

Teacher collaboration: Significant influence on self-efficacy of secondary school teachers

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ABSTRACT

Teacher collaboration is an aspect that needs to be given due attention in the educational institutions in order to sustain the improvement of teachers' learning. This study was conducted to examine the influence of secondary school teacher's collaboration on their self-efficacy. Research design was based on quantitative approach by cross-sectional survey. Data collection via questionnaires was performed to obtain demographic information of respondents, as well as data on teacher collaboration and self-efficacy. A number of 410 secondary school teachers in the northern part of peninsular Malaysia were involved in the study as survey respondents. The collected data was processed and analyzed using statistical package for the social sciences (SPSS) via frequency, mean, standard deviation, Pearson correlation and multiple regression analysis. The study found that the level of teacher collaboration and teachers' self-efficacy among secondary school teachers is high. The findings also discovered that there was positive relationship between teacher collaboration and teachers' self-efficacy. In addition, the dimension of teacher collaboration was found to have a significant influence on the teachers' self-efficacy. Thus, the findings clearly indicated the importance of the collaboration practices between teachers in influencing the self-efficacy of teachers.

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1. INTRODUCTION

The education system has a very important role in providing the community with useful knowledge. This is because education is the main foundation to influence the development of an individual. However, in order to provide education in line with the march of time, the education system should consistently transform accordingly [1], [2]. Such transformation is important in the nation's education system so that the quality of education can be improved, and the country is able to compete globally [3]. Thus, all educationists such as teachers, school leaders and support personnel should prepare themselves to face such challenges [4].

Along with the desire to achieve quality in education, teachers play a significant role to drive students' achievements [5]–[7]. Teachers are individuals who are directly involved in teaching and learning sessions in schools. Therefore, teachers ought to have a high self-efficacy. Teachers with high self-efficacy are able to provide effective learning atmosphere and are capable of handling difficult tasks [8]–[10]. Besides that, teachers with high self-efficacy are more likely to create the best possible planning, constantly strive to find new methods to fulfil the needs of their students and always provide motivation for students to perform better [11]–[13].

According to Moran and Hoy [13], self-efficacy is related to the behavior or attitude of a person in the classroom, and it can impact the efforts related to the teacher teaching process. Self-efficacy is one's level of trust toward a possessed skill but does not truly reflect their actual skills [14]. Evidently, teacher self-efficacy is related to a teacher's behavior and belief in his or her capacity in the aspects of teaching [15]. Although self-efficacy is an important aspect that needs to exist in a teacher [16]–[18] a research conducted in 41 schools in Malaysia, however, found that only 12% of teaching lessons were delivered using the best pedagogical methods, while 38% of the teaching lessons were delivered at a satisfactory level and teaching lessons that were not delivered in a satisfactory manner contributed as much as 50% to the findings [19]. This finding demonstrates that efforts to improve the teaching skills of teachers are direly required.

In the effort to improve the ability and commitment of the teachers in delivering knowledge in schools, teachers need to work together to plan the implementation of teaching methods and associated activities. Moreover, the teachers' knowledge on pedagogy is capable of influencing the quality of teachers' teaching in the classrooms [20]. Previous studies related to cooperation among teachers or teacher collaboration had shown a positive impact on teachers' teaching methods [21], [22].

The findings are also consistent with the studies conducted by Minghui *et al.* [23]. Their study findings discovered that support among teachers was able to increase the self-efficacy of special education teachers in China. With support and cooperation among the teachers, their responsibility to provide education and guidance to students can further progress with a better quality. In 2020, Breyer *et al.* [24] also indicated that the teacher collaboration has a positive relationship with the teacher's self-efficacy. Besides that, study findings by Liu, Bellibaş, and Gümüş [25] also supported the study results obtained by Breyer *et al.* [24]. Hence, based on the discussed study findings, it clearly shows that there is a positive relationship between teacher collaboration and teachers' self-efficacy.

However, there is slight difference in the latest study in relation to the aspects of teacher collaboration [26]. The study was carried out on 10 English teachers via a case study. The study findings by Kwee [26] gathered that, in addition to the teachers collaborating in providing up-to-date teaching materials, self-efficacy of teachers can be improved if there is support from the school management in strengthening the element of collaboration. The study findings showed that there should be a clear direction regarding school policies and determining the teachers' tasks. Such formal collaboration should exist to improve teachers' self-efficacy. Subsequently, Yaakob *et al.* [27] also stated that teacher collaboration is another possible aspect which would be able to bring transformation in the educational sector, especially towards the improvement of the quality of teachers' teaching and achievements of students. Through the practice of teacher collaboration, teachers have the opportunity to generate the sharing of ideas and teaching materials, discuss the problems they encountered, and also provide avenues for teachers to receive support from their colleagues in order to address difficult and challenging situations [28].

