



Chapter IV

Instructional Methods and Learning Styles

Introduction

How do we factor the variability of students into our instructional methods? All students are different, and yet there are many commonalities from student to student. Should students simply design their own education, an education that theoretically would be tailored to their needs? Should students be left to their own desires and needs, as Rousseau advocated in *Emile* in the late 1700s and as A. S. Neill advocated in *Summerhill* in the 1960s? Or are there ideas and methods that all students should simply endure for the good of the social system? We have learned quite a bit about accommodating the variability of students through research into instructional methods and learning styles. If we vary our methods, we have learned, we accommodate a wider range of learning styles than if we used one method consistently. Teaching methods are the complement of content, just as instruction is the complement of curriculum. Technology teachers tend to over-use projects and problems, ignoring the options and opportunities that the balance of teaching methods offers. In this time of global hazards and changes in our lives wrought by technology, it is essential that technology teachers maintain a refined sense of how to teach about controversial and sensitive technological issues. It is essential that technology teachers have a command over values clarification methods as well as demonstration and project methods. Given that technology teaching methods are often research-driven, twenty-

two research methods are outlined in this chapter. Forty-one teaching methods are defined and five that are central to technology studies are explained in detail. The chapter concludes with detailed sections on the relationships among instructional methods, personalities, and learning styles.

Instructional Systems

Think *systemically* about instruction. Systems involve relationships, conditions, processes, causes, effects, and feedback. To identify a system, we must demarcate where one system ends and another begins. In education, as in ecosystems, this is done somewhat arbitrarily. For example, if we identify and focus on an instructional system, we necessarily bracket out the learning system. We make some system components visible and leave others invisible. We identify an instructional system at the peril of ignoring other systems or bracketing too narrowly. What is involved in the process of instruction? What are the essential components of instruction? Instructional systems involve decisions related to what will be taught, how it will be organized for learning and how learning will be assessed. For analytical purposes, it is necessary to identify what students and teachers do within the system. It is important to address individual components of the system. While there are components that are overlooked, Chapter IX's first figure generally represents an instructional system. Events of instruction, such as an activity, demonstration, or presentation require that teachers attend to all of the components within the system. Instructional planning unfolds quite procedurally, but not necessarily in a linear fashion (see Chapter IX).

It is important to grasp the scope of an instructional system and its complexities along with interrelations among its components. When we alter a component within the system, we change the conditions for all the components. We alter the process of instruction. Remember that while we may isolate an instructional system, we do not eliminate the interrelations among this system and others. When we alter instructional systems, we alter learning systems as well. Instructional systems are not built in stone. They are malleable. Hence, if there are problems and issues that are systemic rather than consequential to the system, the system can be altered. These are the most important lessons to take from our recommendation to think systematically about instruction.

In the first chapter, we approached the subject of communication and instructional planning holistically. Invoking our cycle of experience, we suggested that the best way to learn how to teach is to teach. The best way to learn how to teach technology studies is to learn how to demonstrate. Demonstrations involve all of the components of an instructional system. Instead of breaking down a demonstration into separate

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