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Relationship between professional learning community and teacher attitudes toward change

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Abstract: The main objective of the survey was to investigate the relationship between Professional Learning Community (PLC) and Teacher Attitudes Toward Change (TATC). By employing disproportionate stratified sampling, a total of 1004 school teachers from 64 Day Secondary Schools completed the questionnaires with valid data. The results demonstrated that, (i) there was a significant, positive and mediocre relationship between PLC and TATC; (ii) Principals' Commitment and Support, Collegial Understanding and Trust, External Support System, Structural Support and Shared Norms and Vision of PLC were correlated significantly to TATC and (iii) Collaborative Learning, Collective Inquiry and Reflective Dialogue were not associated significantly with TATC. As a whole, the development of PLC in schools has significant relationship with TATC that influences teachers' behavioural intention and ultimately determine their attitudes to embrace school change. The study not only provides empirical evidence that deepen our understanding about the relationship between PLC and TATC, but it also provides valuable insights for schools in those countries with the similar background as Malaysia in crafting pragmatic directions for the implementation of PLC in enhancing positive TATC in schools.

Keywords: professional learning communities; teacher attitudes toward change; principals' commitment and support; collegial understanding and trust; external support system; structural support.

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1 Introduction

With the increased demands for high-quality education and accountability, there has been a growing need on teacher professional development because teacher is the single crucial determinant on student achievement (Jensen, 2012). High-quality professional development is able to enhance teacher capacity, specifically in improving teachers' classroom practices that can impact positively student learning (Zhang et al., 020). The latest paradigm shift in teacher professional development is moving beyond the acquisition of competencies towards a collaboratively constructing knowledge in instruction and learning that can exert substantial impact on teacher capacity (Zhang and Pang, 2016). Professional Learning Community (PLC) is seen as one effective approach that possesses the aforementioned characteristics (Olivier and Huffman, 2016); it holds significant promise for quality teacher professional learning and is central to student outcomes (Harris, 2010; Qiao et al., 2018).

On the other hand, although schools are being bombarded by change due to the growing demands for educational excellence, without buy-in from teachers, school reform tends to be adopted superficially (Tai and Omar, 2018). Whether there is change acceptance is the most crucial problem in any organisational change (Hayes, 2010). Teachers, as change front-liners in school reform, are the actual players in school change as well as the single most critical determinant of the change outcomes in school change (Fullan, 2001; Tai and Omar, 2017). Specifically, Teacher Attitudes Toward Change (TATC) will influence their behavioural intention on whether to embrace or to resist school change, which will subsequently have significant correlation to whether change goals become reality (Tai and Omar, 2020). Therefore, TATC is seen as one of the most critical factors of sustainable and effective school change (Bouckenooghe, 2009; Tai and Omar, 2017).

The Malaysia Education Blueprint 2013–2025 has been set out to prepare young Malaysians to meet the demands of the 21st century. One pathway to realise the objective of 'Transform teaching into the profession of choice' in the Blueprint is to develop a peer-led culture of PLC. Following this, the ethos of PLC began to flourish in 1548 schools as a portion of the continuous professional development plan of the schools (Ministry of Education Malaysia [MOE], 2013). The rhetoric for powerful PLC may be

appealing with extensive resources allocated to the above initiatives, however, how the progressive and dynamic process of the PLC affect TATC to realise change goals in schools has not been well-researched. As PLC hold great promise for quality teacher learning (Huffman et al., 2016), to address the above shortcoming, the major aim of the study was to investigate the relationship between PLC and TATC. The study would provide insights in crafting strategies for the implementation of PLCs in developing positive TATC in schools.

1.1 Professional learning community

PLC has obtained enormous attention in western educational arena since the 1990s, appearing under different terminologies. For instances, professional community (Louis and Marks, 1998), learning community (Toole and Louis 2002), norms of collegiality, teacher networks (Lomos et al., 2011), teacher communities (Kruse and Johnson, 2017), collaborative professionalism and research learning communities (Harris et al., 2018) are terms often used interchangeably. Although the terminology of PLC may differ, generally it is seen as groups of teachers committing themselves to achieve educational goals through shared norms and vision, collective responsibility, collaboration and practices of teacher learning (Olivier and Huffman, 2016; Zhang and Pang, 2016).