Although studies related to teacher collaboration have been carried out in Malaysia, those studies were more focused on teacher collaboration in the professional development program, namely lesson study [29] and professional learning community (PLC) [30]. The study findings by Abdullah *et al.* [29] are in line with the concept of collaboration presented by Yaakob *et al.* [27] which described one of the collaborative practices that can improve cooperation among teachers is by using lesson study. In addition to lesson study, learning walks and peer coaching/instructional coaches are also other types of methods that can be put into practice in the PLC model. In this study, the exploration on teacher collaboration is more focused on the collaboration for improvements in the overall aspect of teaching. The collaboration of teachers in this study was measured by three dimensions of teacher collaboration: i) Formal collaboration–level of formality that describes the working characteristics of teachers' collaborative work; ii) Teachers' collaboration on instructional policy–teachers collaborate by working in team for lesson improvement, such as planning the improvements in school, teaching methods and activities, evaluating curricula and programs, and planning and determining professional development activities; and iii) The frequency of collaboration–how often are teachers working with co-workers to further improve their teaching.

The importance of collaboration among teachers in all areas within a school is highly needed and emphasized. Apart from being able to influence the success of a school, it is also an essential factor to improve teachers' self-efficacy. In addition, the fourth transformation of the Malaysian education development plan, 2013-2025 also emphasizes on the importance of the role of teachers in cultivating the leadership among colleagues in order to guide and share views related to the work of a teacher. Therefore, it would be wise for teachers to grasp such an opportunity to improve and enhance the aspects of teaching and learning, which in turn would be able to promote student achievement. Therefore, this study was conducted to examine the practices of teacher collaboration, and the self-efficacy of secondary school teachers. In particular, the objectives of the study are to: i) Determine the degree of collaboration among teachers and the self-efficacy of teachers; ii) Analyze the relationship between teacher collaboration with teachers' self-efficacy; and iii) Analyze the impact of teachers' collaboration dimension on teachers' self-efficacy.

2. RESEARCH METHOD

This was a quantitative study utilizing the cross-sectional survey method. A survey study is very useful if a researcher wants to gather data for any phenomena that cannot be observed directly, such as to learn on behaviors, opinions and it is well-suited for gathering information of large population or samples [31]. This study utilized standardized questionnaires for data collection, which involved permanent teachers teaching at the national secondary school (day school) in the northern part of peninsular Malaysia.

2.1. Study respondents

The population for this study were form four and form five teachers teaching at national secondary school (day school) in the state of Kedah, Malaysia involving 6,796 teachers. The distribution of study respondents according to districts was based on stratified random sampling while the simple random sampling method was used for the selection of schools and study respondents. In this study, the basis for determining the sample size of 364 teachers was referred to Krejcie and Morgan [32] who suggested the number of teachers that should be selected based on the total survey population. However, taking into account the possibilities of having the questionnaires not entirely returned and with incomplete data, the number of samples was increased to 410 teachers.

2.2. Study instrument

In this study, the teacher collaboration measuring instrument by Goddard *et al.* [33] which contains 13 items was employed to measure teacher collaboration practices. This teacher collaboration measuring instrument contains three dimensions which are formal collaboration (four items), teacher collaboration on instructional policy (five items), and the frequency of collaboration on instructional (four items). In addition, measuring instrument called teachers' sense of efficacy scale (TSES) by Moran and Hoy [13] which consists of 12 items was utilized to measure the dimensions of the teacher's self-efficacy. Three dimensions that are combined together to makes up the TSES are instructional strategies (four items), class management (four items), and students' engagement (four items).

All items in both measuring instruments utilized a six-point scale beginning with (1) strongly disagree to (6) strongly agree. However, for the frequency of collaboration on instructional dimension, the items employed a six-point scale starting with (1) never until (6) almost every day. Both measurement tools were tested on 38 teachers via a pilot study before being used in the actual study. Figure 1 shows the reliability of measuring instrument for teacher collaboration and the teacher's self-efficacy in this study. Reliability value (Cronbach's alpha) for this measuring instrument is between 0.87 and 0.95, and based on Pallant [34], the reliability of this measuring instrument is good.

