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PRIMARY SCHOOL MATHEMATICS AND SCIENCE TEACHERS' STAGES OF CONCERN ABOUT THE IMPLEMENTATION OF LESSON STUDY

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Abstract: In this study, the Japanese model of Lesson Study was introduced as a teacher professional development programme to nine low-performing primary schools in Malaysia. The objectives of this study were to examine to what extent Lesson Study can improve low-performing primary mathematics and science teachers' stages of concern about the implementation of Lesson Study in their schools and their teaching quality as well as student learning performance. The sample consisted of 97 primary mathematics and science teachers from three types of primary schools: the National School (SK); the National Type Chinese School (SJKC) and the National Type Tamil School (SJKT). Before the implementation of Lesson Study, a workshop was conducted in every school to introduce participating teachers to the concepts of Lesson Study and the research procedure. After the workshop, the participating teachers were asked to complete the Stages of Concern Questionnaire (SoCQ) in order to identify their initial stages of concern about the implementation of Lesson Study in their schools. The SoCQ was developed based on the Concerns-Based Adoption Model (CBAM). It consists of 35 items, categorising teachers' concerns into seven stages: Stage 0 (Awareness); Stage 1 (Informational); Stage 2 (Personal); Stage 3 (Management); Stage 4 (Consequence); Stage 5 (Collaboration) and Stage 6 (Refocusing) (George, Hall & Stiegelbauer, *Measuring implementation in schools: The stages of concern questionnaire* (2006)). The same SoCQ was also given to the participating teachers after every Lesson Study cycle to determine whether their stages of concern changed before and after the implementation of Lesson Study cycles. In this paper, only the data collected from the first SoCQ given were analysed. The results showed that the profiles of the SK, SJKC and SJKT teachers' initial stages of concern about the implementation of Lesson Study in their schools were quite similar. The SK, SJKC and SJKT teachers' concerns were the highest in Stage 0 and the lowest in Stage 4, indicating that these teachers had a high level of concern about a number of other initiatives, tasks, and activities besides Lesson Study and they had quite a low level of concern about the consequences of implementing Lesson Study for their students, respectively.

Keywords: lesson study, stages of concern, primary mathematics, science teachers

BACKGROUND OF THE STUDY

Low performance in mathematics and science among primary pupils remains a long standing problem in Malaysia. This problem may be attributed to various factors such as an examination-oriented school culture, low quality teaching, and lack of interest and motivation among both pupils and teachers. For example, teachers tend to focus on "teaching to the tests" because of the examination-oriented school culture (Norris, 1993; Nuttall, 1995). Norris (1993) further explains that "when teacher performance is judged in terms of pupil performance on attainment tests, teachers will tend to protect themselves against the consequences of low scores and teach to the test" (p. 35). This focus on "teaching to the tests" has led teachers to use instructional strategies that mainly promote memorisation and rote learning among pupils. This examination-oriented school culture may further degrade pupils' interest and motivation in learning mathematics and science. Separately, in the 2011 Trends in the International Mathematics and Science Study (TIMSS), relatively small percentages of eighth grade students internationally reported that their mathematics teachers frequently related lessons to students' daily lives (39%), and even smaller percentages had mathematics teachers who routinely brought interesting materials to class (18%) (Mullis, Martin, Foy, & Arora, 2012). In countries teaching general or integrated science, only 29% of eighth grade students, on average, internationally reported being engaged during their science lessons (Martin, Mullis, Foy, & Stanco, 2012).

In addition, quality teaching is strongly linked to student learning performance. Darling-Hammond (2000) identified the following three key factors that contribute to quality teaching: subject matter knowledge, knowledge of teaching and learning, and teaching experience. In particular, teachers' teaching skills and understanding of the student learning process are significantly linked to student success in addition to mastery of content knowledge and teachers' teaching experiences.

