INTERJECTING THE 5-E MODEL INTO CURRICULUM TO ENGAGE STUDENTS

Nancy Shepherd, Ph.D.
1/23/2015
Copyright

Copyright © Texas Education Agency, 2015. These Materials are copyrighted © and trademarked ™ as the property of the Texas Education Agency (TEA) and may not be reproduced without the express written permission of TEA, except under the following conditions:

1) Texas public school districts, charter schools, and Education Service Centers may reproduce and use copies of the Materials and Related Materials for the districts’ and schools’ educational use without obtaining permission from TEA.

2) Residents of the state of Texas may reproduce and use copies of the Materials and Related Materials for individual personal use only, without obtaining written permission of TEA.

3) Any portion reproduced must be reproduced in its entirety and remain unedited, unaltered and unchanged in any way.

4) No monetary charge can be made for the reproduced materials or any document containing them; however, a reasonable charge to cover only the cost of reproduction and distribution may be charged.

Private entities or persons located in Texas that are not Texas public school districts, Texas Education Service Centers, or Texas charter schools or any entity, whether public or private, educational or non-educational, located outside the state of Texas MUST obtain written approval from TEA and will be required to enter into a license agreement that may involve the payment of a licensing fee or a royalty.

For information contact: Office of Copyrights, Trademarks, License Agreements, and Royalties, Texas Education Agency, 1701 N. Congress Ave., Austin, TX 78701-1494; phone 512-463-7004; email: copyrights@tea.state.tx.us.
Provides FREE instructional resources

- Education and Training
- Hospitality and Tourism
- Human Services

http://cte.sfasu.edu/
GRANT TEAM LEADERS

Sandra Ann Delgado
Associate Project Director
Stephen F. Austin State University

Kaleigh Arnett
CTE Administrative Assistant
Stephen F. Austin State University

Cynthia Moreno
CTE Curriculum Specialist
Stephen F. Austin State University

Deborah Woodward
CTE Curriculum Specialist
Stephen F. Austin State University
1. Students come to the classroom with preconceptions about how the world works.

2. Developing competence in an area of inquiry requires: a) a foundation of factual knowledge, b) understanding facts and ideas in the context of a conceptual framework, and c) organizing knowledge for retrieval and application.

3. Helping students learn to take control of their own learning by defining goals and monitoring their progress in achieving them.
Benefits of 5 E Model and Learning

Promotes active, collaborative and inquiry-based learning

Based on constructivism theory

Recognizes that students need time to:

• Express their current thinking
• Interact with objects, organisms, substances, and equipment to develop a range of experiences
• Reflect on their thinking by writing and expressing themselves
• Make connection between their learning and the real world
What are the 5 E’s

- **Engage** - Hook/grab student interest
- **Explore** – Activity to explore concept
- **Explain** – Direct instruction of concept
- **Elaborate** – Extend and apply learning to new situation
- **Evaluate** – Use of formative & summative assessment to gauge student learning
<table>
<thead>
<tr>
<th>Phase</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement</td>
<td>The teacher or a curriculum task accesses the learners’ prior knowledge and helps them become engaged in a new concept through the use of short activities that promote curiosity and elicit prior knowledge. The activity should make connections between past and present learning experiences, expose prior conceptions, and organize students’ thinking toward the learning outcomes of current activities.</td>
</tr>
<tr>
<td>Exploration</td>
<td>Exploration experiences provide students with a common base of activities within which current concepts (i.e., misconceptions), processes, and skills are identified and conceptual change is facilitated. Learners may complete lab activities that help them use prior knowledge to generate new ideas, explore questions and possibilities, and design and conduct a preliminary investigation.</td>
</tr>
<tr>
<td>Explanation</td>
<td>The explanation phase focuses students’ attention on a particular aspect of their engagement and exploration experiences and provides opportunities to demonstrate their conceptual understanding, process skills, or behaviors. This phase also provides opportunities for teachers to directly introduce a concept, process, or skill. Learners explain their understanding of the concept. An explanation from the teacher or the curriculum may guide them toward a deeper understanding, which is a critical part of this phase.</td>
</tr>
<tr>
<td>Elaboration</td>
<td>Teachers challenge and extend students’ conceptual understanding and skills. Through new experiences, the students develop deeper and broader understanding, more information, and adequate skills. Students apply their understanding of the concept by conducting additional activities.</td>
</tr>
<tr>
<td>Evaluation</td>
<td>The evaluation phase encourages students to assess their understanding and abilities and provides opportunities for teachers to evaluate student progress toward achieving the educational objectives.</td>
</tr>
</tbody>
</table>
UNDERSTANDING BY DESIGN

Enduring Understanding

Important to know

Worth being familiar with

Copyright © Texas Education Agency, 2015. All rights reserved.
Implications for Teaching

1. Teachers must draw out and work with the preexisting understandings that students bring.
2. Teachers must teach some subject matter in depth, providing many examples where the concept is at work.
3. The teaching of metacognitive skills should be integrated into the curriculum in a variety of subject areas.
The Engage

Allows you to generate interest in a concept

Allows you to assess what the students already know about a concept
In the explore

Students participate in a common set of experiences
Share their thinking with others
Ask questions about their observations
In the Explain

• Students begin to make sense of their experiences
• Students begin to construct an understanding of the concept
• The vocabulary is introduced
  – Use of readings and activities
  – Provides formal language for concepts
In the elaborate

- Students have an opportunity
  - to apply their current understanding to a new context
  - To extend their understanding
The evaluate

• Provides the students and teachers with an opportunity to assess the students’ understanding of the concept before the introduction of a new concept.
## 5 E: What is the Student/Teacher Doing?

