THE 5E’S OF CONSTRUCTIVISM

Bill Robertson, Ph.D.
(robertson@utep.edu)
Professor, Teacher Education
THE 5E’S OF CONSTRUCTIVISM

“Learning is the Responsibility of the Learner” – John Dewey

Allows for experiences by the learner in order to address misconceptions and develop proper conceptual connections.

Provides opportunities for reflection and numerous experiences in order to synthesize information.

Curriculum should be aligned with the learner’s experiences.

Should be seen as evolving and ever changing.
Constructivism

Constructivism is a learning strategy that draws on students' existing knowledge, beliefs, and skills. With a constructivist approach, students synthesize new understanding from prior learning and new information.

The constructivist teacher sets up problems and monitors student exploration, guides student inquiry, and promotes new patterns of thinking. Working mostly with raw data, primary sources, and interactive material, constructivist teaching asks students to work with their own data and learn to direct their own explorations. Ultimately, students begin to think of learning as accumulated, evolving knowledge. Constructivist approaches work well with learners of all ages, including adults.
The 5 E’s is an instructional model based on the constructivist approach to learning, which says that learners build or construct new ideas on top of their old ideas. The 5 E's can be used with students of all ages, including adults.

Each of the 5 E's describes a phase of learning, and each phase begins with the letter "E": Engage, Explore, Explain, Elaborate, and Evaluate. The 5 E's allows students and teachers to experience common activities, to use and build on prior knowledge and experience, to construct meaning, and to continually assess their understanding of a concept.
THE 5E’S OF CONSTRUCTIVISM

Engage

Make connections between past and present learning experiences
Anticipate activities and focus students' thinking on the learning outcomes of current activities.
Students should become mentally engaged in the concept, process, or skill to be learned.
AROUND THE WORLD WITH WHEELS AND AXLES
EXPLORE
THE 5E’S OF CONSTRUCTIVISM

Explore

Provides students with a common base of experiences
Students identify and develop concepts, processes, and skills
Students actively explore their environment or manipulate materials
Purpose

The student knows that there is a relationship between force and motion. The student is expected to demonstrate basic relationships between force and motion using simple machines including pulleys and levers. The student is also expected to demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force.
EXPLORE
THE 5E’S OF CONSTRUCTIVISM

Explain

Helps students with conceptual understandings
Verbalize their conceptual understanding
Demonstrate new skills or behaviors
Provides opportunities to introduce formal terms, definitions, and explanations for concepts, processes, skills, or behaviors.
Another simple machine to explore is the wheel and axle. The wheels and axles on a skateboard are the urethane wheels, the sealed bearings and the axle the runs through the truck. There are wheels and axles almost everywhere we look. They are a very common and useful simple machine. On a skateboard, the wheel and axle simple machine allows the rider to roll, carve, grind and spin.
EXPLAIN

For each of the data tables, record the weight of each book, the force without wheels and the force with wheels in grams (g).

<table>
<thead>
<tr>
<th>Trial</th>
<th>Weight of Book (g)</th>
<th>Force without wheels (g)</th>
<th>Force with wheels (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
THE 5E’S OF CONSTRUCTIVISM

Elaborate

Extends students’ conceptual understanding
Allows them to practice skills and behaviors
Uses new and unique experiences
Develop deeper and broader concept understandings
Obtain more information about areas of interest
Refine their skills.
A wheel and axle reduces the amount of friction an object creates during its motion, because fewer surfaces are exposed to the stationary object, usually the ground, at any given time. Examples of wheels and axles include tires, doorknobs, and the crankshafts on bicycles, steering wheels, gears, and egg beaters. The wheel and axle can be found in a number of modern technologies, including motorcycles, cars, buses and airplanes.
Often, simple machines help someone to reduce forces or gain leverage to make something easier to do. They encompass the most basic of physics concepts, and are found everywhere in our daily lives. We just don’t think about them as tools of science or ourselves as scientists for using things like can openers, hammers, or dustpans, but these items act as simple machines in our daily lives.
THE 5E’S OF CONSTRUCTIVISM

Evaluate

Encourages learners to assess their understanding and abilities

Lets instructors evaluate students' understanding of key concepts and skill development
Once your experiment is done, see if you can answer these questions in order to draw some conclusions.

• What is a wheel?
• What is an axle?
• Where are wheels and axles found in the real world?
• How do you use wheels and axles in your daily life?
• How do wheels and axles make work easier to do?
THE 5E’S OF CONSTRUCTIVISM

Bill Robertson, Ph.D.
(robertson@utep.edu)
Professor, Teacher Education

Questions?