As PLC is recognised as effective teacher professional development approaches that able to provide different learning experiences contingent to students' demands (Qiao et al., 2018), it has been studied intensively. Different models of PLC based on different contextual factors had been developed. Researchers from America, e.g. Kruse et al. (1995); Hord (1997) and DuFour and Eaker (1998) identified five common characteristics of PLCs: shared vision and values, collaboration, de-privatisation of practice, a focus on student learning and reflective dialogue. Besides, researchers also found other important factors in the development of PLC: principals' commitment and support (e.g. Khalid and Strange, 2016; Song and Choi, 2017), structural support (e.g. Song and Choi, 2017; Zhang and Pang, 2016), organisational trust (e.g. Brucknerova and Novotny, 2017; Hallam et al., 2015), collective inquiry (e.g. DuFour and Eaker, 1998; Pang and Leung, 2016) and external support system (e.g. Olivier and Huffman, 2016; Spencer, 2016).

Researchers also paid great attention to examine how PLC influences student achievement, especially PLC as a mediator between the leadership of school principal and student performance. Huggins et al. (2011) revealed that school leadership was critical in the PLC process for enhancing teacher learning that associates significantly to student performance. A similar picture also supported by Park et al. (2019) that the leadership of school principal imparted PLC significantly through collaborative learning among teachers that can lift the performance of the students by promoting effective learning. Apart from these, Ozdemir (2019) demonstrated that the leadership of school principal had indirect but significant impacts on student performance in maths whereby PLC acted as a mediator specifically by enhancing de-privatised practices and shared responsibility of the teachers.

Besides, how PLC affects teachers who are central to student achievement was another interesting theme explored by researchers. Studies have been conducted in conjunction with dependent variables e.g. teacher efficacy (Battersby and Verdi, 2015; Voelkel and Chrispeels, 2017; Vanblaere and Devos, 2016), teacher commitment (Lee et al., 2011; Zhang and Sun, 2019), teacher professionalism (Cansoy and Parlar, 2017) and

teacher's job satisfaction (Harris, 2010; Zhang and Yuan, 2020). Despite the above studies revealed that PLCs had potential impact on the concerned dependent variables respectively, however, not much is known about the relationship between PLC and TATC. Given this backdrop, it seems timely at this juncture to examine the above relationship in Malaysian secondary schools.

1.2 Attitudes toward change

Attitude is conceptualised as a psychological construct to react to events or objects in a consistent favourable or not favourable manner (Fishbein and Ajzen, 2010). Attitudes toward change are viewed as regularities of one's thoughts, feelings and behaviours toward change conducted by any organisation (Vakola and Nikolaou, 2006). According to Coch and French (1948), the first scholarly article on attitudes toward change emerged in the late 1940s. Since then, researchers have used different terminologies to conceptualise individuals' reactions toward change (Oreg, 2003). Commitment to change, readiness for change, acceptance of change, openness to change are positive terms; cynicism about organisational change or resistance to change are negative terms; although the attitude toward change is inclusive of both the negative and positive views, these are used interchangeably.

Substantial research reveals that contextual variables and individual factors are two main predictors of attitudes toward change (Tai and Omar, 2017). Organisational uncertainty (Hallgrimsson, 2008), organisational trust (Gomez and Rosen, 2001), information (Wanberg and Banas, 2000), organisational culture (Avidov-Ungar and Eshet-Alkakay, 2011), conflicting stakes (Deline, 2018) and leadership (Tai and Omar, 2020) are all contextual variables that contribute to attitudes toward change. Some individual or personal factors that impact the individuals' evaluative judgement toward any change initiative in organisations are disclination to give up old habits (Hayes, 2010; Oreg, 2003), tolerance of ambiguity (Dunican and Keaster, 2015), loss of control (Oreg, 2003), self-esteem (Wanberg and Banas, 2000), cognitive dissonance (Burnes, 2014), emotional intelligence (Vakola et al., 2004) and defence mechanisms (Bovey and Hede, 2001).

Attitude toward change has been an important focus in the literature of organisational change management because it affects the individual's behavioural intention that will determine behaviour (Tai and Omar, 2017). A positive attitude toward change may lead to positive behavioural intention and concerned behaviours such as engaging in change actively or greatly committed to change (Oreg, 2003). Nevertheless, a negative attitude toward change will hinder change as it results in negative behavioural intention and subsequent behaviours such as intentions to quit, withdrawal, absenteeism, sabotage the intended efforts or even reject the change (Armenakis and Bedian, 1999). Both positive and negative attitudes will affect organisational outcomes substantially.