Normally, in-service teacher professional development in Malaysia takes place through the selection of one or two teachers from each school to attend short courses or workshops to learn new pedagogical knowledge and skills. These teachers are then expected to give in-house training to their fellow colleagues after they have completed the professional development courses or workshops. This type of in-service teacher professional development serves as an efficient way to expose more teachers to new mathematics and science teaching knowledge and skills in the shortest time possible. However, the extent to which the newly acquired knowledge and skills are practised in the actual primary mathematics and science classrooms remains questionable. These teachers themselves may not fully understand the new knowledge or skills they have

learned, and they may find it difficult to practise them without continuous support after the professional development courses or workshops. Moreover, these teachers may not be able to seek help and support when problems arise. In addition, in reviewing the literature from a large-scale study of secondary mathematics teachers, Ingvarson, Beavis, Bishop, Peck and Elsworth (2004) found that "much professional development appears to be ineffective" (p. 71). Furthermore, according to Doig and Groves (2011), "research evidence suggests that, despite the money, time, and effort put into professional development for teachers, the outcomes are not always as hoped" (p. 78).

Moreover, mathematics and science teachers need to constantly refresh and update their pedagogical content knowledge and skills in response to recent developments in effective teaching and learning practices. These teachers need to share and develop confidence in practising the newly acquired knowledge and skills that focus on meaningful student engagement and learning. They also need constant support from both the administrators and their peers. More specifically, teachers need to learn from their practices. One way of improving teachers' teaching quality is to have a school-based teacher professional development model such as Lesson Study (National Research Council, 2001). According to Lewis, Perry and Hurd (2009), Lesson Study offers teachers the opportunity to develop professional communities of inquiry, with ownership of the improvement effort, a commitment to inquiry, shared goals, and a sense of responsibility to their colleagues and students.

Thus, Lesson Study was proposed to improve mathematics and science teachers' teaching quality as well as pupils' learning performance in low-performing primary schools. In Malaysia, low-performing primary schools are schools that have scored below the 40% level in the Primary School Assessment Test or *Ujian Penilaian Sekolah Rendah* (UPSR) (Mohd Sofi Ali, 2003). According to Fernandez and Yoshida (2004), Lesson Study is a direct translation for the Japanese term *jugyokenkyu,* in which *jugyo* means lesson and *kenkyu* means study or research. Lesson Study has been well established in Japan since the 1960s, and today it is an on-going practice as a form of teacher professional development whereby teachers actively engage in a continuous process to improve the quality of their teaching and to enrich their students' learning experiences. Specifically, small groups of teachers meet at a stipulated time to collaboratively plan lessons, to observe these lessons unfold in actual classrooms, to discuss their observations and to revise the lesson plans. Thus, Lesson Study provides a platform that encourages primary mathematics and science teachers to collaboratively reflect on their classroom practices and to plan and implement new teaching practices with continuous peer support and collaboration. In other words, Lesson Study provides a more efficient method for teacher learning through on-site professional development.

In fact, a number of studies (e.g., Stigler & Hiebert, 1997, 1999; Shimahara, 1998; Lewis & Tsuchida, 1998; Yoshida, 1999; Lewis, 2000; Fernandez, & Yoshida, 2004; Lim, White & Chiew, 2005) have shown that Lesson Study improves teachers' learning and supports teachers' professional growth. Several countries have also implemented Lesson Study as part of their in-service teacher professional development programme. For example, in 2006–2008, Indonesia implemented the Strengthening In-Service Teacher Training in Mathematics and Science project at the secondary school level, which involved 94 secondary schools and 556 mathematics and science teachers in Sumedang district near Java (Tatang Suratno, 2012). The results show that the project has promoted a stronger sense of ownership among the teachers, which helps to guarantee the sustainability of continuing teacher professional development through Lesson Study collaboration. The teachers were motivated to develop innovative teaching methods by utilising local materials as teaching aids. Students were also motivated and enjoyed learning mathematics and science because teachers enabled students to construct mathematical and scientific concepts through activities and experiments.

