources teachers can use when seeking information and strategies related to problem solving and students with learning disabilities.

Fairbairn, D. (1993). Creating story problems (teaching mathematics using stories). *Arithmetic Teachers*, 41. Retrieved from http://find.galegroup.com.proxy1.cl.msu.edu.proxy2.cl.msu.edu/gtx/retrieve.do?contentSet=IAC- Documents&resultListType=RESULT_LIST&qrySerId=Locale%28en%2C%2C%29%3AFQE%3D%28ke%2CNone%2C15%29problem+solving%3AAnd%3AFQE%3D%28ke%2CNone%2C11%29mathematics%3AAnd%3ALQE%3D%28DA%2CNone%2C4%291993%24&sgHitCountType=None&inPS=true&sort=DateDescend&searchType=AdvancedSearchForm&tabID=T002&prodId=AONE&searchId=R4&xtPosition=4&userGroupName=msu_main&docId=A14558944&docType=IAC

Glago, Karen. 2009. Improving Problem Solving of Elementary Students with Mild Disabilities. *Remedial and Special Education*, 30(6), Retrieved from <http://proquest.umi.com.proxy2.cl.msu.edu/pqdweb?index=1&did=1899099871&SrchMode=1&sid=2&Fmt=6&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1291174562&clientId=3552>

Montague, M. 2005. *Math Problem Solving for Primary Elementary Students with Disabilities*. The Access Center, Improving Outcomes for All Students K-8. Retrieved from: http://www.k8accesscenter.org/training_resources/documents/Math%20Primary%20Problem%20Solving.pdf

Parmer, R. 1996. Word problem-solving by students with and without mild disabilities. *Exceptional Children*, 62(5), Retrieved from <http://proquest.umi.com.proxy2.cl.msu.edu/pqdweb?index=21&sid=2&srchmode=1&vinst=PROD&fmt=6&startpage=-1&clientId=3552&vname=PQD&RQT=309&did=9343857&scaling=FULL>

<http://proquest.umi.com.proxy2.cl.msu.edu/pqdweb?index=4&did=1461976661&SrchMode=1&sid=5&Fmt=6&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1291165147&clientId=3552>

Piggot, J. Woodham, L. 2008. *Thinking Through, and by, Visualising. Mathematics Teaching Incorporating MicroMath 207*. Retrieved from: <http://proquest.umi.com.proxy2.cl.msu.edu/pqdweb?index=4&did=1461976661&SrchMode=1&sid=5&Fmt=6&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1291165147&clientId=3552>

This was a great website that has over 50 videos of teachers implementing effective math lessons across grade levels K-5.

WGBH Boston. (Produced by). (1997). Teaching Math: A Video Library, K-4. *Wheel Problem*. Retrieved from: <http://www.learner.org/resources/series32.html>

Day 1 Agenda

Today's Objectives:

- Participants will gain new knowledge of the importance of implementing problem solving strategies across all grade levels, K-8, with focus on K-2.
- Participants will learn effective problem solving strategies to use with students with learning disabilities.
- Participants will learn how to plan an effective problem solving lesson plan that incorporates important strategy components.
- Participants will learn about beneficial resources that are available on the internet for both students and teachers.

1. Introduction to 3-day PD seminar (45 minutes)

- a. Introduce the topic being discussed for the day- problem solving strategies and the importance of using effective strategies within inclusive K-8 classrooms, with focus on K-2.
- b. In small groups (mixed grade levels), teachers will make a list of different problem solving strategies they use within their own classrooms. (record strategies on chart paper)

- c. Teachers will walk around from group to group reading others' responses- taking note of strategies they don't use but would like to, as well as strategies they aren't familiar with and are possibly confused about.
 - d. Discuss any of these strategies and have teachers clarify any questions or concerns regarding the strategy they use.
 - e. Teachers will complete their first response from the assessment board.
2. Discuss effective strategies to use within K-2 classrooms and *why* teachers should be using them. (Pass out handout which refers to the strategies found in the following article:
http://www.k8accesscenter.org/training_resources/documents/Math%20Primary%20Problem%20Solving.pdf
(60 minutes) Article will be e-mailed to teachers prior to PD meeting.
- a. Process Modeling- thinking aloud about the problem, what it is asking and what steps need to be taken to solve it.
 - b. Group instruction- (5-8 students per group) students will LD can interact and gain knowledge through peer-to-peer experiences.
 - c. Visualization- start with manipulatives, transfer onto paper to represent a problem before solving it.
 - d. Role Reversal- students take on the role of the teacher and *teach* the class.
 - e. Verbal Rehearsal- Follow three-step process during problem solving (say, ask, check)
3. Video- classroom observation of a teacher implementing effective problem solving strategies with her first graders. (40 minutes)
- a. Teachers will take notes on the different strategies this teacher is using in comparison to the ones previously discussed, paying close attention to the use of materials as well as sequencing and segmenting.
 - b. Watch video (#14 Wheel Problem):
http://www.learner.org/vod/vod_window.html?pid=883

- c. Questions/Discussion- teachers will promote discussion based on reactions from the lesson. Question prompts will be provided if necessary.
 - d. Teachers will complete their second response from the assessment board.
4. Lesson Planning (45 minutes)
 - a. In small groups (same groups as before), teachers will plan a problem solving mini-lesson, focusing on one of the strategies mentioned in the article. Each group will be assigned with a specific grade level and strategy to focus on.
5. Presentation (30 minutes)
 - a. Each group will present their mini-lesson to whole group.
 - b. After each presentation, discuss how the strategy was implemented and why this strategy will help children with learning disabilities.
6. Problem- Solving Journals (20 minutes)
 - a. Introduce problem solving journals and how they can be implemented in classroom K-2. (show two different examples)
 - b. Discuss the goals behind the journals and the importance of getting even Kindergarteners involved in problem solving and making problems relatable to their lives.
 - c. Model different ways students and teachers can use these journals and show a few examples of what these journals can look like.
7. Technology (60 minutes)
 - a. Introduce websites and resources that both teachers and students can use to promote and build problem solving skills.
 - b. Allow teachers to browse these websites, then complete the website checklist form.
 - c. <http://www.firstinmath.com/> a website for 1st-8th graders that helps to improve problem solving, basic facts and measuring skills.

