

Chapter 15

A Completely Structured Training on the Angoff Standard-Setting Method for Developing Critical-Thinking Skills of Teachers

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ABSTRACT

This chapter presents a completely structured training (CST) for the Angoff standard-setting method. The CST was developed to address the challenges teachers face in making the required probability judgments about student performance. It includes a comprehensive curriculum and instruction, practice, and feedback to guide participants on task performance. Overall, the approach is useful for developing critical-thinking skills among teachers in the context of assessing and evaluating educational achievement. This chapter also describes and illustrates how to use the training to facilitate professional development for K-12 teachers through programming. Guidelines, lessons and recommendations for implementation and study of CST are also provided.

PURPOSE AND OBJECTIVES OF CHAPTER

This chapter examines a Completely Structured Training (CST) approach for developing critical thinking (CT) of teachers about assessment and evaluation of students' performance. The CST was developed originally to address the complexity of the Angoff standard setting method judgment tasks for K-12 teachers. Thus, this chapter begins with the review of the literature to ground the CST in the perspectives on developing CT. The remaining sections respectively present the standard setting and Angoff method literature, the CST model, and a previous study of its effectiveness, including recommendations for future implementation.

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THE IMPORTANCE AND CHALLENGES OF CRITICAL THINKING

Critical thinking has become a focus of education, especially in the United States and other OECD countries with a knowledge economy characterized by tremendous amounts of information and ill-defined problems with uncertain solutions (e.g., Educational Resource Information Center [ERIC], 1988; Fung, Michael, Townsend & Judy, 2004; Hager & Kaye, 1992). In the U.S., the works of John Dewey on critique in the 1920s; Edward Glaser on CT in 1940s; and Bloom's Taxonomy of educational objectives in 1950s brought CT to the forefront of education (Saeger, 2014). However, no action was generated, until 1980, when the Rockefeller Commission on the Humanities recommended that CT be included in the U.S. Office of Education's definition of basic skills (ERIC, 1988). The CT movement exploded with the U.S. Secretary of Education's Commission on Excellence 1983 publication, *A Nation at Risk: The Imperative for Educational Reform* (National Commission on Excellence in Education, 1983). This report demonstrates that close to 40% of 17-year-olds did not possess the necessary higher-order thinking skills to draw inferences from written material; 80% were unable to write a persuasive essay; and 66% were unable to solve a multi-step mathematical problem. These startling findings ignited educators' efforts to assess and improve CT across the educational landscape in America (Florence, 2014).

However, there is widespread disagreement on the meaning and on strategy for assessing and developing CT in students. Several definitions have been offered in the fields of philosophy and psychology that influence the perspectives for education. The field of philosophy mostly influences the meaning for curricular purposes, while the field of psychology informs the pedagogical approaches. While the philosophical definitions focus on how people should think under ideal conditions, the cognitive psychology perspectives describe how people think (Abrami, 2015; Fung et al., 2004; Saeger, 2014). Even within the philosophical tradition, there are several definitions, which are driven by the debates about the extent to which CT is generalizable or specific to disciplines and whether it consists of skills or dispositions. For this chapter, a review of the most influential definitions and those that build upon them may suffice to underscore this status quo.

Mulnix (2012) defines CT as exercising the ability to grasp inferential relations holding between statements. He shares the dominant view that CT is an intellectual virtue that transcend subject matter divisions, however he believes that identifying relations between statements is the foundational skill. Therefore, he critiques Willingham (2007) as a notable exception of the contemporary views, which favors the generic traits approach. Willingham's (2007) definition of CT is a type of thinking in reasoning, making judgments and decisions, and problem-solving, characterized by effectiveness, novelty, and self-direction. Willingham argues that CT is not a skill on the basis that it is not generalizable from one domain to another. Meanwhile, an earlier consensual definition by the *American Philosophical Association* involving experts, such as Robert Ennis, Peter Facione and Richard Paul in a Delphi Research project indicates CT is a set of skills and dispositions. This study report Facione (1990), defines CT as a purposeful, self-regulatory judgment that results in interpretation, analysis, evaluation, inference and explanations of the basis for judgment. While adopting this definition for a meta-analysis (Abrami et al., 2015) suggest that it is the most broad-based, but not in widespread use. The most popular conceptions are Robert Ennis's. Specifically, Ennis (1989) defines CT as a reasonable reflective thinking focused on deciding what to believe or do. He replaced his earlier formulation in Ennis (1962), as a "correct evaluation of statements," which encountered much criticism, because it was based on skills alone. The penchant for Ennis (1989) conception is because it includes: dispositions and skills; generic and specific skills; and functional characteristics. But, it falls short of distinguishing CT from other higher

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