However, the review of related literature shows that implementing Lesson Study in schools demands a considerable amount of time, effort and commitment from teachers in order to be successful. Furthermore, a number of other initiatives, tasks, and activities in schools are of high concern to the participating teachers. Therefore, these factors may affect the participating teachers' concerns about the effects that implementing Lesson Study in their schools may have on them and their students, such as management, time, rewards, logistical aspects, working with colleagues and student performance.

OBJECTIVES OF THE STUDY

The objectives of this study were to examine to what extent Lesson Study could improve low-performing primary mathematics and science teachers' stages of concern about the implementation of Lesson Study in their schools, their teaching quality, and student learning performance. However, this paper only discusses the low-performing primary mathematics and science teachers' initial stages of concern about implementing Lesson Study in their schools.

METHODOLOGY

Research Design and Sample

The researchers employed a case study research design and purposive sampling to select the sample for the study. The sample consisted of 97 Malaysian primary mathematics and science teachers from nine low-performing primary schools in the states of Kedah, Penang and Perak. The schools consisted of three types of primary schools, namely the National School (*SK*), the National Type Chinese School (*SJKC*) and the National Type Tamil School (*SJKT*).

Impact	6	Refocusing	The individual focuses on exploring ways to reap more universal benefits from the innovation, including the possibility of making major changes to it or replacing it with a more powerful alternative.
	5	Collaboration	The individual focuses on coordinating and cooperating with others regarding the use of the innovation.
	4	Consequence	The individual focuses on the innovation's impact on students in his or her immediate sphere of influence. Considerations include the relevance of the innovation for students; the evaluation of student outcomes, including performance and competencies; and the changes needed to improve student outcomes.
Task	3	Management	The individual focuses on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing and scheduling dominate.
Self	2	Personal	The individual is uncertain about the demands of the innovation, his or her adequacy to meet those demands, and/or his or her role with the innovation. The individual is analysing his or her relationship to the reward structure of the organization, determining his or her part in decision making, and considering potential conflicts with existing structures or personal commitment. Concerns also might involve the financial or status implications of the program for the individual and his or her colleagues.
	1	Informational	The individual indicates a general awareness of the innovation and interest in learning more details about it. The individual does not seem to be worried about himself or herself in relation to the innovation. Any interest is impersonal, focused on substantive aspects of the innovation, such as its general characteristics, effects, and requirements for use.
	0	Awareness	The individual indicates little concern about or involvement with the innovation.

Figure 1. The stages of concern about an innovation

Instrument

The Stages of Concern Questionnaire (SoCQ) provides a quick-scoring measure of the seven Stages of Concern About an Innovation, which are Stage 0 (Awareness); Stage 1 (Informational); Stage 2 (Personal); Stage 3 (Management); Stage 4 (Consequence); Stage 5 (Collaboration) and Stage 6 (Refocusing). The SoCQ was developed based on the Concerns-Based Adoption Model (CBAM). According to the model, individuals progress from little or no concern, to personal or self-concern, to concerns about the task of adopting the innovation (whether it is a product, curriculum, set of strategies, or entire program that includes multiple innovations), and finally to concerns about the innovation's impact (George, Hall, & Stiegelbauer, 2006). George et al. (2006, p. 8) provide an explanation for the Stages of Concern about an Innovation as shown in Figure 1.

To suit the objectives of the study, the words 'the innovation' in the SoCQ were replaced with the words 'Lesson Study', as recommended by George et al. (2006). The adapted SoCQ consisted of 35 items, each expressing a certain concern about the implementation of Lesson Study in the school. There were 5 items per stage, and the respondents indicated the degree to which each concern was true for them at the time they completed the questionnaire by marking a number on a 0–7 Likert scale next to each statement. According to George et al. (2006), high numbers indicate high concern, whereas low numbers indicate low concern, and 0 indicates very low concern or completely irrelevant items. The questionnaire required approximately 10–15 minutes to complete. Some sample items for each of the seven Stages of Concern about an Innovation on the adapted SoCQ are shown in Figure 2 (George et al., 2006, p. 27).

