Creative Classroom Scenario

After investigating density, displacement, and buoyancy in hands-on experiments, students in Mr. Suffolk's elementary class take on the role of designers to create boats for We B Toys. The students create and present a digital product to sell their designs to students in a younger class, who play the role of product developers for We B Toys. For this project, Mr. Suffolk has chosen to focus on creativity as a critical part of scientific thinking.

For the first activity, one that introduces students to the concept of density, Mr. Suffolk gives his students a big tub of water and several objects that float or sink (wood, coins, paper clip, and so forth). He asks students to predict which of the items will sink and which will float, and then test their predictions. In small groups, students use inductive reasoning to brainstorm a list of properties that might have caused the objects to float or sink. After this brainstorming session, Mr. Suffolk gives students a rubric for the **Expands on What Is Known** criterion for creativity. He asks students to use the rubric to think about their activity responses and reflect on their creativity in their science journals.

After conducting several experiments in class to further refine their understanding of density, displacement, and buoyancy, students generate questions they still have about the topic and design an experiment that will answer one of their questions. Mr. Suffolk explains the creativity criterion **Experiments with Alternatives**, and shares a checklist he developed based on a rubric. It encourages the students to be as creative as possible when they think of their experiment, while still thinking like scientists. After the activity is completed and students draw conclusions about what they learned, they use the checklist to self-assess their ability to come up with a variety of ways to achieve their goal of answering a scientific question.

When students have demonstrated through formative assessments that they understand the scientific concepts of the unit, they apply their learning to the creation of a toy boat that will float and be fun for children to play with. At the beginning of the project, Mr. Suffolk models some skills for effective brainstorming, emphasizing the skills in the criterion, **Generates Original Ideas**. He encourages students to use their creativity when proposing ideas for their toy boats and uses the rubric as a guide when taking observational anecdotal notes during planning discussions. These notes give him information he can use when planning to model creativity skills for future projects.

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As student groups discuss the possible ideas for their toy boats, they use the rubrics for **Exercises Reflective Judgment** and **Uses Imagination** as they choose a final idea and refer to it frequently throughout the design process. They make decisions about how best to achieve their goal of creating a fun, original boat that floats.

When the students have created their boats and are ready to develop a presentation to the We B Toys product development team (students in a younger class), Mr. Suffolk reviews all of the criteria for creativity and reminds students to keep them in mind as they create their digital product. He asks them to pay particular attention to those criteria that they didn't do as well on while they continue to develop their stronger skills.

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