



Differentiated Instruction in Science

Science, Differentiated Instruction, Inclusion, LEP, – Grades 4-12

This session will provide you with methods to differentiate content, process and product for your students. You will experience examples of how to reach different levels of learners in your classroom with student-tested strategies. This is an active session where you will test drive the ideas as students see them. You will strengthen your teaching with research based techniques and teaching tools that support collaborative learning, literacy and science that you can use tomorrow.

Shannon C'de Baca

Omaha, Nebraska

Shannon C'de Baca has been a high school science teacher for the past 26 years and is the host of the Annenberg Public Broadcasting System television series, "The Missing Link in Mathematics." She has also worked for the PBS science series "NOVA" and has served as a consultant for the National Education and the Economy, PBS, the Council of Chief State School Officers, the National Education Association, the National Science Teachers Association (NSTA) and the U.S. Department of State. Shannon was one of two Citizen Ambassadors to Bahrain. Shannon is known for using her classroom as a living laboratory to implement the innovations and research-based strategies she shares on a national level. Shannon has received awards from the Milken Family Foundation, Sertoma International, the Iowa Department of Education, and NSTA for her work in the classroom.

The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.

Sample Alphabox

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P
Q	R	S	T
U	V	W	XYZ

The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.

NAME:

TOPIC

	Attribute 1	Attribute 2	Attribute 3	Attribute 4	Attribute 5
Item 1					
Item 2					
Item 3					
Item 4					

The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.

Cubing

Cubing asks you to investigate your topic from six different views. First, select a topic (issue, person, idea, event, problem, object, scene, concept) and write it at the top of your page to help you remember what you are investigating. Then give yourself three to five minutes to write from each of the viewpoints listed below. Start from what you know, but don't limit yourself. Identify those areas that will need further thought or research and try to think about where you will discover this information. Keep going until you have written about your topic from all six views. It is important to reread what you have written. Look for surprises, unexpected things.

1. Describing: Physically describe your topic. What does it look like? What color, shape, texture, size is it? Identify its parts.
2. Comparing: How is your topic similar to other topics/things? How is it different?
3. Associating: What other topic/thing does your topic make you think of? Can you compare it to anything else in your experience? Don't be afraid to be creative here: include everything that comes to mind.
4. Analyzing: Look at your topic's parts. How are these parts related? How is it put together? Where did it come from? Where is it going?
5. Applying: What can you do with your topic? What uses does it have?
6. Arguing: What arguments can you make for or against your topic?

I Remember...I Forget

Process	Meaning???	Solving the problem
Interference		
Retroactive Inhibition		
Proactive Inhibition		
Cue Dependent Forgetting		
Decay Theory		

The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.

I Remember...I Forget

Process	Meaning???	Solving the problem
Interference	<p>..New stuff blocks old stuff or random thoughts block the students concentration</p> <p>?? Why did Ms. C wear that pink and green neon shirt?</p> <p>?? I am worried about my Mom/</p>	<ul style="list-style-type: none"> ▪ Get rid of distractions ▪ Provide special signals for attention ▪ Make activities colorful or more stimulating
Retroactive Inhibition	<p>..Two similar ideas or pieces of info enter the system at the same time.</p> <p>?? Diameter and circumference</p> <p>?? Igneous, metamorphic and sedimentary</p> <p>?? Are and our</p>	<ul style="list-style-type: none"> ▪ Separate similar ideas/concepts ▪ Distinguish between similar items with mental cues or models
Proactive Inhibition	<p>..The stuff you learned before is interfering with the stuff you are learning today.</p> <p>?? Seasons reasons</p>	<ul style="list-style-type: none"> ▪ Create value ▪ Create applications ▪ Models ▪ Examples ▪ detail
Cue Dependent Forgetting	<p>Memory tool has failed to help</p> <p>?? When kids cannot remember the alphabet song</p> <p>?? i before e except after c</p>	<p>Practice... Practice</p> <p>...practice</p> <p>Distributed practice</p> <p>Use in new situations</p>
Decay Theory	<p>If you don't use it you lose it.</p> <p>?? where did I leave my keys...</p>	<p>Practice again and again</p> <p>Review</p> <p>Spiral and revisit</p>

The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.

6. In our class, I wish I could sit...

7. In the classroom my behavior is...

because

8. My favorite book is

because

9. I live with

10. Three words to describe myself are

11. I like to participate in the following activities with my friends:

12. I like to participate in the following activities by myself:

13. When I watch TV, I usually like to watch

14. If I was given a gift of \$1,000 cash, I would use it to

15. The one thing I really want my teacher to know about me is

Layered Curriculum:

C Layer: Basic knowledge, understanding. The student builds on his/her current

level of core information...