- d. <http://www.mathcats.com/> a website with great story problems that were created by children for other children to solve.
- e. <http://www.dreambox.com/> a website for grades K-3 where teachers can adapt lessons for each individual student to meet their own needs.
- f. <http://www.ixl.com/math/> a website for grades K-8 that is aligned to each state's standards.

8. Summative Assessment (10-15 minutes)

- a. Teachers will complete two different questionnaires before leaving for the day.

Day 1 Segment Implementation:

- Throughout the next three days, you will be learning about the importance of using effective mathematical problem solving strategies within your classrooms and more importantly *why* every teacher should be implementing these strategies with all learners, especially those with learning disabilities.
- So the goals we have set behind this seminar are as follows: (have goals written on large poster)
 - o Teachers will learn multiple strategies that will improve student understanding of problem solving in mathematics across all grade levels K-8.
 - o Teachers will develop a deeper understanding of why problem solving is difficult for learning disabled students.
 - o Teachers will develop a deeper understanding of why problem solving strategies are effective tools to use in mathematics.
 - o Teachers will learn how to implement effective problem solving strategies in their own teaching.
- To start, I want you to think about why it is so important to implement effective problem solving strategies in your teaching. What is this doing for your students with learning disabilities? Or how is this benefiting your LD students? Can anyone give me a few reasons why this is so important?

- *(Accept responses from 3-5 people)*
- All of you are on the right track. However, the most important thing to think about is that children, especially those with learning disabilities, aren't born with exceptional problem solving skills, and they can't come up with strategies on their own, so obviously, it's up to you to *teach* them these strategies and skills.
- Now some of you who are teaching primary grades are probably thinking, "My Kindergarteners aren't able to use problem solving skills, especially those with learning disabilities!" It is actually proven that, "Even children as young as five years of age can learn to set goals and work through the problem solving model with teacher support"(Glago, 2). With that said, it is important to introduce these strategies at a young age so that these children are faced with several opportunities to practice these skills before heading off to the higher grades with more complex problem solving situations.
- Another important reason why it's crucial to implement these strategies is because students with learning disabilities often have difficulties in language comprehension and information processing (Parmer, 416). This means that when they are reading problem solving questions they have a difficult time truly understanding what the question is asking and processing what to do in order to solve the problem.
- It's also very common for students with learning disabilities to have difficulties with problem representation, reading difficulties, poor computation skills and an inability to identify the correct operations to use when problem solving, which is yet another reason why teachers need to teach effective strategies for their students to use so that they can be successful learners (Parmer, 417).
- With that said, I would like all of you to think about what problem solving strategies you use in your teaching, what are you doing to help your LD students become proficient and confident problem solvers?
- What we're going to do is break up into groups of 4 or 5 people, and I would like these groups to have a mix of grade levels within them, so make sure there is at least one member from lower el, one member from upper el, and one member from middle school.

- I'm going to give each group a large piece of chart paper so that you can all write down your strategies. Please make sure you put the grade level you teach next to the strategy you write down.
- Then after about fifteen minutes, we are going to stop and I will have all of you mingle from group to group, reading the strategies that others are using. I would encourage you at this time to jot down some notes on the strategies you like, or if you have questions and maybe don't understand how one of the strategies works or what it is exactly, then we can revisit it later.
- Go ahead, break up into your groups and I will let you know when to stop.
- *(Allow groups to work for about fifteen minutes)*
- Alright, try to finish up the last strategy you are writing and then I would like you all to get up and take a look at everyone else's strategies. In about five-seven minutes, we'll go over some of the strategies and any questions you may have.
- *(Allow teachers to mingle from group to group for about 5-7 minutes, taking notes along the way)*
- If everyone could find their seats we will go over some of these strategies or questions.
- *(For the next 10-12 minutes, have teachers share some of the strategies they liked or found to be most effective. Also have teachers clarify any strategies that someone doesn't understand)*
- *(put assessment board up on the ELMO for everyone to see)* Right here I have what is called an assessment board. As you can see, there are eight different response choices that you can choose from. In order to get some feedback from all of you, I would like you to choose one of these responses, write it down on the piece of paper I will be handing out to you and then you can fold it up and turn it into the basket at the front of the room. Think about what we have discussed in this first part and choose a response that relates most to your thinking.
- *(Teachers will complete first response. Once all are handed in, move on to the next activity.)*

Why Teachers Should Use Strategies

Day 1 Handout

1. The goals of this PD seminar include:
 - a. Teachers will learn multiple strategies that will improve student understanding of problem solving in mathematics across all grade levels K-8.
 - b. Teachers will develop a deeper understanding of why problem solving is difficult for learning disabled students.
 - c. Teachers will develop a deeper understanding of why problem solving strategies are effective tools to use in mathematics.
 - d. Teachers will learn how to implement effective problem solving strategies in their own teaching.

2. Common difficulties among children with learning disabilities:
 - a. Language comprehension
 - b. Information processing
 - c. Problem representation
 - d. Reading difficulties
 - e. Poor computation
 - f. Identifying correct operation use

3. Why should effective problem solving strategies be taught:
 - a. LD students can't learn effective strategies on their own.
 - b. LD students have difficulty determining which strategy to use with each problem.
 - c. LD students have difficulty understanding what problem solving questions are asking them to do.
 - d. LD students do well when they see strategies modeled to them first.

4. Notes on other teacher's strategies:

Problem Solving Strategies for K-2nd LD students

Process Modeling

Students will think aloud by saying everything they are doing while performing each step in the problem.

- It is crucial for teachers to explicitly model what their thinking processes look like. LD students typically do not know how to do this on their own, nor do they develop these skills naturally. They need to see how it should be done before they can do it correctly on their own.
- It is important for teachers to also model the incorrect way to think aloud so that these students can see what *not* to do.

