Resilience in Mathematics, Academic Resilience, or Mathematical Resilience?: An Overview

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Abstract **Aim**: To analyze the concept of resilience in mathematics subject based on three-term use; resilience in mathematics, academics resilience in mathematics, and mathematical resilience. **Background:** Resilience in academics is a contemporary focus, especially in mathematics subjects. A few terms and concepts of resilience in mathematics subjects introduced, and recently, the term mathematical resilience has received attention and become based on other resilience research in mathematics. **Methods:** The primary database is Scopus and Google scholar. The keyword use is (a) resilience, resiliences (b) mathematics (c) subjects (d) students, child, adult, to identify the relevant article. Two reviewers are involved in screening and filtering the article in the data extraction process. The screening process is based on the definition, attribute, model use, issue tackle, and approach to tackle the issue. **Results:** There are 82 articles found both in Scopus and google scholar and Scopus, and 29 were used in the final data analysis. The finding shows that resilience is considered as a personal attribute in a person, which results from the process of adapting to the environment or situation that is challenging. Every term uses a different kind of model to represent resilience but origin from the Bandura Self-Efficiency mechanism. **Conclusion:** This study provides the meaning of resilience for each term and the differences between them. Even though the world resilience almost similar purpose, the application in each field is different. Future studies should focus on the process and intervention to boost resilience.

Keywords Resilience, Academic Resilience, Mathematical Resilience, Mathematics

1. Introduction

During these few decades, resilience in academic problems has undergone extensive research. Some researchers focus on specific subjects, some focus on the whole learning life journey. Therefore, many models have been developed to portray resilience in academics. In mathematics subjects, many studies on resilience have been done to prove that resilience is one of the reasons for student success in mathematics. Instead of focusing on the backstory, they try to provide the environment and learning strategy that able to help the student overcome their hardship. The student tends to exhibit bad feeling, especially anxiety when they are working on mathematics problem or attending mathematics class.

Their problem can be detected since kindergarten, especially when the performances are consistently poor (1). While mathematics has imaged as a hard subject, complicated and cause of fear (2), these group of people who has resilience able to overcome it and this draw researcher attention to focus on how the resilience built in them. Many questions revolve, causing this topic to become a depth study. Is resilience a process? Or a personal characteristic? Is resilience is the same for other subjects? Or is there any specific resilience for a specific problem? Do Educational Resilience/Academic Resilience are same with Resilience in Mathematics? Is Mathematical Resilience different from ordinary resilience?

2. Resilience

An act to rebounded back after an adverse situation [3] or criteria of a person to display specific positive outcomes after experiencing risk [4,5]. According to the dictionary, resilience has two meaning:

I The capacity to recover quickly from difficulties; toughness.
II The ability of a substance or object to spring back into shape; elasticity [6]

There have been many studies that try to uncover the