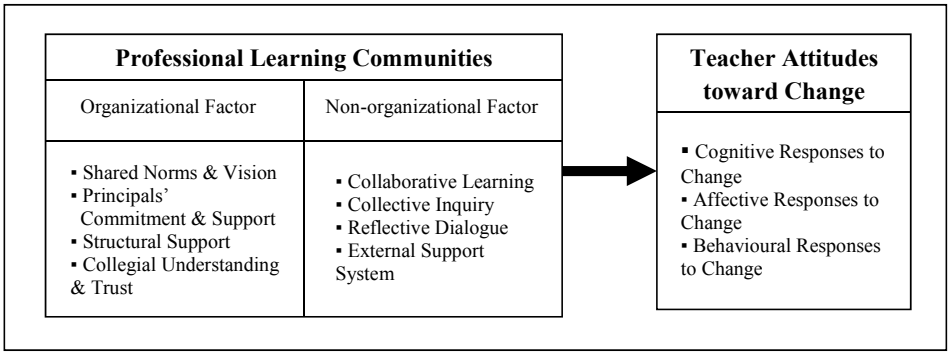
1.3 The conceptual framework of the study

The conceptualisation of PLC was targeted in the Malaysia Education Blueprint 2013 to 2025 as an effective platform to enhance teacher overall professionalism nationwide (Ministry of Education Malaysia (MOE), 2016). By encouraging collaborative teaching and learning among teachers through a learning culture of PLC, it is seen as an effective strategy to establish school as a learning organisation that helps to transform the school

system effectively (Tai and Omar, 2021). To examine the development of PLC, the Model of Professional Learning Community (MPLC) built by Tai and Omar (2021) – an empirical model derived within the Malaysian cultural and educational setting was applied to guide the study. The selection of MPLC is adequate and relevant because the practice of PLC is contextually situated (Koffeman and Snoek, 2018).

As displayed in Figure 1, the MPLC encompasses two major dimensions namely, the Organisational Factor as well as the Non-organisational Factor. The Organisational Factor consists of four sub-dimensions. *Shared Norms and Vision* is the extent to which how the vision shared by the school members about pedagogical purpose, student learning and norms of support behaviours that provide guidance for decision making pertaining to the above objectives. *Principals' Commitment and Support* refers to what extent school principals are committed and support the implementation and sustainability of PLC in schools and take all means to deal with any challenges. *Structural Support* is seen as the degree the management system, policies and procedures support the implementation of PLC specifically about resources, facilities, space, funding and time arrangement. *Collegial Understanding and Trust* refer to what degree members of the school promote mutual respect, understanding, trust as well as collegiate relationship that facilitates group processes for decision making, problem solving and change promoting (Tai and Omar, 2021).

Figure 1 The conceptual framework of the study



The Non-organisational Factor also encompasses four sub-dimensions. *Collaborative Learning* refers to what extent teachers will practise learning collaboratively such as a constant sharing of resources, information and works for problem identification and solving, enhance educational practice and strengthen learning among students. *Collective Inquiry* is seen as the degree the school motivates teachers in developing knowledge by investigating and sharing collectively and systematically their instruction and effects. *Reflective Dialogue* means teachers' effective conversations in groups that enable them to obtain novel ideas and inputs about instruction that often are shared in a supportive manner. *External Support System* is the effort of improving collaboration and outreach with stakeholders including state and district education departments, communities, families, in the pathway of establishing PLC in schools (Tai and Omar, 2021).

TATC was the dependent variable of the current study (see Figure 1). It is defined as the internal state that affects a teacher's evaluative judgement whether positive or negative towards a change carried out by the school (Tai and Omar, 2017). TATC

consists of three main dimensions i.e. the cognitive responses to change, the affective responses to change and the behavioural reaction to change. The cognitive responses is the belief of the teacher pertaining the necessity of change, the significance of change, the outcome favourability or the extent the change will be personally and organisationally beneficial, and the essential knowledge for effective change management. The affective component refers to teachers' feelings about the change – whether they feel at ease, satisfactory and happy, or anxious, uncomfortable and even angry toward the change. The behavioural reaction to change is the degree teachers might take relevant action to support or against the change implemented in schools (Tai and Omar, 2017).