Ex: Sarah had 4 chocolate cookies, Matt had 3 M&M cookies, and Jack had 5 sugar cookies. How many cookies did Sarah, Matt and Jack have altogether?

- "First I need to read the question." (*student reads question aloud*)
- "Now I need to figure out what the problem is asking me to do? Hmm...I need to figure out how many cookies they have altogether"
- "I know the word altogether means the total"
- "I also know that the word altogether means to add"
- "So it looks like I need to add all of their cookies together to see how many they have total."
- "First I need to figure out how many *groups* this problem has in it...three, because I have three people, Sarah, Matt and Jack."
- "Next I need to show my three groups so I'm going to draw three circles and one big circle for the total."
- "I think I'm going to use these bears (manipulatives) to help me solve the problem."
- "I'm going to put Sarah's 4 cookies in one circle, Matt's 3 cookies in the second circle, and Jack's 5 cookies in the third circle."

- "Now I want to check and make sure I have used the correct numbers"
(*student looks back at the question*)
- "Now I need to move all of the cookies into the big circle and count how many there are total." (*student moves the bears and counts to 12*)
- "Now before I write my answer I need to go back and reread the question to make sure I have answered what it is looking for...yep I have figured out that when I add all of their cookies together I get a total of 12 cookies."
- "Now I can write 12 as my answer"

Group Instruction

Students with LD benefit most when working within small groups of about 4-8 students during math instruction. This helps LD students interact with their peers as well as learn skills and strategies that others find effective and useful

Visualization

For K-2nd LD students, it is very difficult for them to mentally visualize what a problem looks like, as well as draw a picture to represent the problem. Often times, they get so caught up in what the picture looks like that it takes away from the meaning behind the problem. So it is important for them to start by using manipulatives to represent the problem, then when they become confident at that, they can start to draw pictures to represent the problem.

Role Reversal

Make learning fun for the students by allowing them to be the "teacher" and lead the class in problem solving processes. This is a great way to encourage students to become confident in their problem solving abilities and to promote becoming independent learners. Another great strategy is for teachers to take the role of the students, pretending to learn from the "teacher".

Verbal Rehearsal

Students can use these three steps to help them along the way during their problem solving process:


- Say (what is the problem)
- Ask (What is the problem asking me to do?)
- Check (make sure I have answered the problem correctly, go back and re-read the question)

For non-readers, visual prompts can be very effective to use to represent the three steps.

Problem Solving Journal



Rachel had 7 glasses of juice. Her dog jumped on the table and spilled 3 glasses of juice on the floor. How many glasses did she have left?



There were 9 children swimming in the pool. Some of them got out. Then there were only 6 swimming. How many got out of the pool?

Website Criteria Checklist

Rate on a scale of 1-5 each question regarding the website.

1-Strongly Disagree 2-Disagree 3-Not Sure 4-Agree 5-Strongly Agree

	Games are available that are kid friendly and engaging	Teachers are able to monitor student progress of the math skills	Students are able to navigate through website independently	You would use this website in place of instructional time when needed
http://www.firstinmath.com/				
http://www.mathcats.com/				
http://www.dreambox.com/				
http://www.ixl.com/math/				

Day 2 Rationale:

The day 2 segment will cover problem solving strategies for upper elementary students. Participants will gain an understanding of why problem solving strategies are necessary tools for not just learning disabled students but all learners. The first half of the day will require participants to first reflect on the practices they use. This is important because participants need to have a clear understanding of what they actually "do" in their classroom in order to see how they can implement new strategies. The self-regulation presentation will then be used to show students the importance of using the strategy SAY, ASK, CHECK with students. Problem solving is a very difficult concept that requires more than just math skills. It requires the ability for students to comprehend what they are reading. It requires students to break down a word problem and find out what is important and what needs to be solved. For LD students this is a challenging task and therefore the self-regulation strategy mentioned can help students monitor each step of the problem solving process. Participants also need to be informed of methods to teach problem solving. Therefore two different processes will be taught, the seven-step process and a four-step process described at the Teaching Today website by McGraw-Hill Companies. Both processes require teachers to model and use explicit instruction to show how to implement the taught steps in order to solve a problem.

The PD would not be effective if participants weren't given the opportunity to plan for how they could use these strategies in their classroom. A lesson planning portion will allow students to create a problem

solving lesson in a small group. After further discussion of problem solving processes participants will be able to revise their lesson plans in order to use the new information introduced. Finally, participants will explore technology. Technology is an important teaching resource and therefore participants need to be aware of the websites out there that support student understanding of problem solving. Participants will leave the day with strategies, processes and technology tools to better assist their students in the classroom.

Assessment Rationale:

Both formative and summative assessments will be used for Day 2. Participants will be assessed in order to demonstrate understanding of the objectives and to help myself reflect on the benefit of the materials introduced and presented. Participants will complete two formative assessments during the day. The first will require participants to reflect on why they feel self-regulation strategies for problem solving are beneficial. This will allow students to think back to the difficulties that LD students have with problem solving. It will also allow myself to see if I correctly presented the necessary information for participants to gain an understanding of the challenges that LD students face when learning how to problem solve. The second formative assessment will take place after the second problem solving process has been introduced. Once again participants will use sticky notes (a different color this time) to write one thing they like about the strategy taught and any questions they may have. This assessment allows me to see what participants took away from the problem solving process and how I could better present information next time. Both formative

assessments will require participants to stick their answers on a poster board in the front of the room. Responses will be addressed at the end of the session in order to review concepts learned and address questions.

The summative assessment used will be a Day 2 Questionnaire. The questionnaire will require participants to write what they found beneficial and could be effective in the classroom. It also requires participants to give suggestions on how the PD could be made more useful. The questionnaire allows me to reflect on my planning and implementation and to modify and make changes to the program in order to maximize learning. The assessment also allows students to rank the seminar, asking questions about the organization and usefulness of materials presented.

Day 2 Objectives:

- Participants will learn about different problem solving strategies using multiple media forms.
- Participants will gain knowledge in how to implement problem solving strategies in their classrooms.
- Participants will create and revise a problem solving lesson plan that includes a strategy discussed that day.
- Participants will use computers to explore and analyze student websites that offer problem solving games and activities.