Using SPSS version 20 for Windows, the internal consistency reliability as estimated by Cronbach's alpha coefficients for Stages 0, 1, 2, 3, 4, 5 and 6 of the SoCQ based on the pre-survey data were .41, .73, .80, .69, .65, .77 and .55, respectively.

Data Collection

The second author conducted a workshop at every school to introduce the concepts of Lesson Study and the research procedure to the participating teachers before Lesson Study was implemented. After the workshop, the participating teachers were required to complete the SoCQ in order to identify their initial stages of concern about the implementation of Lesson Study in their schools. After every Lesson Study cycle, the same SoCQ was also given to the participating teachers to determine whether there were any changes in their stages of concern before and after the implementation of Lesson Study cycles.

Impact	6	Refocusing	2. I now know of some other approaches that might work better.
			31. I would like to determine how to supplement, enhance, or replace Lesson Study.
	5	Collaboration	5. I would like to help other faculty in their use of Lesson Study.
			27. I would like to coordinate my effort with others to maximise Lesson Study's effects.
	4	Consequence	1. I am concerned about students' attitudes towards Lesson Study.
			11. I am concerned about how Lesson Study affects students.
Task	3	Management	4. I am concerned about not having enough time to organise myself each day.
			16. I am concerned about my inability to manage all Lesson Study requires.
Self	2	Personal	17. I would like to know how my teaching or administration is supposed to change.
			28. I would like to have more information on time and energy commitments required by Lesson Study.
	1	Informational	6. I have a very limited knowledge of Lesson Study.
			15. I would like to know what resources are available if we decide to adopt Lesson Study.
	0	Awareness	12. I am not concerned about Lesson Study at this time.
			21. I am preoccupied with things other than Lesson Study.

Figure 2. Sample items on the SoCQ

Data Analysis

The participating teachers' responses on the SoCQ were analysed to identify their stages of concern about the implementation of Lesson Study in the three types of schools, SK, SJKC and SJKT. The teachers' item responses for each stage of concern were added to represent their raw score totals. The mean raw score totals were then computed for each stage of concern. Finally, these mean raw score totals were converted to percentile scores based on the Percentile Conversion Chart for the Stages of Concern Questionnaire (George et al., 2006). The percentile scores were used to plot a graphical profile for all of the teachers in *SK*, *SJKC* and *SJKT*, respectively.

FINDINGS AND DISCUSSION

Table 1 shows the mean raw score totals and percentile scores of the *SK*, *SJKC* and *SJKT* teachers before the implementation of Lesson Study in their schools. The teachers' concerns are interpreted as very high, high, moderate, low or very low based on the range of their percentile scores as follows: very high: 81–100; high: 61–80; moderate: 41–60; low: 21–40; and very low: 0–20.

Table 1. Mean raw score totals and percentile scores of the SK, SJKC and SJKT teachers

	Mean raw score totals			Percentile scores		
	SK	*SJKC*	*SJKT*	*SK*	*SJKC*	*SJKT*
Stage 0	18.95	17.41	15.62	97	94	94
Stage 1	21.40	18.24	22.57	75	66	84
Stage 2	22.44	18.82	23.16	78	70	80
Stage 3	21.26	17.76	17.00	80	69	65
Stage 4	18.95	16.59	20.49	27	21	30
Stage 5	20.72	18.53	23.81	52	44	64
Stage 6	18.60	15.82	19.97	60	47	65

