

# Turn Over among STEM Teachers: A Case Study

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DOI Link: <http://dx.doi.org/10.6007/IJARPED/v14-i3/26018>

**Published Online:** 26 August 2025

## Abstract

This article identifies the reasons why STEM (Science, Technology, Engineering and Mathematic) teachers choose to retire early. Issues related to STEM teachers retiring early have become a hot topic of discussion and are often discussed. This study was conducted using simple random sampling. The research method was quantitative that is questionnaires distributed to 140 STEM teachers. The study findings show that the contributing factors for STEM teachers choosing to retire early are the teacher workload, personal problems, working environment and salary payment. Therefore, various parties must work together to solve this increasingly cancerous problem. A lack of quality STEM teachers will be the cause of the decrease student success in STEM subjects.

**Keywords:** Early Retirement, STEM Teacher, Working Environment, Teacher Workload, Personal Problem, Salary Payment

## Introduction

Teachers not only hold the responsibility of being educators, but teachers can also be managers, leaders, facilitators, managing directors, innovators, motivators, reformers, evaluators and supervisors. In other words, teachers are versatile people. The task of teachers is not only to teach, educate or in other words, humanize people. Some say that successful teachers are not teachers who receive many gifts on Teacher's Day, but teachers who are able to produce a civilized and knowledgeable generation. In other words, good teachers will produce good students. There is a proverb that says how the mold is the form. However, the sacred title 'teacher' always remains until the end of a teacher's life. (Munawir, Salsabila and Nisa, 2022; Prihartini, Hasnah and Ds, 2019).

The teaching profession is a noble profession because it is able to generate rewards for the hereafter. In Islam, teachers are called muallim, murobbi and muaddib. Teachers need to emulate the Prophet's attitude such as love, sincerity and patience in educating students. At the same time, teachers also need to set a good example for their students in particular and society in general (Aminah and Nursikin, 2023; Munawir, Salsabila and Nisa, 2022). However, there are still have STEM teachers who choose to retire early even though the teaching field is the field that generates the most rewards or in other words, the school is a field of rewards for a teacher.

The issue of teachers choosing to retire early is hotly debated. However, the issue of STEM teachers choosing to retire early is rarely discussed. Everyone knows that teachers have a serious job because they are not only educating in schools but also responsible for humanizing people. Especially in STEM subjects because teachers need to be more creative, critical and innovative in delivering Teaching and Learning (T&L) in an effort to increase student understanding and interest. For example, in Science subjects, teachers need to explain theories and follow them with practical exercises aimed at further strengthening students' understanding of the topic. The same is true for other STEM subjects (Galanti and Holincheck, 2022; Hamad, Tairab, Wardat, Rabbani, AlArabi, Yousif and Stoica, 2022; Lo, 2021).

The problem of teacher shortages in Physics, Mathematics and Chemistry has been around for a long time. This problem first occurred in 1983 regarding the shortage of Science and Mathematics teachers. Among the factors contributing to this issue is the issue of job dissatisfaction, which is difficult to achieve work-life balance. Teachers have to be at school until the end of school hours, which is until the evening, and even have to complete assignments on holidays. They stated that they are not comfortable with this job. This was compounded after the outbreak of the Corona Virus Disease-19 or COVID-19 pandemic, which forced a few teachers to choose to quit their jobs and switch to other professions (Hite and Milbourne, 2024; Feder, 2022).

This trend has raised concerns about the sustainability of quality STEM education in schools. While retirement is a natural part of any career, early retirement among experienced teachers often reflects deeper issues within the education system. There are some reasons why STEM teachers choose early retirement including high workloads, burnout, lack of support and better opportunities outside the teaching field. Understanding these challenges is crucial in finding effective solutions to retain skilled educators and ensure the continued growth of STEM learning. (Ming, 2024; Kim, Koedel, Kong, Ni, Podgursky and Wu, 2021).

#### *Factors Contributes STEM Teacher Choose Early Retirement*

A few STEM teachers also choose to retire early. There are several factors that contribute to STEM teachers choosing to retire early. Among them is a work environment that is not conducive. Many experienced STEM teachers feel that their contributions are underappreciated and that there is little room for growth in the profession. Without clear career advancement pathways, they may lose motivation and see early retirement as a more appealing alternative (Juškevičienė, Jevsikova, Stupurienė and Vinikienė, 2024; Whiteford, Kelly and Dawes, 2021).

Next, STEM teachers often face intensive workloads, which include lesson planning, managing laboratory sessions, grading complex assignments and keeping up with rapid technological advancements. The expectation to constantly innovate and integrate digital tools can lead to professional burnout a key reason many educators choose early retirement as a form of relief (Ebol, 2024; Farhi and Rubinsten, 2024; Ouwehand, Xu, Meeuwisse, Severiens and Wijnia, 2022).

However, there are also STEM teachers who are faced with personal problems. Not all individuals find it easy to share their problems with others. Some choose to remain silent rather than talk to others. Teaching STEM subjects is mentally demanding, often involving

extra hours after school. Over time, this can cause both physical and mental health. STEM teachers who are approaching retirement age may prefer to step away early in order to focus on personal well-being, family or hobbies especially when retirement packages make it viable (Farhi and Rubinsten, 2024; Cormier, Wong, McGrew, Ruble and Worrell, 2021).

