Chapter 3

# Empowering Minds, Transforming Mathematics:
## Harnessing the Potential of Self-Efficacy in Instruction

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## ABSTRACT

*The COVID-19 pandemic has had a significant impact on education, with Mathematics instruction being no exception. In response to the challenges posed by the pandemic, Mathematics instructors have had to adapt their teaching strategies to engage students in virtual or hybrid learning environments. One key factor in the success of this adaptation is the instructors' level of self-efficacy and self-confidence in teaching Mathematics. This chapter explores two strategies to enhance self-efficacy in Mathematics instruction in the post-COVID era: inclusion and technology. Inclusion strategies such as understanding the diverse learning needs of students, using inclusive pedagogical approaches, and promoting collaboration and a supportive classroom environment are essential to enhance self-efficacy. Furthermore, technology strategies such as using online teaching platforms and resources, professional development on the use of technology in Mathematics instruction, and interactive and engaging technology-based learning activities can also improve self-efficacy.*

## INTRODUCTION

The COVID-19 pandemic has had a significant impact on education worldwide. In early 2020, schools and universities were closed or moved to remote learning to slow the spread of the virus. This sudden shift to online learning created significant challenges for students, teachers, and parents alike. The pandemic has disrupted the traditional methods of teaching and learning, leading to changes in the way that education is delivered. The move to online learning has highlighted existing inequalities and exacerbated the digital divide, with students from low-income households and rural areas facing challenges in accessing online learning resources (Moore, Vitale & Stawinoga, 2018). Additionally, the pandemic has highlighted the need for teachers to have training and support in using technology to deliver effective instruction, particularly for Mathematics and other STEM subjects (Capone & Lepore, 2022). Students' and teachers' mental health and wellbeing have also been impacted by the pandemic (Hamilton & Gross, 2021). The pandemic's anxiety and uncertainty, as well as remote learning's social isolation, have contributed to rising rates of anxiety and depression among students and teachers. This has brought to light the necessity for colleges and universities to offer resources and support for mental health to assist students and faculty in coping with the pandemic's challenges. The pandemic has also had an impact on the world economy, which has resulted in funding reductions for education and financial difficulties for colleges and universities. There have been additional disruptions to the educational system since many institutions being forced to reduce staff and programs (Settersten et al, 2020).

In general, the COVID-19 pandemic has had a significant impact on education and will do so for years to come. The pandemic has brought to light the importance of mental health support and resources for students and educators as well as the need for greater investment in technology and infrastructure to support remote learning. Additionally, it has highlighted the necessity of ongoing research and innovation in education to adjust to the shifting requirements of both students and teachers in a post-COVID world.

## What is Self-Efficacy?

Self-efficacy is an important psychological construct that has been studied extensively in the context of educational achievement and career paths. According to Bandura's (1977) seminal work, self-efficacy is a person's belief in his or her own ability to successfully complete a task or achieve a goal. Self-efficacy is closely linked to motivation, as those with a higher sense of self-efficacy are more likely to be motivated to work hard and persist in the face of difficulty. Self-efficacy is also closely linked to learning outcomes, as those who believe in their ability to

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