

The Relationship between Total Quality Management and Teacher Quality: Transformational Leadership as Mediator

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Abstract--- *This study aims to examine the relationship between total quality management practice and teacher quality in secondary schools besides to identify the effect of transformational leadership style on the relationship between both. This study used cross-sectional survey engaging 423 secondary school teachers from all over Malaysia. This study utilised Pearson's correlation inference analysis to determine the relationship between variables and SPSS Macro Process 3.0 analysis to identify the intermediate effect. The results showed that the relationship between total quality management practice and transformational leadership style, the relationship between transformational leadership style and teacher quality and the relationship between quality management practices and teacher quality are positive and significant. Additionally, the Variance Adjustment Factor (VAF) for mediator variable was 24.4%. Thus, this study has demonstrated that there is an intermediate effect between total quality management practice and teacher quality.*

Keywords--- *Total Quality Management; Transformational Leadership Style; Teacher Quality, Secondary School*

I. INTRODUCTION

Teachers play a significant role in helping to achieve student achievement and school effectiveness, specifically through the implementation of an effective education system which will create a highly educated, knowledge driven society [1]. Teacher is among the essential components in the organisation besides for the purpose of realising the educational aspiration [2]. The field of education is evolving in line with the development of state-of-the-art technology. In this regard, the National Philosophy of Education was established as part of the government's effort to produce holistic individuals with balanced spiritual, physical and emotional growth with the potential to achieve personal well-being and contribute to the country's harmony and prosperity [3].

Based on the above argument, having quality teachers is very important to the quality of an education system; in detail, teachers' quality is an essential factor in achieving teacher's self-efficacy in educating students in schools [4]. Teachers' quality can also reflect a teacher's job satisfaction [5] as high-quality teachers reflect their commitment to carry out the responsibilities, gain new knowledge and skills, job loyalty and their willingness to perform their task willingly without any coercion [1].

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In this light, the aspect of teacher quality needs to be taken into account in view of the increasing teachers' workload. This is because quality teachers who are creative, efficient, highly motivated and well-educated, are one of the key elements in enhancing the effectiveness of teaching and learning in schools [6]. All these aspects can be fulfilled if the teachers have high levels work and personal quality. Therefore, quality teachers play an important role in fulfilling the goals of the education system through striving to achieve their school's goals [7].

Having high quality teachers is an important aspect to fulfil Malaysia's aspiration to become a developed and educated country. It is argued that quality teachers will demonstrate the best work performance which could increase the productivity, capacity and excellence in a school [8]. This is important to create a successful future generation future. On the other hand, the level of teacher's quality might differ across individuals. hence, it is challenging to measure and quantify teacher's quality as teachers have the different responsibilities, burdens, problems, exposure and experiences [6].

The committee of the study on Teachers' workload and Responsibility conducted a comprehensive study in 2007 and found that a teacher in Malaysia spend an average of 66.24 hours a week to perform her duties and responsibilities as an educator [9]. This amount is greater than the average weekly work hours as recommended by the International Labour Organisation (ILO), which is 45 hours a week. This research states that Malaysian teachers are often burdened with not only curriculum and co-curriculum related tasks, but also tasks related to community relations, staff development, physical development, administrative works, finance, student affairs and hostel management. It was reported teachers are required to do additional administrative tasks on top of curriculum related tasks such as teaching, lesson planning, lesson preparation, assessment, and additional classes [9]. The issue of teachers' workload has led to the implementation of quality management initiatives the public service in Malaysia such as the implementation of Total Quality Management, Innovative and Creative practices, Work Quality Improvement Group and Quality School Management System. In this light, while these quality management practices should be implemented in the public service to ensure effective government service delivery, the implementation of quality management is still poorly implemented at the school level [10].

Leadership is a process of influencing a group of individuals towards a common goal or vision performance [11]. On top of that, transformational leadership is an important aspect of shaping the culture and effectiveness of a school and it was found that effective transformational leadership could positively influence job satisfaction and teacher commitment [12]. Each principal adopts his/her own style of leadership depending on the circumstances in which a school is headed. Studies have reported that most principals practice transformational leadership to influence teacher's attitudes and behaviours so that they can work towards achieving the school's goals. Existing transformational leadership needs to be continually improved to ensure the school's sustainability as a learning institution [13]. As a leader often practices transformational leadership according to the conditions and attitudes of employees within an organization [14], this study will identify the needs for principals' implementation of transformational leadership ensure that teachers can accept and implement effective total quality management in schools.