Resources for Day 2 Agenda

Website used for Presentation. The website has a wealth of articles along with teaching tips and videos.

Promoting Problem-Solving Skills in Elementary Mathematics [Online exclusive]. *The McGraw-Hill Companies*. Retrieved November 29, 2010, from <http://teachingtoday.glencoe.com/howtoarticles/promoting-problem-solving-skills-in-elementary-mathematics>

Materials used for PowerPoint and Discussion. Many of Marjorie Montague's writings can be found at the k8access center.

Montague, Marjorie. (2007). Self-Regulation and Mathematics Instruction. *Learning Disabilities Research & Practice* 22(1), 75-83

Montague, Marjorie. (2005). *Math problem solving for upper elementary students with disabilities*. The Access Center Improving Outcomes for All Students k-8. Retrieved from http://www.k8accesscenter.org/training_resources/MathPrblSlving_upperelem.asp

(2008)Self-Regulation strategies to improve mathematical problem solving for students with Learning disabilities. *Learning Disability Quarterly*. Retrieved from http://goliath.ecnext.com/coms2/gi_0199-7693942/Self-regulation-strategies-improve.html

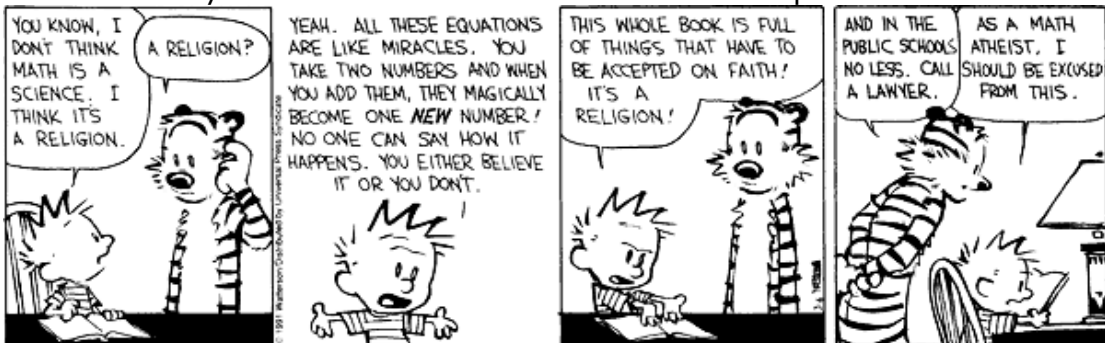
The McGraw-Hill Companies (Production). Modeling. Retrieved from: <http://teachingtoday.glencoe.com/videos/view/modeling>

Below is the video that was used during the viewing segment. The video was found at a teacher resources for mathematics website. It is part of a 52 video program that allows viewers to see math instruction in grades K-4.

WGBH Boston. (Produced by). (1997). Teaching Math: A Video Library, K-4. *What's the Price?*. Retrieved from: <http://www.learner.org/resources/series32.html>

Day 2 Agenda: Problem Solving for Intermediate Grade Levels 3-5

1. Introduction (Small Groups/ 45 minutes)
 - Individually read the Calvin and Hobbes comic strip.



- Discuss with the teachers at your table your thoughts on the comic strip and the following questions:
 - o How well do you think ALL your students understand problem solving and strategies?
 - o What specific strategies do you use in your classroom?
 - o What do you need to better teach problem solving to your students?
 - o Do you think students with LD understand the problems to the degree your regular education students do?
- Using the chart paper given write down all the strategies you use in your classrooms for problem solving.
- Groups share and then hang around the room for later reference.

2. Discussion and Presentation about Self-Regulation (80 minutes)

- Outside Reading Previously Assigned: "Math Problem Solving For Upper Elementary Students With Disabilities" by Marjorie Montague (Pages 1-5)
- Open Discussion about the article: What did you find interesting? Did anything in the reading make you rethink about how you teach problem solving and strategies?
- Slide Viewing about the importance of teaching self-regulation strategies (Reference Self-Regulation PowerPoint)
- Formative Assessment: Teachers will write one reason why teaching self-regulations are important on a yellow sticky note and give the presentation a rating of 1-5 for usefulness. Sticky note will be placed on a poster board in the front of the room.

Bathroom Break

3. Viewing: (45 minutes)

- A video that demonstrates problem solving using a real world context involving division.
- Watch: *What's the Price?* Found at http://www.learner.org/vod/vod_window.html?pid=880 Scroll down to number 11 and click the video to access.
- Have individuals talk with the others at their table about what they found interesting about the video.

- Each table picks one speaker to share with everyone else one thing they found interesting.

LUNCH BREAK

4. Small Group Activity: (60 minutes)

- Groups of 4 will come up with a problem solving lesson that will require students to use real world applications. The lesson should be a one-day math lesson that is geared towards a specific grade level from (3-5).
- Groups may go use any resources available to them: computers, math manuals, etc. Groups will be provided State Standards.
- They will complete the Lesson Plan Format Provided (See Attached).

4. Presentation: (40 minutes)

- McGraw Hill- How to for Problem Solving
- Pull up the website article on large projector for all to see:
<http://teachingtoday.glencoe.com/howtoarticles/promoting-problem-solving-skills-in-elementary-mathematics>
- Read through the discourse, which shows the ideas of using think-aloud and teachers models for each stage of problem-solving. The goal is to follow this four step program:
 - understanding the question
 - selecting a strategy
 - applying the strategy
 - checking your answer
- Continue on discussing the indicated activities that help support the process of problem solving:
 - Problem of the Day (Math Journals go o more)
 - Sharing Solutions
 - Summarizing and Paraphrasing
- Continue on and discuss the Focus on Language section: symbolic, content-specific, academic. Review the following activities that encourage support of problem solving language:
 - Word Sort
 - Guess My Word Game
 - In Your Own Words
 - Write a Word Problem
- Discuss using whole group and small group learning strategies in the classroom. Make a list on chart paper of the whole group and small

group learning strategies addressed that students could find useful and realistic in the classroom.

