Science Classroom Observation Guide: Overview and Uses

Introduction

The SCIENCE CLASSROOM OBSERVATION GUIDE helps establish common language about effective science instruction, shapes a common vision for science programs, guides individual and group reflection on instruction, and supports teachers in eliciting the involvement of their colleagues in the collaborative examination of instructional practices. It is used by teachers to strengthen their individual practice and by professional learning communities to work collaboratively on a specific facet of instruction.

Overview

Organization of the SCIENCE CLASSROOM OBSERVATION GUIDE

The SCIENCE CLASSROOM OBSERVATION GUIDE describes a research-based approach to effective science teaching that can be used by administrators and teachers to develop a shared understanding of quality science classrooms and to collaboratively identify targets for growth. The guide is divided into four *components* which are further divided into constituent *elements* that comprise them. The elements are described in detail by the bulleted *indicators*. The components of effective science instruction are:

I. Classroom Culture is Conducive to Learning Science

An effective science classroom that is respectful and equitable is critical to ensure that each and every student has the opportunity to learn. In this setting, teachers and students exchange and challenge ideas and support and defend those ideas with evidence.

II. Science Content is Intellectually Engaging

An effective science lesson focuses on science content that is important for students to know, and represents science as a dynamic body of knowledge generated by investigation and modified based on evidence. Students interact purposefully with the intended science content to develop a scientifically accurate understanding of the science concepts and the supporting facts and terms.

III. Instruction Fosters and Monitors Student Understanding

Effective science instruction strategically uses questioning, discussion, direct experience, and direct explanation to help students think about concepts to promote understanding. Student responses drive instructional decisions to challenge current thinking and deepen their conceptual understanding.

IV. Students Organize, Relate, and Apply Their Scientific Knowledge

In effective science classrooms, students take responsibility for doing the intellectual work to clarify, monitor, and revise their ideas based on scientific reasoning and evidence, and thereby begin recognizing the connections between the immediate lesson, real-world contexts, and new situations.

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Uses of the SCIENCE CLASSROOM OBSERVATION GUIDE

Collaborative Uses

Peer classroom observations: As a tool to foster peer-to-peer conversation, the SCIENCE CLASSROOM OBSERVATION GUIDE lets one teacher focus on a selected component, or element of a component of instruction. The observing teacher then uses the indicators in the SCIENCE CLASSROOM OBSERVATION GUIDE to focus the observation of the instruction.

Coach/Mentor relationships: The SCIENCE CLASSROOM OBSERVATION GUIDE provides a picture of observable behaviors consistent with effective science instruction. Within the Guide is a framework which allows the mentor and novice teacher to collaboratively identify specific instructional elements for observation, and maintain objectivity in post-observation discussions.

Professional learning community: Examining a videotaped lesson collaboratively with colleagues through the lens of the SCIENCE CLASSROOM OBSERVATION GUIDE allows the recorded teacher to ask her colleagues to place their attention on one well-described element or component of effective science instruction, keeping the discussion focused and objective.

Lesson study: The SCIENCE CLASSROOM OBSERVATION GUIDE allows a lesson study group to select aspects of instruction they would like observers to provide feedback on. The components, elements, and indicators allow a group to easily scale the feedback from general to detailed observations of instruction.

Case study: The SCIENCE CLASSROOM OBSERVATION GUIDE may be used in case study to highlight certain aspects of instructional practice related to the issues a particular case raises. Indicators in the guide may help case study participants consider different perspectives and/or potential solutions to the dilemmas presented in that case.

Provide cross-curricular support for instructional dialogue: While many instructional strategies differ between content areas, there are some common elements of effective instruction encapsulated in the SCIENCE CLASSROOM OBSERVATION GUIDE. For groups working collaboratively among multiple content areas, this guide allows them to craft a common vision for effective instruction in their building.

Individual Uses

Provide a vision of effective instruction: The SCIENCE CLASSROOM OBSERVATION GUIDE provides concise descriptions of what effective science instruction may look like in classrooms, focusing on specific components of instruction.

As an inventory of effective instruction: The SCIENCE CLASSROOM OBSERVATION GUIDE can serve as a checklist for items to be considered when designing instructional structure. For example, “How is this lesson building on students’ prior ideas and experiences?”

To accelerate professional learning: The terminology used in the guide makes it easy for the teacher to communicate a clearly identified area of focus to her students, colleagues, or administrator so that they may provide useful feedback to the teacher.

Planning for instruction: The guide can be used to assess the effectiveness of the curriculum used in the classroom. Thinking carefully about the four components of the SCIENCE CLASSROOM OBSERVATION GUIDE helps ensure curriculum is used effectively.

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Formal Teacher Evaluation: A Caution

The NCOSP Science Classroom Observation Guide is not intended for formal teacher evaluation. Establishing a culture of trust and respect, where observations are used to support teacher learning and growth, is essential for the guide to support instructional improvements. Multiple cycles of observation, reflection, and discussion over time – months and years – are necessary before lasting changes in practice takes root. Every effort must be made to ensure teachers are given the opportunity to take risks and make mistakes while on their path to instructional effectiveness. Using the guide for evaluation could undermine the trust needed for observations to be objective and conversations about instructional effectiveness to be open, honest, and productive.

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