Good school quality management practices will make schools effective without relying solely on the principal's leadership effectiveness [15]. Hence, despite the change of hands in leadership, a school might still be able to maintain its quality. The quality of teachers and all aspects within the school can be systematically shaped, to produce students who are excellent in every aspect [15]. Effective quality management practices will also ensure that the teachers and the school staff are able to take on their tasks and responsibilities according to the guidelines provided by the school's quality management. As a result, the teachers will produce quality work and at the same time, able to fulfil the students' learning needs.

Based on the issues, problems and challenges discussed earlier, there is still room for studying the gaps in teacher quality by adopting a more comprehensive and effective approach which incorporates total quality management practices. The purpose of this study is to identify the relationship between the implementation of total quality

management practices, transformational leadership and teacher quality. In addition, this study also examines the role of transformational leadership as the mediator variable on the relationship between quality management practices and teacher quality in secondary schools.

This study provides an overview of the relationship between the independent variable (total quality management), the mediating variable (transformational leadership) and the dependent variable (teacher quality). The framework of this study is based on the extended model of Social Cognitive Career Theory developed by [16] which presents a more detailed model of individual achievement. The model was developed to understand teachers' career factors in education and vocational education [16]. The extended Model also emphasizes on the relationship between behaviour, environmental factor, and an individual's development and achievement [16]. The main framework of this study is supported by three main models which are Total Quality Management Model [17], Transformational Leadership Theory [18] and the Malaysian Teacher Standards [19].

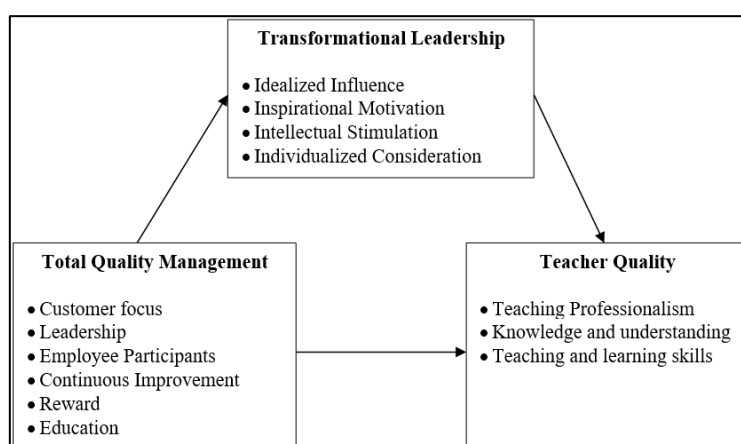


Figure 1. Relationship between Total Quality Management and Teacher Quality: Transformational Leadership as Mediator

II. METHODOLOGY

Study Design

This study used cross-sectional survey method to obtain data. The data were collected only at one time point for respondents consisting of secondary school teachers throughout Malaysia. This study involved numerical data collected and then analysed by statistical test. This study is also a descriptive form of correlation in which it examines the relationship between comprehensive quality management that can influence teacher quality. This study describes the phenomenon by analysing the data obtained from the instrument in the form of a questionnaire. All information obtained will be classified according to the specified aspect and will be quantitatively interpreted. The data measurement in this study emphasises the reliability and validity of testing the theory, constructing facts and identifying the relationships between variables.

Sample

The population of this study comprises of teachers who are teaching national secondary schools and they have different responsibilities and responsibilities than teachers teaching in other types of schools. In this regard, the characteristics of students in the national secondary schools will influence the quality of teachers as these students have a wide range of behaviours and socio-cultural backgrounds. This study involved 423 teachers. The number of samples

was determined based on the appropriate sample size as noted in the literature, as well as the study's design, procedure and statistical analyses [20].

This study used simple random sampling procedures and proportional random sampling. The simple random sampling was used in this study to ensure that each person in the population has the same opportunity to be selected as the respondents of this study [21]. The simple random sampling was also used based to select the states and teachers involved in this study. Whereas, random sampling was used to calculate the number of schools involved in this study based on actual number of schools available in the selected state, based on the number of samples required.

