

## **Mastery Goal Orientation**

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Nuclear energy as an alternative energy source, environmental pollution, and genetic engineering are only a few of the controversial issues that confront our students today. Any brief glance at the print or electronic media reveals the increasing impact that science and technology has on our society. Without realising it, our students are implicitly being called upon to make judgements and to formulate opinions on some of these critical issues. It is not surprising, therefore, that they tend to rely heavily on the knowledge and expertise of their [science] teachers at school to assist them as they mentally interrogate these issues at the personal level.

In response to changes such as these, and to address their impact on, and the implications for, our students, several methodologies of constructivist teaching have become increasingly popular within the science classroom. Volumes of literature speak about the ideology of constructivism, and researchers and educators agree that, once provided with the right stimulus, students are naturally active builders of knowledge through interaction with their social and physical environments. Over the last decade or so, the emphasis on constructivist teaching in the science classroom has led to an increasing use of activities that focus on hands-on investigations, social interactions, and classroom discussions. Teachers become facilitators of knowledge rather than dispensers of knowledge and, indeed, the benefits of the constructivist approach are well known and well documented.

An adaptation of the constructivist approach that has been used to enhance the constructivist classroom experience, and which has proven to be particularly useful when teaching controversial topics is the mastery goal orientation approach. This approach has been gaining popularity over the last few years, and advocates of the method believe that it works because the focus is on mastery rather than on performance.

Mastery goal orientation or mastery orientation is described as “a student's wish to become proficient in a topic to the best of his or her ability. The student's sense of satisfaction with the work is not influenced by external performance indicators such as grades or class placement. Mastery orientation is associated with deeper engagement with the task and greater perseverance in the face of setbacks” (Ames, 1992). Students with mastery goal orientations are intrinsically motivated; they attempt to master the topic, aim to learn as much as possible, and consider mistakes to be stepping stones.

According to Timothy L. Carter, assistant professor of Curriculum and Instruction at Arkansas Technical University, the first step in using the mastery goal orientation approach within a constructivist-based classroom is for teachers to help students set short-term goals at the beginning of a chapter or a unit. Students are expected to write three or four learning goals, desires, or questions that relate to what they are expected to learn (not perform) at the end. This allows them to understand that the ultimate purpose is to learn and not to finish quickly in order to get a grade or a mark.

The second step in this approach is to encourage students to observe and even document their step-by-step progress in learning through self-examination of their work. The role of the teacher is crucial in this step; it is to encourage students to ask AND answer appropriate questions about their own progress towards achieving the goal/s identified in step one. In this step it is very important that students be challenged and directed by teacher questions that allow them to examine the extent to which the learning goals are being met.

The final step in this approach relies heavily on teachers' expertise and research capabilities, as it is here that any misconceptions or scientifically inaccurate beliefs that students may have developed must be addressed by the teacher. Teachers are expected to clearly point out that misconceptions are valuable stepping stones in the learning process. Once students realise this, they begin to encounter what scientists encounter when attempting to develop models and theories. Through such activities students can discover that some of the questions and beliefs they hold are similar to those that scientists have struggled with in the past. The rapid technological revolution that our students are part of, no doubt, exposes them to many controversial issues—some of which they may not necessarily learn about in the classroom, but which they may have to confront outside of school and later in life. The combination, therefore, of a constructivist perspective with mastery goal orientation is an effort that is worth pursuing by teachers.

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