To ensure that the Malaysian education system stayed vibrant and effective, changes have been made by the MOE to realise the change goals delineated in the Malaysia Education Blueprint 2013 to 2025 (Ministry of Education Malaysia (MOE), 2016). For example, the Secondary School Standards-based Curriculum, School-based Assessment, Integrated STEM Education, 21st-century Learning Skills and Higher Order Thinking Skills (HOTS) were important policies or programmes that implemented by the MOE to improve and enhance student and school performance. The overall attitudes of the teachers toward the above policies or programmes were those that being measured in the study.

2 Methods

2.1 Sample

The Day Secondary School (DSS) was the targeted locality for the study as it is the most popular type of secondary schools in Malaysia. DSS makes up 85% of the secondary schools in this country (Tai and Omar, 2019). There are 16 states/federal territories in Malaysia with different sizes and different number of DSS. As the differences were not small, to ensure that DSS in every state/federal territory has the same opportunity to be involved, disproportionate stratified sampling was employed in the study. To achieve the above purpose, four schools were sorted out from each state/federal territory at random according to the record provided by the State Education Department, respectively, giving a total of 64 schools (16 × 4) participated in the survey. For every school in the list, 20 teachers were chosen as respondents randomly. As a result, 1280 (64 ×20) respondents were engaged in the survey.

2.2 Survey instrument

The Professional Learning Community Scale designed by Tai and Omar (2021) was used to measure PLC. As mentioned earlier, it consists of two major factors namely, Organisational Factor and Non-organisational Factor; each dimension consists of four sub-dimensions with 22 items, respectively. To examine TATC, the Teacher Attitudes toward Change Scale adapted by Tai and Omar (2017) from the Attitudes toward Change Scale of Dunham et al. (1989) was employed. It encompasses three dimensions i.e. (a) *Cognitive*; (b) *Affective* and (c) *Behavioural* responses to change with each construct of three items. Both the scales applied a Likert scale of six with responses from 'strongly disagree' to 'strongly agree'. Importantly, both also held good validity of convergent

since the Squared Multiple Correlations were more than the 0.5 cut off and the Averaged Extracted Values (AVEs) were all greater than 50% (Hair et al., 2010). These scales also held good discriminant validity because all AVEs of the factors were well above 0.5 and Composite Reliability Indices were all more than 0.60 (Awang, 2012).

2.3 Data analysis

There were 1280 sets of questionnaires delivered via post to all the chosen respondents. Among these, 1024 sets of questionnaires were sent back and the response rate was 78.44% (see Table 1). However, only 1004 sets of questionnaires were kept for the following analysis as 20 sets were with technical errors. Descriptive statistical analysis was applied to acquire means and percentages. The Pearson product-moment correlation coefficients were applied to measure the relationship between PLC and TATC and the strength of the correlation coefficient is shown in Table 2; multiple regression was run to analyse the contribution of PLC on TATC.

Table 1 Total number of school principals, senior assistants and teachers engaged in the survey

Total number of schools involved	*Number of respondents identified in every school*	*Total number of respondents identified for the survey*	*Total number of questionnaires returned*	*Total number of usable data*
64	20	1280	1024	1004

Table 2 The strength of the correlation coefficient

Coefficient (r) Value		*The strength of association*
Positive	*Negative*	
00	00	No correlation
.1 to .3	–0.1 to –0.3	Weak
.3 to .5	–0.3 to –0.5	Moderate
.5 to 1.0	–0.5 to –1.0	Strong

3 Demographic characteristics

Among all the respondents, 72.09% (*N*=732) were females and 27.09% (*N* =272) males. More than 70% of the respondents were from the 31 to 50 years age group, with this breakdown: 38.45% (*N* =386) from the 31 to 40 years age group and 32.86% (*N* =329) from the 41 to 50 years group; the rest were 19.02% (*N* =191) from the 51 to 60 years group and 9.76% (*N* =98) from the 21 to 30 years age group. In terms of academic qualifications, 90.64% (*N* =910) of the respondents with a Bachelor's degree; 8.76% (*N* =88) has a Master's degree; and only 0.60% (*N* =6) with a Ph.D. degree. In terms of work experience, there were 26.89% (*N* =270) of the respondents worked over 20 years; 20.12% (*N* =202) 16 to 20 years; 20.02% (*N* =201) six to ten years; 18.63% (*N* =187) 11 to 15 years and 14.34% (*N* =144) one to five years.