B Layer: Application or manipulation of the information learned in the C layer.

Problem solving or other higher level thinking tasks can be placed here.

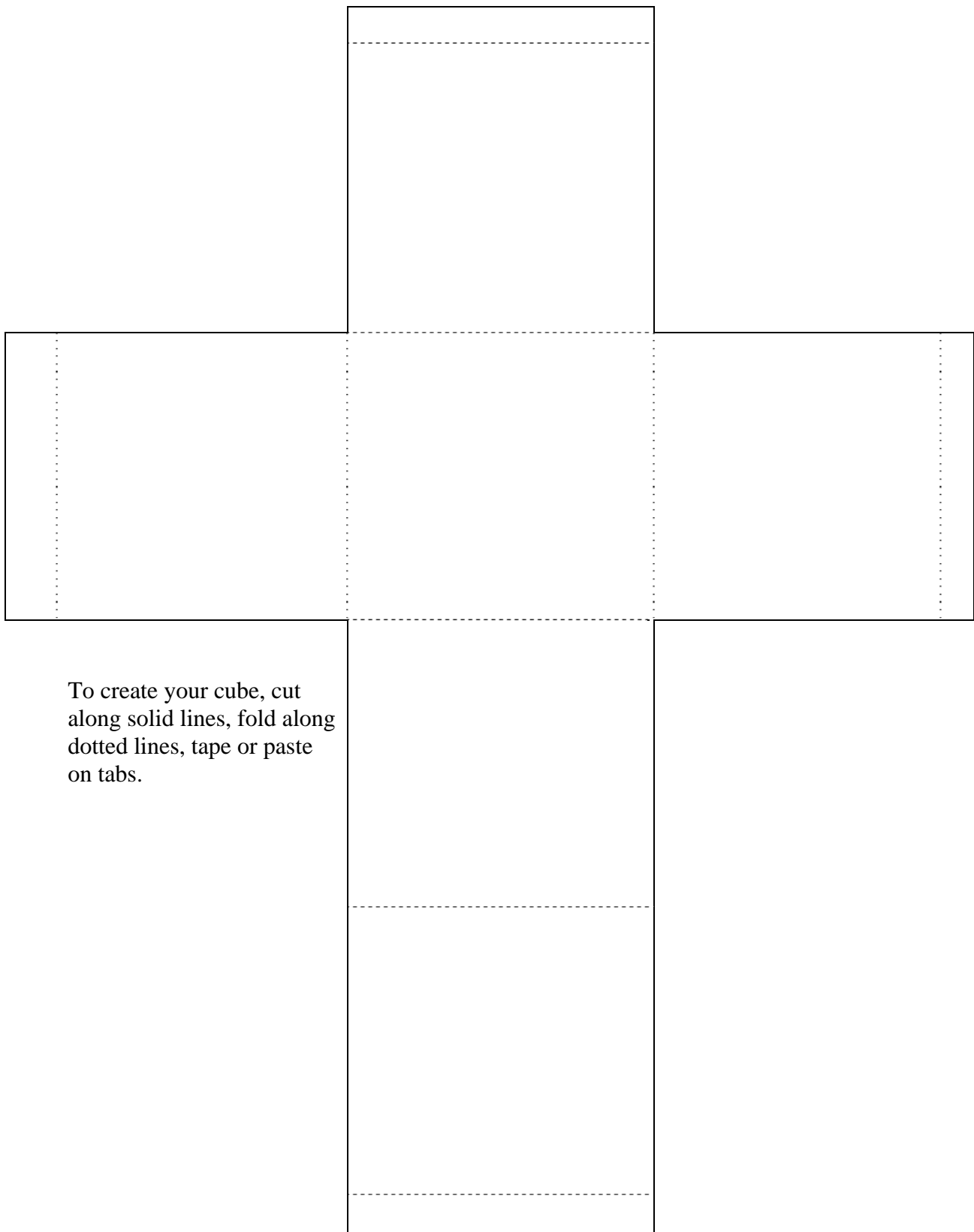


A Layer: Critical Thinking and Analysis. This layer requires the highest and most

complex thought. Create leaders, voters.



The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.



The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.

What is important for you to know about the kids you teach?

Task: At your table make a list of the questions you would ask kids on a student survey.

Now, what other information would you like to have at your disposal from Parents:

From former teachers?

Others?

Pitfalls?

The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.

Facts	Feelings
Questions	Ideas

The workshop presentations and materials from the U.S. Department of Education Teacher-to-Teacher Workshops were developed by various individuals and are being provided as illustrative examples of what might be useful to teachers. The Department is not requiring or encouraging the use of any particular methods or materials in the classroom, and the use of the methods and materials in these sessions does not constitute an endorsement by the U.S. Department of Education.