- Formative Assessment: On a green sticky note write one thing they liked about the strategy taught. (Optional) On the orange sticky note provided write a question you may have. Stick on the poster board up front.

5. Analyzing Lesson Plans: (40 minutes)

- Groups will review their lesson plan to see if they have any components of the How to for Problem Solving Presentation. Make modifications to lessons if needed.
- Final product
 - Lessons should show the four step approach
 - An activity that supports the process of problem solving
 - A focus on math language if possible
 - Use of a whole group or small group learning strategy.
- Finally share your lesson plan with another group.

Bathroom Break

6. Looking at Technology: (60 minutes)

- We will be using the school computer to explore the following websites that would be beneficial for students to use. Teachers may explore at their own pace but need to complete the Website Form that analyzes the following programs.
 - <http://www.mathcats.com/explore.html> - Go to the math problem story and review
 - <http://www.funbrain.com/numbers.html>
 - <http://www.mathplayground.com> - Go to Word Problems with Katie
 - <http://www.compasslearningodyssey.com/>
- Regroup and discuss the websites we found beneficial.

7. Closing (30 minutes)

- We will briefly revisit the problem solving strategies recorded on chart paper in the beginning of the session.
- Each group will pick another group to share how they may implement one of the strategies taught.

- Pick a few sticky notes from both formative assessments (yellow and green) to share with group. Answer any questions found on the orange sticky note.
- Summative Assessment: Day 2 Questionnaire

Day 2 Implementation

Discussion and Presentation about Self-Regulation

1. "I would like to start off by having us all discuss the prior reading, "Math Problem Solving For Upper Elementary Students With Disabilities."

(Pages 1-5) In your groups just take a few minutes to discuss any parts that you found interesting or have more questions on."
2. Regroup:
 - "Is there anything you would like to share that you found interesting or have further questions about from the reading?"
 - "What were your feelings when you read the section: **What is mathematical problem solving?** Were you surprised to learn how difficult problem solving could be for students with LD? In order to better reach our students with LD we need to have strategies that can be taught and that our students can learn to implement. Some of you may already use some self-regulation/monitoring strategies with your students. We are going to learn more specifically about the seven-step problem solving process and a self-regulation strategy that is helpful in teaching problem solving skills to students with LD."
3. Self-Regulation PowerPoint- **Please reference speaker notes for this portion on the PowerPoint.**
4. Wrap-Up:
 - "Are there any questions you about the self-regulation strategy taught or about the seven-step problem solving process?"
 - "Would anyone like to share their thoughts on if they feel they could use this strategy in their classroom or if anything they don't like about the strategy?"

5. Formative Assessment:

- Participants will be given a yellow sticky note.
- “Please use this yellow sticky note to write one reason why teaching self-regulation strategies for problem solving is beneficial. Also rate the usefulness of this presentation on a scale of 1-5 (1 being not useful at all and 5 being very useful) on the back of the sticky note. You don’t need to write your name on the sticky note. Please place the sticky note on the poster board up front.”
- The sticky note responses will be useful in evaluating teacher attitudes towards the importance of what was just presented. It will help direct the next PD development and whether this portion of the PD needs to be modified.

Lesson Title: _____

Grade Level: _____ Subject: _____ Prepared By: _____

<p>Overview & Purpose What will be learned and why it is useful:</p>	<p>Education Standards Addressed What state/county education standards that this lesson satisfies.</p>
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<p>Objectives (Specify skills/information that will be learned.)</p>		<p>Materials Needed</p> <ul style="list-style-type: none"> · Paper · Pencil · Others
<p>Information (Give and/or demonstrate necessary information)</p>		
<p>Activity (Describe the independent activity to reinforce this lesson)</p>		<p>Other Resources (e.g. Web, books, etc.)</p>
<p>Assessment (formal or summative)</p>		

Summary (To be completed later in the PD Session)		Additional Notes
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Website Criteria Checklist

Rate on a scale of 1-5 each question regarding the website.

1-Strongly Disagree 2-Disagree 3-Not Sure 4-Agree 5-Strongly Agree

	Games are available that are kid friendly and engaging	Teachers are able to monitor student progress of the math skills	Students are able to navigate through website independently	You would use this website in place of instructional time when needed
http://www.mathcats.com/exlore.html				
http://www.funbrain.com/numbers.html				
http://www.mathplayground.com				

http://www.compasslearningodyssey.com/				
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Day 3 Rationale:

The last day of the seminar is going to touch on different problem solving strategies that are useful for middle school students, and also how to make problem solving work in the classroom. A lot of times, it is very difficult to get students to really want to “think” and not just be given specific steps for solving problems, especially in middle school, and especially with students with disabilities. So this portion of the seminar will just touch on more specific problem solving strategies, but since many of the strategies used on the previous days can be applied at all grade levels, we are going to use this day to also give specific ideas on how problem solving can be done in classrooms, how it relates to UDL, and how co-teaching can be beneficial when doing problem solving in the classroom.

We feel that it is very important for teachers to get a clear understanding of how important problem solving is for students. We want them to think about how making sure students have great problem solving skills can really help students succeed. Participants need to realize that teaching to students to be able to think is as important to follow steps to solve a problem. If students know how to think, they can reason through even more difficult problems as they continue through life.

We also think that it is extremely important for the participants to have a chance to connect problem solving with Universal Design for Learning. We hope that they can see how with very specific planning, we can make sure that all students have access to problem solving. Also, we want the participants to have some concrete examples of how it works in inclusive

classrooms and have a chance to figure out how to make it work in their own classrooms.

By the end of this seminar, we want the participants to feel confident teaching and implementing different problem solving strategies within the classroom. We also want the participants to be able to identify the ways problem solving can be useful in helping all students achieve success.

Assessment Rationale:

As in the other days of the seminar, we will be using a variety of different methods to gauge the participants learning throughout the day. They will be asked to participate in discussions throughout the day. We will also have the participants work in a small group to present information from different articles. The participants will also be asked to fill out a sheet and answer questions about the information their peers present. We will also have participants write questions on sticky notes that will be answered throughout the day. These small checks for understanding will help us know whether the material being presented is being received correctly and if we are efficiently relaying the information.