### The Engage

<table>
<thead>
<tr>
<th>STUDENT</th>
<th>TEACHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Become interested in and curious about the topic</td>
<td>• Piques Students’ curiosity and generates interest</td>
</tr>
<tr>
<td>• Express current understanding of a concept</td>
<td>• Determines student’s current understanding and prior knowledge</td>
</tr>
<tr>
<td>• Raise questions such as, What do I already know about this? What do I</td>
<td>• Invites students to express thoughts</td>
</tr>
<tr>
<td>want to know about this? How could I find out?</td>
<td>• Invites students to raise questions</td>
</tr>
</tbody>
</table>
## 5 E: What is the Student/Teacher Doing? In the Explore

<table>
<thead>
<tr>
<th>STUDENT</th>
<th>TEACHER</th>
</tr>
</thead>
</table>
| • “Mess around” with materials and ideas  
• Conduct investigations through observation, description and data  
• Try different ways to solve a problem  
• Acquire a common set of experiences so they can compare results and ideas  
• Compare their ideas with others | • Encourages student-to-student interaction  
• Observes and listens to the students as they interact  
• Asks probing questions to help students make sense of their experiences  
• Provides time for students to puzzle through problems |
### 5 E: What is the Student/Teacher Doing? In the Explain

<table>
<thead>
<tr>
<th>STUDENT</th>
<th>TEACHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Explain concepts and ideas in their own words</td>
<td>• Encourage student to use experiences from previous lessons</td>
</tr>
<tr>
<td>• Base explanations on evidence acquired</td>
<td>• Asks questions that help students express</td>
</tr>
<tr>
<td>• Express and record their ideas using appropriate language</td>
<td>• Request justification</td>
</tr>
<tr>
<td>• Reflect on and revise ideas</td>
<td>• Provides time for students to compare ideas and perhaps revise</td>
</tr>
<tr>
<td>• Compare ideas with those of experts</td>
<td>• Introduce terminology and alternative explanations after students express ideas</td>
</tr>
</tbody>
</table>
### 5 E: What is the Student/Teacher Doing? ELABORATE

<table>
<thead>
<tr>
<th>STUDENT</th>
<th>TEACHER</th>
</tr>
</thead>
</table>
| • Make conceptual connection between new and former experiences  
• Use what they have learned to explain a new object, event, or idea  
• Use appropriate terms and descriptions  
• Draw reasonable conclusions from evidence and data | • Focus student attention on conceptual connections between new and former experience  
• Encourage students to use what they have used to transfer to a new situation  
• Reinforce student’s use of scientific terms and descriptions previously introduced  
• Ask questions to help draw reasonable conclusions |
### 5E: What is the Student/Teacher Doing? THE EVALUATE

<table>
<thead>
<tr>
<th>STUDENT</th>
<th>TEACHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Demonstrate what they understand about the concepts and how well they can implement a skill</td>
<td>• Observes and records as students demonstrate understanding and performance skills</td>
</tr>
<tr>
<td>• Compare current thinking with that of others</td>
<td>• Provides time for students to compare ideas with others and perhaps revise</td>
</tr>
<tr>
<td>• Assess progress by comparing current understanding with prior knowledge</td>
<td>• Interviews students to assess their developing understanding</td>
</tr>
<tr>
<td>• Ask new questions to take them deeper into a concept</td>
<td>• Encourages students to assess their own progress</td>
</tr>
</tbody>
</table>

Copyright © Texas Education Agency, 2015. All rights reserved.
How should you use the model?

• Don’t try to use all steps in one lesson
• Lessons may combine more than one “E”
• If students need more time insert another explore or explain lesson
• Keep handouts about “what student/teacher should do” handy to stay on track during lessons
• Use simple pre/post tests for evaluations to monitor student learning when you start using the model
Understanding by Design Stages

Stage 1:
Identify the learning goals

Stage 2:
Develop the Evaluate Lesson

Stage 3:
Develop Engage, Explore, Explain and Elaborate Lessons
For the Evaluate Lesson

- Develop the general idea, context, scope of the lesson
- Write the Outcomes and Indicators of Success
- Develop a comprehensive rubric
- Write the Evaluate lesson with these guides
- The process is iterative, messy and non-linear
Lesson Level: Engage-----Elaborate

• Identify the purpose, context, and scope of the lesson
• Develop the Os and Is
• Write the lesson or find one
Plan your 5E Adventure……

• Begin with the end in mind……
  – what do students need to know?

• Utilize lessons that are already prepared

• Incorporate reading, writing and technology
Statewide Instructional Resources Center

http://cte.sfasu.edu/
5-E Framework Planning Template

- Lesson Objectives
- Standards addressed
- Action by Phase
<table>
<thead>
<tr>
<th>ACTION</th>
<th>Reading Strategies</th>
<th>Writing Strategies</th>
<th>Technology Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1: Engage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 2: Explore</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 3: Explain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 4: Elaborate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase 5: Evaluate:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
QUESTIONS?

NANCY SHEPHERD, PH.D.
Assistant Professor
Stephen F. Austin State University
shepherdn@sfasu.edu
Questions Regarding Education Laws and Rules

Diane Salazar
Statewide CTE Coordinator
CTE Career Clusters:
  Business Management and Administration
  Education and Training
  Finance
  Hospitality and Tourism
  Human Services

Texas Education Agency
Diane.Salazar@texas.tea.gov
512-463-9581
REFERENCES

BSCS, (2005). Learning theory and the BSCS 5E Instructional Model, NSTA Professional Development Institute, Dallas, Texas.


Statewide Instructional Resources Development Center, (2015). http://cte.sfasu.edu/