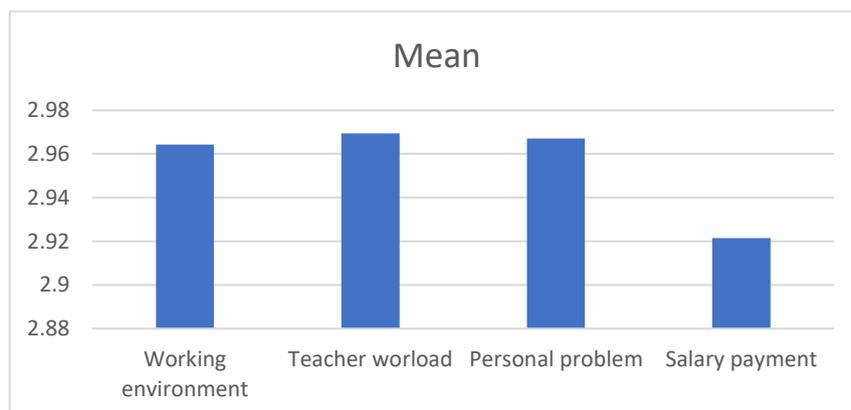
Salary payment is also an issue for STEM teachers choosing to retire early. They believe that the work they do is not commensurate with the salary they earn each month. Because there are urgent tasks that need to be expedited and force them to complete at home. Because they believe that they should be paid more (See, Munthe, Ross, Hitt and El Soufi, 2022; Wiggan, Smith and Watson-Vandiver, 2021).

### Methodology

The researcher distributed a questionnaire to 140 STEM teachers. The researcher used a five-point Likert scale questionnaire. STEM teachers were selected through simple random sampling. This study is quantitative. All data was then analysed using SPSS (Statistical Package for Social Sciences).

### Findings

Table 1.1 shows that workload is the highest reading which is 2.9694. Followed by personal problems (2.9671). Next is working environment which is 2.9643 and lastly is salary payment (2.9214).



### Results and Discussion

Researcher found that STEM teachers feel burdened by the tasks given is the main problem of this issue. As is well known, the task of STEM teachers is not only to conduct T&L sessions, at the same time they also have to do management work to the point that they feel burdened. Next, a study conducted by (Ebol, 2024) argues that teachers are burdened with many tasks. The task of teachers is not only to deliver T&L. However, teachers also have to carry out management work. at the same time, they also have to bring home the work that is needed urgently or take the work that is delayed home. In another study (Hall, 2023) supports that STEM teachers bear a heavy workload to the point that they are forced to bring home the work that is needed urgently.

Other than that researcher also found that STEM teachers also experience personal problems. STEM teachers are also ordinary people who do not run away from facing personal problems. There are STEM teachers who have to deal with personal problems that not everyone wants

to hear their voices. Some teachers choose to remain silent without sharing their problems with others. And ultimately cause them to burn out and eventually force them to retire early. A study conducted by Nguyen and Kremer (2022) stated that the loss of teachers due to early retirement causes a lack of successful students, especially the loss of quality and experienced STEM teachers. They choose to retire early due to various factors, including personal problems. In another study, Yeh, Mehta and Wayne (2025) STEM teachers who experience personal problems lead to anxiety, frustration and apathy. This is very dangerous, especially for those who are STEM teachers because they deal with students with various problems plus with their own problems. However, it can be reduced with moral support from various parties. This study also shows that STEM teachers do not feel happy with the working environment. Teachers feel stressed because fellow teachers do not provide encouragement and guidance to those in need. For example, new teachers transferred from another school or teachers newly placed in the school need guidance and want to know the ins and outs of the school. However, none of the old teachers came to offer help. According to Aslam, Alghamdi, Abid, Kumar (2023) stated that STEM teachers need a conducive environment such as guidance and support from old teachers. This is the main reason for the success of a school in educating the nation's children. Based on Diana (2021), believes that STEM teachers need support such as pedagogical knowledge from experienced STEM teachers at the school in teaching STEM subjects because they need creative, critical and innovative ideas in an effort to increase student understanding and interest.

Lastly STEM teachers also stated that they were not satisfied with the salary they were given because it was not commensurate with the workload they faced. There are some teachers who work alone and bear all expenses alone, which is a huge expense that needs to be borne alone. Causing it to be insufficient. According to a study (Steiner, Woo and Doan (2023) stated that there were STEM teachers who were not satisfied with the salary they received each month because they thought the salary was not commensurate with the tasks they did. So they took steps to work more than two jobs to increase their source of income which contributed to mental and physical exhaustion and ultimately chose to retire early. In addition, in another study, Erceg, Jelovica, Mešić, Nešić, Poljančić Beljan and Nikolaus (2023) believed that the low salary of STEM teachers made them choose to retire early. As is well known, there are STEM teachers who shoulder all household expenses. In addition, their children who are still studying require high expenses every month. So they decided to retire early and look for a job opportunity that pays well.

### **Conclusion**

The early retirement of STEM teachers is a complex issue rooted in systemic, personal and professional challenges. While each teacher's decision is unique, the pattern signals a need for education policymakers and school leaders to rethink how STEM teachers are supported, valued and retained. Addressing these challenges is not only essential for teacher well-being but critical for the future of STEM education and innovation.

### **Contributions**

The issue of STEM teachers choosing to retire early has become a very worrying phenomenon. This case study covers several factors that contributes to the increase in this case. In conclusion, various parties must work together to address this issue, so that it can be dealt with more effectively.

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