At the end of the day, the participants will be asked to create a plan of action by taking the information presented and using it in their own classroom. They will need to include problems to be used with different problem solving strategies, as well as how they will begin teaching problem solving in the classroom in a UDL format. Their plans will show us exactly what information they retained throughout the seminar and which areas we need to tighten up. The purpose of the seminar is to make sure the

participants are able to use the information in their own rooms, and we want to make sure it is useful.

We will also provide the participants with a questionnaire regarding the seminar. They will have been given the same questionnaire on both of the previous days, but we feel it will still be useful. The participants will be able to give us suggestions on how to make the seminar more useful and engaging. This will be helpful in our own reflections on the seminar. It is important to make sure that the participants felt they got the gist of the seminar and that they found it useful. If there were areas that needed to be changed, these questionnaires will help us identify them.

Day 3 Objectives:

- Participants will learn about different problem solving strategies that are useful for middle school students
- Participants will identify the ways UDL can lend itself to creating a successful problem solving environment
- Participants will learn about how co-teaching can be used in a classroom to help students access problem solving
- Participants will create a plan of action to represent their understanding of the seminar. The plan of action will address the ways in which they can implement their new learning in their own classrooms

Day 3 Resources:

Below is the list of resources used, as well as different websites that could be useful to look at in the future.

Corral, N. & Antia, S.D. (March 27, 2002). Self-talk: Strategies for success in math. Retrieved from www.dldcec.org/pdf/teaching_how-tos/self-talk.pdf

Council for Exceptional Children. (2010). Teaching math to students with disabilities. Retrieved from <http://www.cec.sped.org/AM/Template.cfm?Section=Home&CONTENTID=7015&TEMPLATE=/CM/ContentDisplay.cfm>

Friend, M. (2007). Co-Teaching Connection. Retrieved from <https://angel.msu.edu/section/default.asp?id=FS10-CEP-842-730-881602-EL-14-204>

Friend, M. (2007). The Coteaching Partnership. Wilson Web. Educ Leadership 64 no5 F 2007.

Hall, T., Strangman, N., & Meyer, A. (November, 2, 2009). Differentiated instruction and implications for UDL implementation. Retrieved from http://aim.cast.org/learn/historyarchive/backgroundpapers/differentiated_instruction_udl

Jitendra, A. (2002). Teaching students math problem-solving through graphic representations. TEACHING Exceptional Children, Vol. 34, No. 4, pp. 34-38
Retrieved from www.teachingld.org/pdf/teaching_how-tos/

Maccini, P. & Gagnon, J. (n.d.). Mathematics strategy instruction for middle school students with learning disabilities. The Access Center Improving Outcomes for All Students k-8. Retrieved from http://www.k8accesscenter.org/training_resources/massini.asp

Montague, M. (2005). Math problem solving for middle school students with disabilities. The Access Center Improving Outcomes for All Students k-8. Retrieved from http://www.k8accesscenter.org/training_resources/MathProblemSolving.asp

Websites with links to new ways to teach math and get students involved in problem solving.

<http://msteacher.org/epubs/math/math2/background.aspx>

<http://expertvoices.nsd.org/middle-school-math-science/category/problem-solving/>

Teachers will be going through the IRIS module. Here is the link to the module:

<http://iris.peabody.vanderbilt.edu/udl/chalcycle.htm>

http://iris.peabody.vanderbilt.edu/media/module_nav.html (if they need to learn how to use the module)

Problem solving list and questions retrieved from fcit.usf.edu/fcat8m/resource/fcat/strat.pdf

Reading the book: *Hooray for Diffendoofer Day* by Dr. Seuss, Jack Prelutsky and Lane Smith

Day 3 Agenda: Problem Solving for Middle School Grades 6-8

1. Introduction (small groups/20 minutes)
 - a. We will create small groups by doing an ice breaker activity, each person will have a piece of paper at their seat face down, and will be asked to keep the paper turned upside down until given further instructions
 - i. The activity is called "What's Cooking" and the instructions will be attached
 - ii. After the groups have met all of their members, they are to take a seat with their groups
 - b. Discuss group norms and expectations
 - i. Be respectful
 - ii. Be on time
 - iii. Pay attention
 - iv. Use "Parking Lot" to write down questions that come up throughout the day (the parking lot is a sheet of paper that can be used to hang sticky notes with questions written on them that have come up throughout the presentation)
2. Read Hooray for Diffendoofer Day by Dr. Seuss, Jack Prelutsky and Lane Smith (20 minutes)
 - a. Read the story aloud
 - b. Discuss what the idea means for our own teaching
 - c. Move into the small group activity
3. Whole group learning activity (20 minutes)
 - a. The whole group will participate in an activity that puts them in the shoes of their students with disabilities
 - b. Teachers will discuss their frustrations
 - c. Talk about how this makes us conscious of the learners in our class with special needs
 - d. Brainstorm, quickly, ways that we can make our classes more accessible to students with disabilities
4. Small group article review (45 minutes)
 - a. Hand out an article about different problem solving strategies that work for students with disabilities
 - b. Each group will be in charge of reading a specific section of the article and creating a poster to highlight the important parts of the article
 - c. The poster will also have a problem solved using the strategy given
5. Presentations (50 minutes)

- a. Each group will present their poster and then hang it up in the room for reference throughout the seminar.
 - b. Teachers will be filling in a short worksheet describing what they learned from the presentations (they will also be provided with a note sheet they are able to keep themselves)
6. Video of teacher implementing problem solving in the classroom (25 minutes)
- a. Whole group will discuss video
 - i. What does the classroom look like?
 - ii. How is the classroom set up
 - iii. Focus on questions being asked in the classroom
 - iv. What students are doing
 - v. If the students are working in groups or individually
 - vi. Look at what the teachers are doing during the class period
 - vii. Identify which strategies the students are using in the classroom
 - b. Break down strengths and weaknesses of the lesson in the video
 - c. Discuss similarities between video and own personal classroom
 - d. Brainstorm ways to improve on the way classes are run