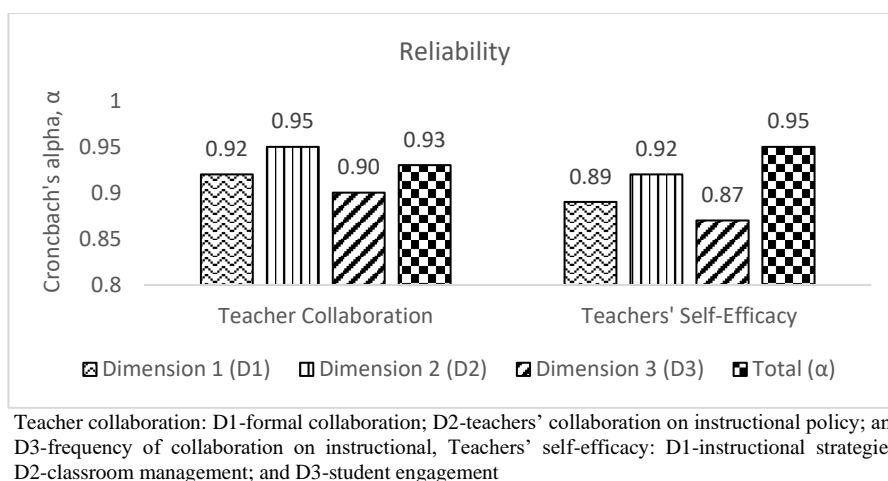


Figure 1. Reliability statistics

2.3. Data analysis

The obtained data were processed using the statistical package for the social sciences (SPSS) software version 22.0 as this software facilitates the quantitative data analysis process. The descriptive statistics, Pearson correlation and multiple regression analysis were used to analyze the answers on the questionnaire. Descriptive analysis using mean and standard deviation were utilized to measure the level of

teacher collaboration and teachers' self-efficacy among the teachers of national secondary school (day school) in Kedah, Malaysia. Next, the Pearson correlation test was also employed to analyze the relationship between teacher collaboration and teachers' self-efficacy. The interpretation of the correlation coefficient by Hussin *et al.* [35] in Table 1 is used to demonstrate the relationship strength between the variables. The next analysis, which is multiple regression analysis, was used to analyze the influence of the teacher collaboration towards teachers' self-efficacy.

Table 1. Correlation coefficient	
Correlation coefficient	Strength of relationship
1.00	Perfect
0.80–0.99	Very strong
0.60–0.79	Strong
0.40–0.59	Moderate
0.20–0.39	Weak
0.01–0.19	Very weak
0.00	No relationship

3. RESULTS

3.1. Profile of respondents

Table 2 depicts the demographic information for respondents who were involved in this study; gender, academic qualification and school category. Based on the 410 responses obtained, a total of 91 respondents (22.2%) were male while the remaining 319 respondents (77.8%) were female. In terms of academic qualification, most of the respondents obtained a bachelor's degree, 368 (89.8%), followed by 41 (10.0%) with a master's degree and only one respondent (0.2%) with a doctorate degree. Next, in terms of school category, a total of 197 teachers (48.8%) teaches in the urban school category and the remaining 213 teachers (52.0%) teach in rural schools.

Table 2. Demographic information (n=410)			
Section	Item	Frequency	Percentage (%)
Gender	Male	91	22.2
	Female	319	77.8
Academic qualifications	Bachelor	368	89.8
	Master	41	10.0
	Doctor of philosophy	1	0.2
School category	Urban	197	48.8
	Rural	213	52.0

3.2. Descriptive statistics

Based on Table 3, the mean score for three dimensions of teacher collaboration and three dimensions of teachers' self-efficacy are between 3.88 to 4.89. In general, the dimension for teacher collaboration and teachers' self-efficacy variables among secondary school teachers in Kedah, Malaysia is at a high level except for the dimension of the frequency of collaboration on instructional mean (M) and standard deviation (SD) which is at moderate level (M=3.88, SD=0.78). The mean score for this dimension is also the lowest. On the other hand, the formal collaboration dimension (M=4.89, SD=0.80) has the highest mean score. Next, the overall mean score for both variables—teacher collaboration (n=410, M=4.53, SD=0.64) and teachers' self-efficacy (n=410, M=4.71, SD=0.60), recorded a high practice level. Table 3 shows descriptive statistics for teacher collaboration and teachers' self-efficacy variables.