Figure 3 displays the *SK*, *SJKC* and *SJKT* teachers' stages of concern profiles before the implementation of Lesson Study in their schools. As shown in Figure 3, the *SK* (97), *SJKC* (94) and *SJKT* (94) teachers' percentile scores in Stage 0 (Awareness) were very high, with the *SK* teachers showing the highest concern. The teachers' very high score in Stage 0 indicated that a number of other initiatives, tasks, and activities were of very high concern to them. In other words, the implementation of Lesson Study in their schools was not the only thing that the teachers were concerned about before Lesson Study was implemented in their schools (George et al., 2006). In addition, the *SK*, *SJKC* and *SJKT* teachers' concerns were the highest in Stage 0 among the seven stages of concerns. This result concurs with the results of a study by Chamblee, Slough and Wunsch (2008) that examined the impact of a year-long professional development program on high school mathematics teachers' concerns about the implementation of graphing calculators in their classrooms. They found that the teachers' concerns were very high on Stage 0 (81) at the beginning of the professional development experience. Furthermore, they also found that the teachers' concerns were highest in Stage 0 among the seven stages of concerns at the beginning of the professional development experience. This result is also in agreement with the results of a study by Ndirangu and Nyagah (2013) that investigated science teachers' concerns about implementing the Strengthening of Mathematics and Science Secondary Education (SMASSE) innovation. They found that the science teachers' concerns about the implementation of the SMASSE innovation were very high in Stage 0 (97), and it was also the highest concern among the seven stages of concerns.

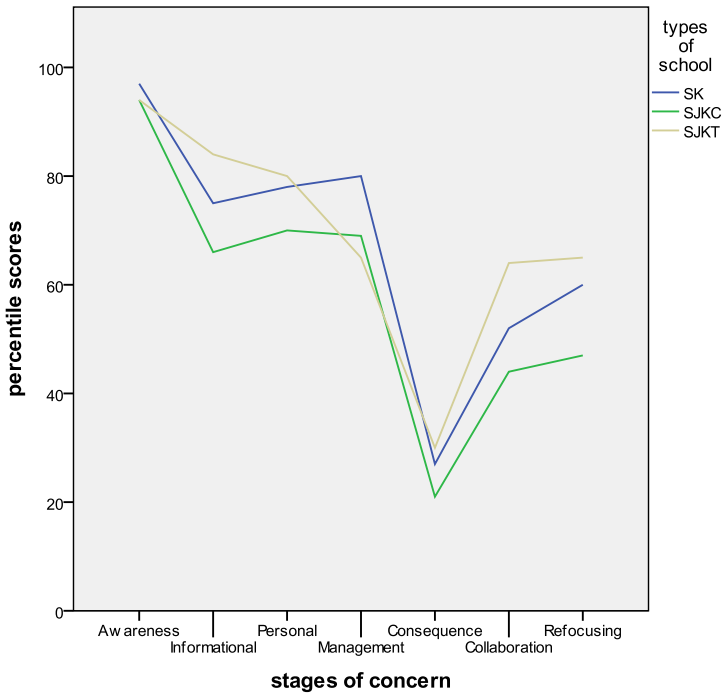

Figure 3. *SK*, *SJKC* and *SJKT* teachers' stages of concern profiles

The *SK* (75) and *SJKC* (66) teachers' percentile scores in Stage 1 (Informational) were high, with the *SK* teachers showing a higher concern. The teachers' high score in Stage 1 suggests that they would have liked to know more about the implementation of Lesson Study in their schools. They were not concerned about the more important details but, rather, wanted fundamental information about what the implementation of Lesson Study was, what it would do, and what its use would require (George et al., 2006). Chamblee et al. (2008) also found that the high school mathematics teachers' concerns about the implementation of graphing calculators in their classrooms were high in Stage 1 (80) at the beginning of the professional development. Similarly, Ndirangu and Nyagah (2013) found that the science teachers' concerns about the implementation of the SMASSE innovation were high in Stage 1 (80). However, the *SJKT* (84) teachers' percentile scores in Stage 1 were very high, indicating that their desire to know more about the implementation of Lesson Study in their schools exceeded that of the *SK* and *SJKC* teachers.

The *SK* (78), *SJKC* (70) and *SJKT* (80) teachers' percentile scores in Stage 2 (Personal) were high, with the *SJKT* teachers showing the highest concern and the *SJKC* teachers showing the lowest concern. According to George et al. (2006), the teachers' high score in Stage 2 revealed that they were highly

concerned about status, rewards, and what effects the implementation of Lesson Study in their schools might have on them. Similarly, Chamblee et al. (2008) found that the high school mathematics teachers' concerns about the implementation of graphing calculators in their classrooms were high in Stage 2 (76) at the beginning of the professional development experience. Ndirangu and Nyagah (2013) also found that the science teachers' concerns about implementing the SMASSE innovation were high in Stage 2 (78).