LUNCH

7. After lunch we will re-convene and begin discussing how to set up the classroom for success (45 minutes)
- a. We will be talking about the article they should have read at home (Find article) regarding how to create an effective UDL classroom and how UDL really works with problem solving
 - b. I will lead the teachers through the IRIS module
 - c. Teachers will discuss their learning and make connections between UDL and problem solving
8. Talk about co-teaching (45 minutes)
- a. We will talk about how co-teaching can be effective in the classroom
 - b. We will show the different models of co-teaching (quickly) and discuss which would be the most effective in the classroom
 - c. Teachers will design a plan on how to implement one of the co-teaching strategies in the classroom
 - d. Teachers will present the ideas to the whole group
9. Tie it all together (80 minutes)
- a. Teachers will take everything they have learned from this PD and work together to create (or find) good problem solving questions
 - b. They will solve at least one other person's problem

- c. Then they will work on creating a plan of action for implementing problem solving in the classroom. This plan will have to have the specific questions being asked, examples of strategies students can use, how co-teaching could be used in the lesson

10. Wrap-up (20 minutes)

- a. We will answer any final questions
- b. Teachers will fill out evaluation form

Day 3 Implementation:

The day will start with the participants turning over the piece of paper at their chair. This will be the beginning of the ice breaker called "What's Cooking?" (This activity was adapted from numerous professional developments I've been to.)

I will tell the participants:

Your family (group) just inherited a successful restaurant from Chef Charlie, a long lost relative. The only problem: Charlie was very disorganized. The only recipes you have found are on torn strips of paper. You have to make sense of it all and quickly! The restaurant is opening tonight, and you have to have the food ready.

- Each member of the group will be given part of recipe (an ingredient, instruction, etc.).
- Your job is to put yourselves in order as quickly as possible. Your recipe must make sense.
- When your group is done, loudly announce "bon appetite" to signal the end of the game.

After the end of the game, the participants will sit with their new group members.

Next, we will read the story *Hooray for Diffendoofer Day* by Dr. Seuss, Jack Prelutsky and Lane Smith. This story really touches on the idea of how important it is for students to be able to think about problems rather than just memorize procedures. The school in this story is about to be closed, unless they can pass a very hard test. So the students work really hard learning how to problem solve, so when they get to the test, they are able to succeed. They reason their way through problems they don't understand or haven't seen before.

After the reading, teachers will talk with their teams about the story and what it means for us, as teachers.

They will be asked to answer the following questions on sticky notes:

- What did you learn from the story?
- Do you agree that problem solving is an important skill for our students to have? Why or Why not?
- How do you implement problem solving in your own classroom now?
- The participants will hang their responses on a poster in the front of the room.

Next the participants will be asked to put themselves in the shoes of students with disabilities. They will be led through the following activity in which they will feel the frustrations many students with (and without) disabilities feel while trying to learn math.

What it's Like to Have a Disability

(This idea was taken from a professional development I was part of this summer. I don't have the exact activity or the name of the presenter, so I just kind of used what I could remember from that activity and added my own spin to it.)

1. During this activity the adults will learn what it feels like to have a disability.

2. They will be given math symbols that represent numbers we know, but not numbers.
3. They will be given symbols to use ^-0, #-1, @- is 2, !=3, %=4, *-5, and &-6.
4. The participants will get a quick chance to look at the symbols, and then be expected to answer questions using the symbols.
5. The presenter will be rattling off the problems quickly and yelling at students who don't get the answers correct quickly enough.
6. After about 7 minutes, we will stop and talk about the frustrations
7. Participants will discuss feelings and make connections to how our students feel in class.

Example of questions (presenter has option to create own questions):

- 1) What is ^+@
- 2) Draw me number 4
- 3) What is &-!
- 4) Write numbers 0-6 in the correct order
- 5) What is *+&

After this activity is complete, we will move into doing the small group activity. This activity will have two parts: an article review as well as a problem solving strategy review. We are going to have five groups of teachers. The task for each group will be to create a poster that has a review of their given article and the important aspects of the article as well as using a given problem solving strategy to solve a given problem. Each group will be given the poster criteria handout to use when making their poster. The articles and problem solving strategies, as well as questions, will be provided as hand-outs as well.

After the participants have created their posters, they will present their

poster to the group.

While the groups are presenting, the audience will fill out evaluation sheets (attached) about each group and their presentation.

Once all groups have presented, we will view a video of a teacher running a problem solving lesson.

Participants will be looking for:

- What does the classroom look like?
- How is the classroom set up-Focus on questions being asked in the classroom
- What students are doing-If the students are working in groups or individually
- Look at what the teachers are doing during the class period
- Identify which strategies the students are using the in the classroom

We will then discuss their observations and how they can use the information in their own classrooms.

Participants will be asked to reflect on the following questions:

- How is my classroom similar to this classroom?
- Do I use problem solving strategies such as these in my own classroom?
- How can I make my classroom more investigative and incorporate problem solving more often?

List of Day 3 Handouts

- Recipes cut up and placed on table
- Seminar Evaluation sheet
- Poster Criteria and Evaluation Sheet
- Problem Solving Strategies List
- Problem Solving Questions
- Articles for Reading in Small Group:
 - Self-Talk- Strategies for Success in Math

- Teaching Students Math Problem-Solving Through Graphic Representations
 - Mathematics Strategy Instruction for Middle School Students with Learning Disabilities
 - Math Problem Solving for Middle School Students with Disabilities
 - Teaching Math to Students with Disabilities
-
- Article for Reading as Whole Group (given before):
 - Differentiated instruction and implications for UDL implementation

Name: _____

Poster Criteria:

Each poster needs to have a list of important information from the article. This should be:

- The strategy being discussed,
- Strengths and weaknesses of article
- An example of how to use the information in their classroom.

