The 5e Learning Cycle

Why

The learning cycle rests on constructivism as its theoretical foundation. "Constructivism is a dynamic and interactive model of how humans learn" (Bybee, 1997, p. 176). A constructivist perspective assumes students must be actively involved in their learning and concepts are not transmitted from teacher to student but constructed by the student. In the early 1960's, Robert Karplus and his colleagues proposed and used an instructional model based on the work of Piaget. This model would eventually be called the Learning Cycle (Atkin & Karplus, 1962). Numerous studies have shown that the learning cycle as a model of instruction is far superior to transmission models in which students are passive receivers of knowledge from their teacher (Bybee, 1997). As an instructional model, the learning cycle provides the active learning experiences recommended by the National Science Education Standards (National Research Council, 1996).

The learning cycle used in these lesson plans follows Bybee’s (1997) five steps of Engagement, Exploration, Explanation, Elaboration, and Evaluation. As in any cycle, there’s really no end to the process. After elaboration ends, the engagement of the next learning cycle begins. Evaluation is not the last step. Evaluation occurs in all four parts of the learning cycle. The description of each part of the learning cycle draws extensively from Smith’s work.

How

Engagement: First build interest in the subject, to propel pupils into the learning process. This could be with news stories, online video clips or other stimuli. The purpose of engagement is to:
• Focus students’ attention on the topic.
• Pre-assess what students’ prior knowledge.
• Inform the students about the lesson’s objective(s).
• Remind students of what they already know that they will need to apply to learning the topic at hand.
• Pose a problem for the students to explore in the next phase of the learning cycle.

Exploration: Next pupils gain concrete experience and familiarity with the concept, before any formal definitions. This could be through hands-on, games, or discussion. The purpose of exploration is to have students collect data that they can use to solve the problem that was posed.

Explanation: This stage is about achieving ‘transfer’. In this phase of the process, students apply the concept to familiar and unfamiliar contexts and problems. The teacher also introduces new vocabulary, phrases or sentences to label what the students have already figured out.

Elaboration/Examine: This stage aims to assess pupils’ understanding. This could be through quizzes, observation, or a ‘performance assessment’ such as making a presentation.

Evaluation: This enables students to reflect on what they have learnt, also gives a chance to talk to other students to ensure they have fully understood the content of the lesson.