In addition, the *SJKT* teachers' Stage 1 percentile score (84) was higher than their Stage 2 percentile score (80) in this study, suggesting that they were open to and interested in learning more about the implementation of Lesson Study in their schools (George et al., 2006). Likewise, Chamblee et al. (2008) found that the high school mathematics teachers' concerns about the implementation of graphing calculators in their classrooms in Stage 1 (80) were higher than their concerns in Stage 2 (76) at the beginning of the professional development experience, indicating that they were open to and interested in learning more about the implementation of graphing calculators in their classrooms. Ndirangu and Nyagah (2013) also found that the science teachers' concerns about the implementation of the SMASSE innovation on Stage 1 (80) were higher than their concerns in Stage 2 (78). However, both the *SK* and the *SJKC* teachers' Stage 1 percentile scores (75 and 66, respectively) were lower than their Stage 2 percentile scores (78 and 70, respectively) in this study, indicating that they had various degrees of doubt and potential resistance to the implementation of Lesson Study in their schools (George et al., 2006).

The *SK* (80), *SJKC* (69) and *SJKT* (65) teachers' percentile scores in Stage 3 (Management) were also high, with the *SK* teachers showing the greatest concern and the *SJKT* teachers showing the least concern. The teachers' high score in Stage 3 showed that they were highly concerned about management, time, and logistical aspects of implementing Lesson Study in their schools (George et al., 2006). This result is also in accordance with Ndirangu and Nyagah's (2013) finding that the science teachers' concerns about the implementation of the SMASSE innovation were high in Stage 3 (80). By contrast, Chamblee et al. (2008) found that the high school mathematics teachers' concerns about the implementation of graphing calculators in their classrooms were moderate in Stage 3 (47) at the beginning of the professional development experience.

However, the *SK* (27), *SJKC* (21) and *SJKT* (30) teachers' percentile scores in Stage 4 (Consequence) were low, with the *SJKT* teachers showing the greatest concern and the *SJKC* teachers showing the least concern. The teachers' low score in Stage 4 indicated that they had a low level of concern about the consequences of implementing Lesson Study for their students (George et al., 2006). In addition, the *SK, SJKC and SJKT* teachers' concerns were the lowest in

Stage 4 among the seven stages of concerns. On the contrary, Chamblee et al. (2008) found that the high school mathematics teachers' concerns about the implementation of graphing calculators in their classrooms were moderate in Stage 4 (48) at the beginning of the professional development experience. Furthermore, they found that the teachers' concerns were the lowest in Stage 6 (42) among the seven stages of concerns at the beginning of the professional development experience. Likewise, Ndirangu and Nyagah (2013) found that the science teachers' concerns about the implementation of the SMASSE innovation were moderate in Stage 4 (43). Nevertheless, Ndirangu and Nyagah found that the science teachers' concerns about the implementation of the SMASSE innovation were the lowest in Stage 4 among the seven stages of concerns.

The *SK* (52) and *SJKC* (44) teachers' percentile scores in Stage 5 (Collaboration) were moderate, with the *SK* teachers showing a higher level of concern. The teachers' moderate score in Stage 5 indicated that they were moderately concerned about working with others in connection to the implementation of Lesson Study in their schools (George et al., 2006). Ndirangu and Nyagah (2013) also found that the science teachers' concerns about the implementation of the SMASSE innovation were moderate in Stage 5 (52). However, the *SJKT* (64) teachers' percentile scores in Stage 5 were high in this study, indicating that they were highly concerned about working with others in order to implement Lesson Study in their schools compared to the *SK* and *SJKC* teachers. Chamblee et al. (2008) also found that high school mathematics teachers' concerns about the implementation of graphing calculators in their classrooms were high in Stage 5 (68) at the beginning of the professional development experience.