The posters must also show:

- The problem solving strategy each group was given
- The problem being solved
- A clear solution using the problem solving strategy
- Strengths and weaknesses of strategy

Group Presentation Evaluation Sheet:

1. One thing I liked about the presentation:

2. What is the strategy being discussed in the presentation:

3. One questions I still have about the strategy introduced:

Problem Solving Strategies

- *Look for a pattern*
- *Make an organized list*
- *Guess and Check*
- *Make a table*
- *Work backwards*
- *Use logical reasoning*
- *Draw a diagram*
- *Solve a simpler problem*
- *Read the problem carefully*

• **Work backwards**

Example: Fortune Problem: a man died and left the following instructions for his fortune, half to his wife; $\frac{1}{7}$ of what was left went to his son; $\frac{2}{3}$ of what was left went to his butler; the man's pet pig got the remaining \$2000. How much money did the man leave behind altogether?

• **Use logical reasoning**

Example: At the Keep in Shape Club, 35 people swim, 24 play tennis, and 27 jog. Of these people, 12 swim and play tennis, 19 play tennis and jog, and 13 jog and swim. Nine people do all three activities. How many members are there altogether?

• **Draw a diagram**

Example: Fortune Problem: a man died and left the following instructions for his fortune, half to his wife; $\frac{1}{7}$ of what was left went to his son; $\frac{2}{3}$ of what was left went to his butler; the man's pet pig got the remaining \$2000. How much money did the man leave behind altogether?

• **Solve a simpler problem**

Example: In a delicatessen, it costs \$2.49 for a half pound of sliced roast beef. The person behind the counter slices 0.53 pound. What should it cost?

• **Guess and check**

Example: Which of the numbers 4, 5, or 6 is a solution to $(n + 3)(n - 2) = 36$?

Day __ Questionnaire (used each day)

1. What do you feel was the most beneficial part of today's seminar and why?

2. What do you feel was the least beneficial part of today's seminar and why?

3. Which strategy do you feel will be most effective to use when working with LD students and why?

4. What, if anything, would you hope would be included in the next PD seminar you attend that is related to problem solving strategies?

5. Questions, comments, concerns?

Day 2 Questionnaire

Please rank the following statements pertaining to today's segment of this PD seminar:

(1=disagree 2= slightly disagree 3=indifferent 4= slightly agree 5= agree)

1. I thought the information in today's seminar was informative and useful.

1 2 3 4 5

Comments: _____

2. I thought the information in today's seminar was organized and well-planned.

1 2 3 4 5

Comments: _____

3. I thought the strategies presented are ones I will use in my own teaching.

1 2 3 4 5

Comments: _____

4. I thought the activities were engaging and interactive.

1 2 3 4 5

Comments: _____

5. I thought that today's seminar was well-worth my time and was enjoyable.

1 2 3 4 5

Comments: _____

Recipes for Ice Breaker Activity:

How to Make an Avocado Dessert

Avocado Dessert?! That's crazy! Actually, it's not. In a lot of Asian countries, avocado is used more like a fruit than a vegetable. Because of its buttery, creamy texture, this dish is an excellent substitute for ice cream. Always serve cold.

To easily scoop out the meat of the avocado, slice across the avocado until your knife hits the pit. Grab both halves and twist in opposite directions. Take one half of the avocado, set aside. To take out the pit, and tap it with the sharp blade of your knife so the blade gets stuck into the pit. Then twist the lower half. If you are planning to delay the preparation, keep the pit on the avocado and put the other half back to prevent oxidation.

Scoop out the meat into the bowl. Add lemon juice to prevent further oxidation. If you prefer, you can slice the avocado into smaller pieces, or you can mash it with a fork.

Drizzle the avocado with the condensed milk. Toss (or mix) until the avocados are thoroughly coated with the milk. (Yes, you can add an extra helping of the milk if you like)

Chill in the fridge or the freezer. Do not freeze. If you do freeze it, you can reconstitute it by placing the dish in a hot water bath (the bowl, not the dish).

Serve in a bowl with an extra drizzle of milk and some ice chips.

Puppy Chow Ingredients:

- 1/2 cup creamy peanut butter
- 1/2 cup butter or margarine
- 6 oz chocolate chips
- 10 cups Corn Chex cereal
- 2 cups powdered sugar

Melt the peanut butter, butter or margarine, and chocolate chips in a saucepan over medium heat.

Pour over Corn Chex, being sure that all cereal is coated.

Put 2 cups powdered sugar in a large paper bag.

Place cereal in a bag and shake gently until all cereal is coated.

Pour out on wax paper to cool.

Cat's Eyes Ingredients:

- 8 Ritz crackers
- 1/2 cup of creamy peanut butter
- 1 Banana; cut into 8 slices
- 8 Raisins

1. Spread peanut butter on crackers.
2. Top each cracker with a slice of banana.
3. Place a raisin in center of each banana to form a cat's eye.
4. Repeat for all banana topped crackers.

Microwave Carmel corn Ingredients:

- 2 bags microwave popcorn
- 2 cups brown sugar
- 1 stick butter
- 1/3 cup Kero white syrup

1. Pop 2 bags of microwave corn. Put popped kernels in a brown paper bag (make sure you take out all unpopped kernels)
2. Boil the following ingredients for 5 minutes on the stove: 2 cups brown sugar, 1 stick of margarine, 1/3 cup of Kero syrup (white). Stir constantly.
3. Carefully pour mixture onto pop corn and mix.
4. Place in microwave oven for 1 minutes and then mix again. Tear open bag and let cool.

Clingons Ingredients:

- 4-1/2 cups mini marshmallows
 - 1/3 cup creamy peanut butter
 - 1/4 cup margarine
 - 3-1/2 cups Rice Chex cereal
 - 3-1/2 cups Corn Chex cereal
 - 1/2 cup M & M's
1. Grease a 9 x 13 pan.
 2. In a microwave safe bowl, microwave marshmallows, peanut butter and margarine for two minutes or until melted. Stir until smooth.
 3. Add Cereal and M & M's, stirring to coat all pieces.
 4. Spread mixture in prepared pan and press down slightly with the back of a buttered spoon.
 5. Refrigerate for one hour.
 6. Pull pieces from pan or cut into squares.

** The articles that will be given to the participants are being sent separately, as is the powerpoint**