Table 3. Descriptive statistics of study variables			
Variables	M	SD	Level
Formal collaboration	4.89	0.80	High
Teachers' collaboration on instructional policy	4.82	0.75	High
Frequency of collaboration on instructional	3.88	0.78	Moderate
Teacher collaboration (total)	4.53	0.64	High
Instructional strategies	4.68	0.63	High
Classroom management	4.81	0.67	High
Student engagement	4.63	0.64	High
Teachers' self-efficacy (total)	4.71	0.60	High

3.3. Inferential statistics

3.3.1. Data normality

Among the basic condition to analyze by inferential statistics, such as the Pearson correlation and multiple regression, is that the data gathered has to be of normal distribution. Skewness and Kurtosis statistics are one of the ways to identify data normality. In this study, data is of normal distribution, as the Skewness and Kurtosis value for the constructs of teacher collaboration and teacher self-efficacy are within the range of ± 2.0 [36].

3.3.2. Relationship between teacher collaboration and teachers' self-efficacy

The relationship between teacher collaboration and teachers' self-efficacy among the teachers of secondary school was measured using a Pearson correlation test. Table 4 shows the relationship between teacher collaboration and teachers' self-efficacy variables. The correlation analysis shows teacher collaboration has a significant relationship ($r=.62$, $p<.01$) with the overall self-efficacy of teachers. This positive relationship indicates that if teacher collaboration is high, therefore, the teachers' self-efficacy is also high, whereas when teacher collaboration is low, the teachers' self-efficacy will also be low. The relationship between teacher collaboration and the overall teachers' self-efficacy is strong ($r=.62$). Besides that, the correlation analysis also demonstrates the dimension of teacher collaboration on instructional policy which has the strongest, positive relationship ($r=.60$, $p<.01$) with teachers' self-efficacy, followed by formal collaboration ($r=.55$, $p<.01$) and the frequency of collaboration on instructional ($r=.39$, $p<.01$). Overall, the correlation analysis discovered that there is a significant positive relationship between both variables.

Table 4. Correlation analysis of teacher collaboration and teachers' self-efficacy

Dimension	Instructional strategies	Classroom management	Student Engagement	Teachers' self-efficacy (Total)
Formal collaboration	.52**	.52**	.47**	.55**
Teachers' collaboration on instructional policy	.57**	.54**	.53**	.60**
Frequency of collaboration on instructional	.41**	.31**	.37**	.39**
Teacher collaboration (Total)	.61**	.56**	.56**	.62**

** $p<.01$ (2-tailed)

3.3.3. Influence of teacher collaboration on teachers' self-efficacy

Multiple regression analysis was used to test whether all three independent variables—formal collaboration, teacher collaboration on instructional policy and frequency of collaboration on instructional can predict the dependent variables significantly, which is teachers' self-efficacy. In reference to Table 5, the results of the regression analysis ($R^2=.398$, $F(3, 409)=89.59$, $p<.01$) displayed that all three independent variables can significantly demonstrate as much as 39.8% variance in a dependent variable. Teacher collaboration on instructional policy illustrate a significant positive influence ($\beta=.384$, $p=0.000$) towards teachers' self-efficacy, followed by the frequency of collaboration on instructional ($\beta=.190$, $p=0.000$) and formal collaboration ($\beta=.174$, $p=0.009$).

Table 5. Regression analysis on the prediction of teachers' self-efficacy by teacher collaboration

	B	β	t	p
Constant	2.036		12.309	0.000
Formal collaboration	.130	.174	2.643	0.009
Teachers' collaboration on instructional policy	.306	.384	5.771	0.000
Frequency of collaboration on instructional	.145	.190	4.577	0.000

$R=.631$; $R^2=.398$; $R^2_{adj}=.394$; $F(3, 409)=89.59$, $p<.01$; Dependent variable: Teachers' self-efficacy (Total)

4. DISCUSSION

This study had been carried out via cross-sectional survey which involved 410 secondary school teachers in the northern part of peninsular Malaysia. In general, this study explores the influence of teacher collaboration towards teachers' self-efficacy. The study findings showed that teacher collaboration is at a high level. However, this is contrary to the study findings which found that teacher collaboration in which teacher engagement in professional learning is at a low level [37]. These findings clearly showed that the secondary school teachers in this study practiced good teacher collaboration. The teachers were found to have cooperated as a team to make improvements in teaching. Cooperation exists between the principal, teachers and staff so that all school operation runs smoothly. The highest collaboration practices among teachers are in formal collaboration, followed by teacher collaboration on instructional policy. Next, collaboration frequency displayed the least collaboration practiced by teachers, but it still stands at a moderate level.

