

Visible Learning for Science Grades 12: A Comprehensive Guide to Improving Teaching and Learning



Visible Learning for Science, Grades K-12: What Works Best to Optimize Student Learning by Douglas Fisher

★★★★☆ 4.6 out of 5

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Visible learning is a set of research-based strategies that have been shown to improve student learning. These strategies are based on the idea that students learn best when they can see the impact of their own learning. When students can see how their actions affect their progress, they are more likely to be motivated to learn and to make improvements. Visible learning strategies can be used in any subject area, but they are particularly effective in science.

The Key Principles of Visible Learning

There are five key principles of visible learning:

1. **Clarity:** Students need to know what they are learning and why. Clear learning goals and objectives should be posted in the classroom and

reviewed regularly.

2. **Challenge:** Students need to be challenged to think critically and to solve problems. Lessons should be designed to be engaging and to promote active learning.
3. **Feedback:** Students need feedback on their work in order to learn from their mistakes. Feedback should be specific, timely, and actionable.
4. **Collaboration:** Students learn from each other through collaboration. Collaborative learning activities should be built into lessons to allow students to share ideas and to work together to solve problems.
5. **Reflection:** Students need to reflect on their learning in order to make improvements. Reflection activities should be built into lessons to allow students to think about what they have learned and to identify areas where they need to improve.

How to Apply Visible Learning in Your Science Classroom

There are many ways to apply visible learning strategies in your science classroom. Here are a few examples:

- **Use clear learning goals and objectives.** Post these in the classroom and review them regularly with students. Check for understanding by asking questions and having students complete short quizzes or exit slips.
- **Create challenging learning experiences.** Design lessons that are engaging and that promote active learning. Use hands-on activities, experiments, and problem-solving tasks to help students learn.

- **Provide students with feedback on their work.** Feedback should be specific, timely, and actionable. Written feedback can be provided on assignments, and verbal feedback can be provided during class discussions or one-on-one conferences.
- **Encourage collaboration among students.** Collaborative learning activities can help students to share ideas and to work together to solve problems. Use group projects, peer review, and brainstorming sessions to promote collaboration.
- **Provide opportunities for students to reflect on their learning.** Reflection activities can help students to think about what they have learned and to identify areas where they need to improve. Use journaling, self-assessment, and peer feedback to encourage reflection.

Assessment in the Visible Learning Classroom

Assessment is an integral part of visible learning. Assessment should be used to inform teaching and to help students track their progress. There are many different types of assessment, but the most effective assessments are those that are aligned with learning goals and objectives. Assessments should also be timely and frequent.

There are four main purposes of assessment in a visible learning classroom: to diagnose student learning, to track student progress, to evaluate student learning, and to inform teaching.

- **Diagnostic assessment** is used to identify what students know and can do. This information can be used to plan instruction and to provide targeted support to students who need it. There are formative and

summative assessments that are used for, respectively, formative and summative evaluations.

- **Tracking** student progress involves monitoring how students are progressing toward learning goals and objectives. This information can be used to make adjustments to instruction and to provide feedback to students and parents.
- **Evaluation** is used to assess student achievement and to determine a student's grade.
- **Informing instruction** involves using assessment data to make decisions about what to teach, how to teach it, and how to assess student learning.

Creating a Classroom Environment that Supports Visible Learning

The classroom environment plays a critical role in supporting visible learning. The classroom should be a place where students feel safe, respected, and challenged . Here are a few tips for creating a classroom environment that supports visible learning:

- **Establish clear expectations.** Students need to know what is expected of them in order to be successful. Clear expectations should be posted in the classroom and reviewed regularly.
- **Create a positive learning environment.** Students are more likely to learn when they feel safe and respected. Create a positive learning environment by being respectful, encouraging, and supportive.
- **Provide opportunities for students to take ownership of their learning** Learners of any age appreciate a say over their own time, learning, and environs. Provide choices whenever viable, offer

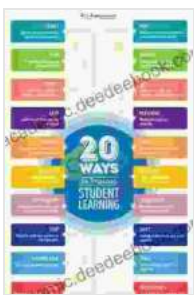
autonomy in appropriate situations, and give learners a voice in decisions that affect them.

- **Encourage collaboration.** Collaborative learning activities can help students to learn from each other and make sense of their learning. Create opportunities for students to work together on projects, problem-solving tasks, and other activities.
- **Provide feedback.** Feedback is essential for student learning. Give students feedback on their work in a timely and constructive manner.

Visible learning is a powerful approach to teaching and learning that can help students to achieve their full potential. By using visible learning strategies, teachers can create a classroom environment that supports student learning and helps students to become independent learners.

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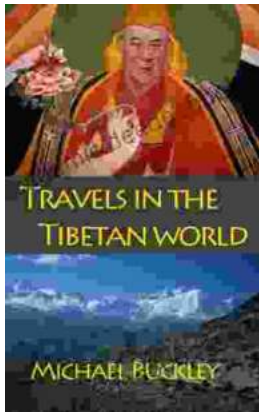
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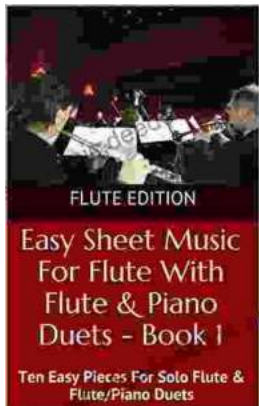
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