Table 1. The teachers' demographic profile

Profile	Category	Frequency	Percentage (%)
<i>Gender</i>	Male	118	27.9
	Female	305	72.1
	Total	423	100
<i>Level of Education</i>	Graduate	322	76.1
	Post-Graduate	101	23.9
	Total	423	100
<i>Locality of School</i>	Urban	318	75.2
	Rural	105	24.8
	Total	423	100

Research Instrument

The data were collected through questionnaires adapted from the Total Quality Management Instrument [22], Multi-Factor Leadership (MLQ) [23] and Malaysian Teacher Standards Instrument [19]. This study used construct validity and content validity to measure the validity of the construct and content to ensure it can measure the true value of the concepts in this study. This study also used the item correlational scale and the internal consistency (Cronbach's Alpha) to measure their reliability.

Table 2. Items in the survey questionnaire

Section	Dimension	Dimension	Total
<i>A</i>	<i>Demographic Profile</i>	Gender	1
		Level of Education	1
		Locality of School	1
<i>B</i>	<i>Total Quality Management</i>	Customer Focus	6
		Leadership	8
		Employee Participants	8
		Continuous Improvement	9
		Reward	6
		Education	6
<i>C</i>	<i>Transformational Leadership</i>	Ideal Influence	7
		Inspiration Motivation	9
		Intellectual Brainstorm	8
		Individual Consideration	10
<i>D</i>	<i>Teacher Quality</i>	Teacher Professionalism Practice	26
		Knowledge and Understanding	21
		Teaching and Learning Skill	24

Data Analysis

Statistical analyses used include descriptive statistics, Pearson correlation coefficient (Pearson Product - Moment Correlation Coefficient) and mediator variable analysis (SPSS MACRO PROCESS 3.0) introduced by [24]. The data collected were then analysed by researchers using the SPSS (Statistical Package for the Social Sciences) software, which was designed to analyse data and information collected statistically. In addition to the descriptive statistics, the Pearson Correlation Coefficient and Mediator Variables Macro Process 3.0 were conducted to examine the relationships between the variables and to answer the research objectives through the statistical analysis of data collected. Prior to a more detailed data analysis, Exploratory Data Analysis was conducted for data identification.

III. FINDINGS

Table 3. The correlation between total quality management and transformational leadership

Total Quality Management	Pearson Correlation	1	.768**
	Sig. (2-tailed)		.000
	N	423	423
Transformational Leadership	Pearson Correlation	.768**	1
	Sig. (2-tailed)	.000	
	N	423	423

** Significant at 0.01

The result in Table 3 showed that the variables for total quality management are positively correlated with transformational leadership ($r = .768$, $n = 423$, $p = .000$). It can be concluded that total quality management has a high correlation with transformational leadership.

Table 4. Pearson Correlation test for the relationship between total quality management and transformational leadership

<i>Dimension</i>	Transformational Leadership		
	Nilai Sig.	r	Interpretation
Customer focus	.000	.565	Moderate correlation
Leadership	.000	.618	High correlation
Employee participant	.000	.497	Moderate correlation
Continuous improvement	.000	.642	High correlation
Reward	.000	.755	High correlation
Education	.000	.635	High correlation

The results in Table 4 show that the factors of total quality management show the correlation coefficient close to 1.0. In term of customer focus, the Pearson correlation coefficient is .565, indicating that a moderate relationship strength. Next, leadership obtained a correlation coefficient of .618, indicating a strong correlation. Employee participant showed a moderate correlation coefficient of .497 while continuous improvement showed a high correlation coefficient, at 642. Meanwhile, the aspect of rewards indicate that the correlation coefficient is high at .755. Finally, education obtained .635, which is lower than .05 ($p < .05$) which shows a strong level of correlation.

Table 5. correlational analysis between transformational leadership and teachers' quality

Transformational Leadership	Pearson Correlation	1	.846**
	Sig. (2-tailed)		.000
	N	423	423

Teachers Quality	Pearson Correlation	.846**	1
	Sig. (2-tailed)	.000	
	N	423	423

** Significant at sig 0.01

The results in Table 5 show that the variable for transformational leadership are significantly and positively correlated to teachers' quality (.846). It can be concluded that transformational leadership has a high correlation with teacher quality.

Table 6. Pearson correlation of the relationship between transformational leadership and teacher quality

<i>Dimension</i>	Teachers Quality		
	Sig. Value	r	Interpretation
Idealized Influence	.000	.768	High correlation
Inspirational Motivation	.000	.787	High correlation
Intellectual Stimulation	.000	.780	High correlation
Individualized Consideration	.000	.782	High correlation

As shown in Table 6, all transformational leadership domains showed positive and significant relationships. However, each domain recorded different Pearson correlation coefficients. For the ideal influence, the coefficient is significant at .768, indicating a strong relationship, Furthermore, inspirational motivation showed a correlation coefficient of .787 with a strong relationship. Intellectual stimulation also showed a high correlation coefficient of .780 and individual consideration indicate that a high correlation coefficient with a correlation coefficient of .782.