Finally, the *SK* (60) and *SJKC* (47) teachers' percentile scores in Stage 6 (Refocusing) were also moderate, with the *SK* teachers still showing a higher concern. The teachers' moderate scores in Stage 6 indicated that they were moderately interested in learning more about Lesson Study. In a similar manner, Chamblee et al. (2008) found that high school mathematics teachers' concerns about implementing graphing calculators in their classrooms were moderate in Stage 6 (42) at the beginning of the professional development experience. In this study, however, the *SJKT* (65) teachers' percentile scores in Stage 6 were high, suggesting that they were highly interested in learning more about Lesson Study compared to the *SK* and *SJKC* teachers. Meanwhile, Ndirangu and Nyagah (2013) found that the science teachers' concerns about the implementation of the SMASSE innovation were very high in Stage 6 (81).

However, George et al. (2006) cautioned that the tailing-up of the Stage 6 concerns among nonusers at the three types of schools suggested that the teachers might be resistant to implementing Lesson Study in their schools. In other words, the teachers had ideas that they believed had more merit than the proposed

implementation of Lesson Study in their schools. Similarly, Ndirangu and Nyagah (2013) found a tailing-up of the Stage 6 concerns among nonuser science teachers, indicating that the teachers might be resistant to the implementation of the SMASSE innovation. In contrast, Chamblee et al. (2008) did not find a tailing-up of the Stage 6 concerns among nonusers at the beginning of the professional development experience.

CONCLUSION

The results of the study showed that the profiles of the *SK*, *SJKC* and *SJKT* teachers' initial stages of concern about the implementation of Lesson Study in their schools were quite similar. The *SK, SJKC* and *SJKT* teachers' concerns were the highest in Stage 0 and the lowest in Stage 4, indicating that they had a very high level of concern about a number of other initiatives, tasks, and activities besides Lesson Study and a low level of concern about the consequences of implementing Lesson Study for their students, respectively.

The *SK*, *SJKC* and *SJKT* teachers' concerns were high in Stage 2 and Stage 3, suggesting that they were highly concerned about status, rewards, and the effects that implementing Lesson Study in their schools might have on them, as well as highly concerned about management, time, and the logistical aspects of implementing Lesson Study in their schools.

Whereas the *SK* and *SJKC* teachers' concerns were high in Stage 1, the *SJKT* teachers' concerns were very high, suggesting that the *SJKT* teachers had a stronger desire to know more about the implementation of Lesson Study in their schools than the *SK* and *SJKC* teachers. Additionally, the *SJKT* teachers' concerns in Stage 1 were higher than their concerns in Stage 2, indicating that they were open to and interested in learning more about implementing Lesson Study in their schools. In contrast, both the *SK* and the *SJKC* teachers' concerns in Stage 1 were lower than their concerns in Stage 2, indicating that they had various degrees of doubt and potential resistance to the implementation of Lesson Study in their schools.

Finally, the *SK* and *SJKC* teachers' concerns were moderate in Stage 5 and Stage 6, suggesting that they were both moderately concerned about working with others to implement Lesson Study in their schools and moderately interested in learning more about Lesson Study. Meanwhile, the *SJKT* teachers' levels of concern were high in Stage 5 and Stage 6 when compared to the *SK* and *SJKC* teachers. However, the tailing-up of the Stage 6 concerns among nonusers for the three types of schools, especially the *SK* schools, suggested that the teachers might be resistant towards implementing Lesson Study in their schools at the

beginning of the study. Therefore, more guidance, assistance and support would help these teachers understand the benefits of implementing Lesson Study in their schools.

In conclusion, the SoCQ was suitable for use as a tool to identify the participating teachers' initial stages of concern about implementing Lesson Study in their schools. The results help researchers evaluate and understand a change process and support the implementation process. The SoCQ is also useful as a means to develop, focus, and support professional development such as Lesson Study in schools (George et al., 2006).

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