



The Power or the 5E Model:

**A Blueprint for Inquiry,
Discovery, and Deep Learning**

We live in a time of constant and rapid change. Education, jobs, marketable skills, and fields of knowledge can shift more swiftly than ever before. In this ever-evolving landscape, the need for instructional models that develop critical thinking, problem-solving, and knowledge application has never been more crucial.

Students need to learn how to learn, so they can adapt as needed in the world that awaits them. The 5E instructional model offers a framework to accomplish just that.

The Foundations of the 5E Instructional Model

In 1987, Rodger Bybee and his team at [Biological Sciences Curriculum Study \(BSCS\)](#), developed the 5E Instructional Model as an answer to a widespread call for science education reform. It builds on earlier learning cycle models, like [Atkin and Karplus's Learning Cycle \(1962\)](#), emphasizes experiential learning, and breaks instruction into five distinct phases — Engage, Explore, Explain, Elaborate, and Evaluate.

The 5E model is a shift away from more traditional lecture-based/direct-instruction, and toward a hands-on, highly-engaging, student-centered process. The model offers an opportunity for educators to create learning environments that foster deep learning and critical thinking. The model isn't just for learning science — it can be adapted across subject areas and grade levels. The inquiry-based framework encourages students to ask questions, investigate concepts, reflect on their understanding and apply new knowledge. These are the building blocks of a meaningful learning process in any discipline.

The Five E's of the Model

The phases of the Five E model are:

Engage: The *Engage* phase captures students' curiosity and explores prior knowledge to establish a connection with new concepts. Teachers can use thought-provoking questions, demonstrations, or real-world problems to pique interest.

Explore: The *Explore* phase encourages hands-on experimentation and exploration. Teachers provide scaffolding to guide inquiry. Students actively investigate concepts, gather data, form their own ideas, and participate in group activities or simulations to develop a deeper understanding through experience rather than direct instruction. In this phase, students grapple with concepts and make mistakes and discoveries, while teachers observe their problem-solving abilities.

Explain: The *Explain* phase deepens understanding through discussion and explanation. Students share their findings from the *Explore* phase with their teachers. Teachers ask clarifying questions, address misconceptions, offer additional resources, and introduce technical information in a more formal manner.

Elaborate: The *Elaborate* phase extends learning by applying new knowledge. Students integrate what they discovered in the *Explore* phase and what the teacher clarified in the *Explain* phase. They work on additional challenges, projects, presentations, or cross-disciplinary connections to cement their understanding.

Evaluate: The *Evaluate* phase assesses student learning through formal and informal assessments. This phase helps teachers gauge whether students have a complete grasp of concepts. It is also an opportunity to identify individual strengths and needs, provide feedback and utilize self-assessments and peer-assessments.

Advantages of the 5E Model

Traditional instruction often follows a "frontloading" approach, where teachers present information before students engage with it. Research consistently shows the limitations of this approach for developing critical thinking and retention. The inquiry-based, constructivist approach 5E model offers several advantages:

From Passive to Active: While lectures position students as passive recipients of information, the 5E model places them in active roles where they investigate and discover concepts themselves. By beginning with engagement and exploration, the 5E model activates students' existing knowledge and ability to make connections before formal instruction occurs. Students take an active role in their learning from the start. By beginning with engagement and allowing student-directed inquiry, the model taps into intrinsic curiosity. Triggering cognitive engagement sets the stage for deep learning. This curiosity-driven approach may tap into intrinsic motivation to discover more about a concept.

From One-Size-Fits-All to Personalized Learning: The 5E model prioritizes active learning and inquiry, offers multiple pathways for engagement and many points for teacher observation and assessment. It inherently supports diverse learners.

From Memorization to Understanding: Traditional approaches often emphasize recall of facts and procedures. The 5E model prioritizes conceptual understanding and application. The 5E model is based on constructivist learning theories, particularly those of [Jean Piaget](#), [Jerome Bruner](#), and [Lev Vygotsky](#). The constructivist approach emphasizes that learners 'construct' their understanding through experience reflection, and building on prior knowledge, rather than passively taking in information through instruction.

From Fragmented to Integrated Knowledge: Rather than presenting information in isolated units, the 5E model helps students connect new learning with existing

knowledge and across subject boundaries. The cyclical nature of the model, particularly the Evaluation phase, encourages students to reflect on their learning processes, identify misconceptions, and refine their approach and understanding.

From Teacher-Centered to Student-Centered: The 5E model shifts the teacher's role from "sage on the stage" to "guide on the side," empowering students as the primary agents in their learning journey.

Conclusion: Creating Curious, Independent, Critical Thinkers

The 5E model is a powerful tool for 21st-century education, creating curious, independent, critical thinkers equipped with a toolkit to explore and understand the world around them. As we guide the next generation toward an uncertain future, giving them the tools of inquiry and discovery may be our most important educational responsibility.

References

Research Papers

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Online Resources

The Next Innovation in BSCS's Instructional Design. *Anchored Inquiry Learning*

<https://bscs.org/about/anchored-inquiry-learning/>

Empowering Students: The 5E Model Explained. *Lesley University*

<https://lesley.edu/article/empowering-students-the-5e-model-explained>

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