Table 7. Correlation test between TQM and teacher quality

		Total Quality Management	Teacher Quality
Total Quality Management	Pearson Correlation	1	.942**
	Sig. (2-tailed)		.000
	N	423	423
Teacher Quality	Pearson Correlation	.942**	1
	Sig. (2-tailed)	.000	
	N	423	423

* Significant at sig. level 0.01

Table 7 shows that variables for total quality management are positively and significantly linked to teacher quality at .942. It can be concluded that total quality management has a high correlation with teacher quality.

Table 8. Pearson Correlation of the relationship between TQM and teacher's quality

<i>Dimension</i>	Teacher Quality		
	Sig. Value	r	Interpretation
Customer focus	.000	.766	High correlation
Leadership	.000	.815	High correlation
Employee participant	.000	.675	High correlation
Continuous improvement	.000	.830	High correlation
Reward	.000	.636	High correlation
Education	.000	.814	High correlation

Table 8 shows that all factors related to total quality management practices have a positive and significant relationship. However, each factor recorded different Pearson correlation coefficient. In terms of customer focus, the

coefficient of significance is at .766 with the relationship strength being high. Furthermore, leadership showed a correlation coefficient of .815 with a high relationship strength. Meanwhile, employee participants showed a high correlation coefficient of .675, continuous improvement showed a high correlation coefficient at .830, rewards scored the high correlation coefficient at .636. Finally, education scored the highest correlation coefficient at .814. Overall, the correlation between total quality management practices at teacher quality is high at .942.

Table 9. SPSS Macro Process 3.0 analysis on the moderator role of transformational leadership in the relationship between TQM and teachers' quality

Path	Unstandardized Coefficients (B)	SE	P (two-tailed)	95% Confidence Interval (CI)	
				Lower Level	Upper Level
Total effect (without mediator path c) TQM → TQ	.7985	.0139	.0000	.7712	.8258
Direct effect (with mediator path c') TQM → TQ	.6037	.0178	.0000	.5687	.6386
Indirect effect					
TQM → TL (path a)	.7396	.0301	.0000	.6804	.7987
TL → TQ (path b)	.2634	.0185	.0000	.2272	.2997
TQM → TL → TQ (ab)	.1948	.0006	.0000	.1546	.1837

Table 9 shows the mediator role of transformational leadership in the relationship between total quality management and teacher quality. It was found that the p value for overall quality management is $p = .000$, which is smaller than the significant value ($p < .05$). The result shows that total quality management can influence the quality of teachers. The overall effect without intermediate path c from total quality management to teacher quality indicates a Beta value of .7985, which means that overall quality management can influence teacher quality by 79.85 per cent. It was also observed that there is a positive influence between comprehensive quality management and intermediary variables, namely transformational leadership which represent a path with Beta = .7396 and p value of .000. These values indicate that total quality management can influence transformational leadership by 73.96 per cent. In regard to the mediator role of transformational leadership on teacher quality, the result shows that the beta value of transformational leadership on teacher quality is .2634 and $p = .000$. This means that route b has a significant and positive relation effect. Here, a one per cent change in transformational leadership will improve teacher quality by 26.34 per cent. Furthermore, there is a direct relationship between total quality management and teacher quality, with the direct effect of intermediate c is .6037. Whereas, the indirect relationship with transformational leadership is .1948. The results of this analysis indicate that transformational leadership has there is a positive and significant mediator effect in the relationship between total quality management and teacher quality.

