Chapter 9
START Model in Science Teaching

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ABSTRACT

This chapter presents a discussion of the START model, which has been internationally recognized as a useful syllabi-tracking system that can be applied to online and on-ground teaching. START, an acronym for "(S)yllabus Analysis (T)racking System Covering Objectives (A)ssessment Methods (R)esearch Component Inclusion, (T)esting Through Research," is presented in this chapter as a unique method for educators to heighten current academic standards by placing a priority on multidisciplinary approaches. Through this chapter, the authors sought to provide readers with an understanding of the application of the START model in the twenty-first century. Additionally, to further strengthen the presented information, the authors included reflections on past experiences in the application of the model at a university level.

INTRODUCTION

The twenty-first century has led to the advent of major technological improvements that have revolutionized traditional education. Within the United States (U.S.), most societal activities essentially revolve around technology, especially social media outlets. The heavy reliance on social networking sites and the use of online resources has led to rapid connection amongst individuals, yet it has also paved the way for educators to adopt novel approaches to teach students. Whilst online teaching is slowly becoming a commonality, the research presented within this chapter explains the extent to which the bounds of online education could span and the way in which the award-winning START model could be further applied to improve students' learning. This work further explores the applicability of the START model, a syllabi-tracking system that enables educators to effectively teach and take part in cross-curriculum, within classroom settings at all levels of education.

According to the Virginia Department of Education (2012), cross-curriculum instruction provides students with an opportunity to integrate content and skills from multiple subjects to "ex-

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perience their school subjects as connected and interrelated, rather than isolated and fragmented." As is further explicated within the body of this article, the notion of cross-curriculum is that which is placed as a priority within the START model. This model, which was officially finalized and begun in 2008, as a result of research conducted in Manchester, England by Eugene de Silva in the 1990s, acts as an integrative and collaborative system to combine subjects. As is further exemplified herein this presented work, determined educators who have a passion for providing students with the necessary knowledge to improve the future also strengthen the effectiveness of the START model. Although the START model was independently based on research in the 1990s, many years before the widespread adoption of cross-curriculum instruction, it is hoped that by incorporating recent, up-to-date information, readers will further understand the way in which the START model paved a path for multidisciplinary research even many years ago when it was not the norm and was not generally accepted.

Overall, the aim of this chapter is to provide readers with an opportunity to understand the practicality of the START model in academic institutions ranging from high schools to graduate-level programs. The model expands on learner-centered educational applications; however, it ventures beyond the generally accepted learner-centered practices in order to integrate research within classroom settings to place a priority on the individual goals of the learners, while ensuring that they are able to master course objectives. Whilst the START model certainly has advantages for instructors to teach material, it also has many advantages for students, which are elaborated within this chapter. Overall, this chapter is aimed at expanding on the START model, and also contributing to the existing body of literature with regard to multidisciplinary approaches to teaching and the learner-centered educational environments in comparison to teacher-centered environments.

BACKGROUND

Multidisciplinary research is slowly, yet steadily becoming the new norm of education and is essentially transforming traditional education. The elegance of multidisciplinary research is highlighted by the opportunity it provides to academics to assess and investigate topics in a more detailed manner than that would be possible if assessing a specific subject as an independent notion. With regard to the presented research, multidisciplinary research played a major role in allowing students to understand the extent to which physics could be applied in their daily lives. Furthermore, the research itself was multidisciplinary in nature due to the blend of research methods, physics, and social media. This model has been further applied to other fields, such as chemistry and other sciences.

Moving forward, the START model, as aforementioned, first officially began in the United States (US) in 2008, in an effort to further support students' academic and professional goals, while improving the efficacy of institutionalized teaching and learning (de Silva, Long, & Mennen, 2008). The START model was also initiated to overcome the long-standing notion of educating students by compartmentalizing education into separate subjects, without placing a priority on the interconnected nature of all subjects. The outdated view of the academic infrastructure as being a system, wherein students learn the textbook knowledge of subjects without learning their application or connection, was rejected through this model. According to one researcher, the traditional educational system, at all levels, fails to take into consideration the personal discovery of meaning that has been highlighted as imperative for effective learning (Bondelli, 2007). In addition, as is noted in the latter stages of this chapter, the START model does not place the utmost reliance on training students to pass standardized tests; rather, the model focuses on ensuring that