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Besides that, the self-efficacy of teachers in the study is also at a high level. These results clearly stated that teachers are able to provide an effective learning environment and good planning related to teaching and learning processes. This result supports the study findings [2], [30], [38] which also found that the self-efficacy of teachers in Malaysia is at a high level. This study discovered that secondary school teachers have a high level of self-efficacy, especially in the aspects class management, followed by teaching strategies and, finally, the engagement of students. These findings are similar to previous study which found that teachers possess the highest self-efficacy in the aspect of classroom management [39].

Study results from Pearson correlation analysis finds that there is a strong and significant positive relationship between teacher collaboration with teachers' self-efficacy. The findings of this study explain that if the teacher collaboration practices are enhanced, the teachers' self-efficacy will also improve and vice versa. As for the dimensions in teacher collaboration, namely formal collaboration, teacher collaboration on instructional policy, and frequency of collaboration on instruction, are also found to have a positive and significant relationship with the teacher's self-efficacy.

Although the dimension of teacher collaboration has a positive and significant relationship with teacher self-efficacy, the dimension of teacher collaboration namely formal collaboration, teacher collaboration on instructional policy, and the frequency of collaboration on instructional have differing values towards teacher self-efficacy. The study findings indicated that the dimension of teacher collaboration on instructional policy has the greatest influence on the self-efficacy of teachers. In this study, the multiple regression tests show that all three independent variables have a significant influence on the self-efficacy of secondary school teachers. Formal collaboration displayed a significant positive influence on the teacher's self-efficacy. School management support is able to influence the increase of teachers' self-efficacy [26]. By announcing the school's mission, such as giving clear instructions regarding teachers' tasks and effective collaboration strategies, it would be able to increase teachers' self-efficacy [26]. The school administration should also provide opportunities for teachers to collaborate with others in order to get feedback on their teaching practices [40]. Consequently, collaboration on instructional policy also has significant positive influence upon the teacher's self-efficacy. The findings of this study supported Choi and Kang [40] which stated that teachers who work together in teams to improve teachings did influence teachers' self-efficacy.

The improvement of self-efficacy occurs if teachers always work together (collectively) to enhance the aspects of teaching. These include planning professional development activities as well as choosing the methods and teaching activities together. The final analysis, frequency of collaboration on instructional, also has significant positive influence on the self-efficacy of secondary school teachers. The more often teachers discussed together regarding teaching improvement, the higher the teacher's self-efficacy would be. Cassata and Allenworth [41] found that the frequency of teacher collaboration was the highest during collaborative time planning and classroom observations with other teachers. Teacher collaboration practices which happened during the Professional Development Program could improve the teachers' teaching [41]. In summary, this study has provided important information related to teacher collaboration to be applied in the education sector to improve the teachers' self-efficacy. Schools need to pay attention to teachers' collaboration (formal collaboration, teacher collaboration on instructional policy and frequency of collaboration on instructional) as it is an important element in influencing the teachers' self-efficacy.

5. CONCLUSION

The practice of teacher collaboration among secondary school teachers has an impact on the teacher's self-efficacy. The findings discovered that teacher collaboration has a positive relationship with the teacher's self-efficacy. The results of the study also found that teacher collaboration practices could affect the self-efficacy of teachers among secondary school teachers. Within the context of this study, its findings clearly showed that the elements of teacher collaboration for lesson improvement which consists of teacher collaboration on instructional policy, followed by the frequency of collaboration on instructional and formal collaboration that takes place in school, have a positive influence on the teachers' self-efficacy. Therefore, this study has provided an important contribution in the education field specifically in the field of education management and administration. This information relating to teacher collaboration can be applied in the education field to enhance teacher self-efficacy. Various parties such as the ministry of education, department of state education, district education office, Institut Aminudin Baki, principals and the school management can employ this as guidance in training implementation and emphasize these two elements.

These findings are in line with the aspiration of the Ministry of Education Malaysia in strengthening the quality of teachers as stated in the Malaysian Education Development Plan 2013-2025. It is proposed that further qualitative research be conducted in order to obtain more in-depth research data related to teacher collaboration practices. In addition, since this study was only conducted among secondary school teachers in day schools; hence, this study should also be extended to the population in different types of schools.

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