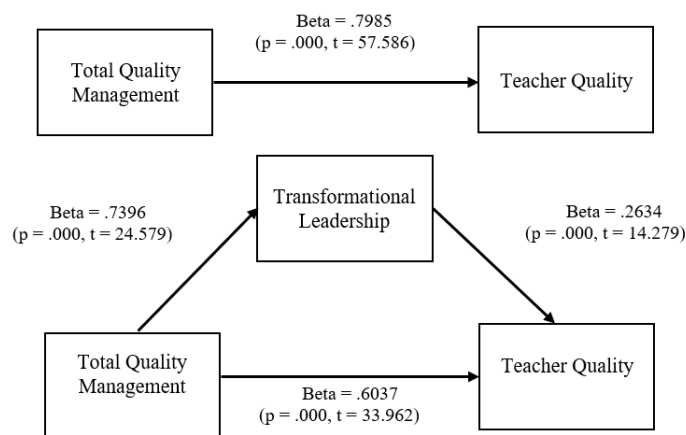


Figure 2. The mediator role of transformational leadership in the relationship between total quality management and teacher quality

The mediator effect can be calculated using the Variance Accounted For (VAF) index as follows:

$$\begin{aligned}
 &= ab / (c'+ab) \\
 &= .7396 (.2634) / (.6037+.1948) \\
 &= .1948 / .7985 \\
 &= .244
 \end{aligned}$$

The VAF for indirect effects (mediator effect) is .244. This shows that transformational leadership style has a 24.4% effect in the relationship between total quality management and teacher quality. Thus, it can be concluded that transformational leadership style has a mediator effect on the relationship between quality management practices and teacher quality.

IV. DISCUSSION

The data analysis revealed four significant findings from this study. First, total quality management has a high correlation with transformational leadership. This finding is supported by [25-27] which have proven that total quality management has a significant relationship with transformational leadership. The findings of the study also support the findings of [28] who found that reward is the total quality management factor with the highest correlation compared to other factors. This means that transformational leadership can be enhanced among school principals when total quality management is implemented in schools, particularly in providing rewards and recognition for teachers.

The next significant finding is that transformational leadership has a positive relationship and high correlation with teacher quality. This finding is in line with studies conducted by [29-35] that have proven that the impact of transformational leadership relationship to teachers' quality in schools. In this regard, transformational leadership can transform teachers' attitude and behaviour in a positive way and subsequently, improve teachers' quality through principal's charisma, providing motivation and inspiration, increasing intellectual engagement and making individual judgments appropriate to the situation.

The third significant finding shows that total quality management has a high correlation with teacher quality. The findings of this study support the studies by [36-38]. These studies argued that total quality management can improve teachers' quality. In addition, the findings show that reward and recognition are the factors with the strongest relationship with teacher quality as shown in [39-40]. This shows that total quality management is a practice that can

improve teachers' quality and schools' effectiveness. Therefore, each factor in the total quality management practices can play an important role in shaping the quality of teachers.

The final finding indicates that transformational leadership has a mediator effect in the relationship between total quality management relationship and teachers' quality. Thus, if total quality management practices are implemented directly, the quality of teachers can still be improved, but at a lower rate. On the other hand, the quality of teachers will be enhanced when the principal implements transformational leadership. This indicates that principals need to implement transformational leadership to change teachers' attitudes and behaviours in accepting total quality management in schools, and subsequently, improves teachers' quality in schools. Hence, a high-quality school relies on the competency of the school organisation work culture in managing change (15,41).

V. SUMMARY AND CONTRIBUTION

The findings of this study could help increase the existing understanding and knowledge on total quality management, transformational leadership and teacher quality. In summary, the findings suggest that total quality management and transformational leadership can contribute to improving teachers' quality. Teachers who gain support through a principal's implementation of transformational leadership will show increased professionalism, knowledge and understanding as well as higher ability to facilitate teaching and learning process. This study has several implications to schools as the finding shows the need to find the right approach to encourage teachers to involve actively in school activities and compete with each other. In this regard, higher teachers' involvement will improve the teachers' teaching quality and subsequently, the quality of the school. The ministry of education should strive to implement total quality management to ensure the continuous improvement of teachers' quality. More courses and workshops on total quality management could be conducted to educate teachers on the importance of such practices in strengthening teachers' quality in the future.

This study is with limitations. One of the limitations is that this study only examined the aspects related to total quality management, transformational leadership and quality of teachers in national secondary schools. Therefore, future studies could further elaborate and expand the study by involving teachers and administrators from other types of school, such as boarding schools, religious schools and high performing schools. As a nation leading towards a developed nation, there is a need for continuous improvement in the quality of teachers, which is line with the goals set out in the Malaysian Education Development Plan 2013-2025. Therefore, the findings of this study can contribute to improving school management practices, specifically in the implementation of total quality management, transformational leadership and teachers' quality. This study could become a source of information for school management to help them develop more detailed plans to implement total quality management and improve teacher quality. The results of this study also provide useful inputs for all parties in identifying the role of total quality management in the 21st century education system.

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