4 Results

To investigate the relationship between PLC and TATC, Pearson product-moment correlation coefficients were computed. As delineated in Table 3, there were significant and positive correlations between PLC and TATC, $r = .604$, $N = 1004$, $p<0.01$. Besides, the coefficient of determination of PLC was .604 × .604, or 36.48 and indicated that the correlation of PLC and TATC was mediocre in strength (see Table 2).

Table 3 Pearson correlation of PLCs and TATC

	PLCs-TATC	
	PLCs	*TATC*
Pearson Correlation	1	.604**
Sig. (2-tailed)		.000
N	1004	1004
Pearson Correlation	.604**	1
Sig. (2-tailed)	.000	
N	1004	1004

To examine how PLC contributes to TATC, multiple regression was chosen to analyse the data. As shown in Table 4, five predictive variables i.e. *Principals' Commitment and Support*, *Collegial Understanding and Trust*, *External Support System*, *Structural Support* and *Shared Norms and Vision* were shown to be significant at .05 level and were included in the regression model. Importantly, the combination of the above five components contributed 40.3% of the total variation of TATC (see Table 5). However, the other three predictive variables of *Collaborative Learning*, *Collective Inquiry* and *Reflective Dialogue* were found not significant and were excluded in the model.

Table 4 Variables entered/removed[a]

Model	*Variables entered*	*Variables removed*	*Method*
1	Principals' Commitment and Support	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Collegial Understanding and Trust	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	External Support System	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	Structural Support	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	Shared Norms and Vision	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

Note: [a]Dependent Variable: TATC.

Table 5 Model summary

Model	*R*	*R^2-Square*	*Adjusted R^2-Square*	*Std. error of the estimate*
1	.545[a]	.297	.296	.57740
2	.602[b]	.362	.361	.55022
3	.629[c]	.395	.394	.53589
4	.633[d]	.400	.398	.53403
5	.635[e]	.403	.400	.53307

Notes: a. Predictors: (Constant), Principals' Commitment and Support

b. Predictors: (Constant), Principals' Commitment and Support, Collegial Understanding and Trust

c. Predictors: (Constant), Principals' Commitment and Support, Collegial Understanding and Trust, External Support System

d. Predictors: (Constant), Principals' Commitment and Support, Collegial Understanding and Trust, External Support System, Structural Support

e. Predictors: (Constant), Principals' Commitment and Support, Collegial Understanding and Trust, External Support System, Structural Support, Shared Norms and Vision

5 Discussion

Several important insights have emerged from the study. Firstly, the study found that there was a significant, positive and mediocre relationship between PLC and TATC in DSS. This is an indication that the implementation of PLC has nurtured a positive and significant TATC in DSS. In other words, the implementation of PLC was yielded less variability in teachers' emotions and feelings, their response to support the change, and subsequently a buy-in from the teachers toward school change. The above finding supports the claims of Qiao et al. (2018) that PLC can exert impact on teacher capacity in school change and development that link significantly to student performance.

Secondly, the study also found that *Principals' Commitment and Support*, *Collegial Understanding and Trust*, *External Support System*, *Structural Support* and *Shared Norms and* Vision of PLC, contributed significantly to TATC at 40.3% of the total variation of TATC. This implies that although many factors can impact TATC, as long as the implementation of PLC is adequate and efficient, PLC can shape TATC, develop the foundation for adoptive behaviours and can positively influence TATC. Thus, it can be argued that in any school change initiatives, it is possible to enhance buy-in from the teachers if PLC is efficiently implemented in schools.

Among the above five components of PLC, *Principals' Commitment and Support* was the main predictor of TATC. Song and Choi (2017) emphasised that school principals can develop PLC successfully by providing time, moral support as well as contingent expertise and chances for teachers. On the same point, Khalid and Strange (2016) highlighted that school leaders are in a strategic position to provide support and lead in promoting a collaborative culture for improving teachers' pedagogical practice. Clearly, commitment and support provided by school principals tend to ripple outward with substantial momentum that can result in positive cognitions, emotions and behaviours of teachers and enhance TATC that is so critical to school change.

Collegial Understanding and Trust was another important sub-dimension of PLC that impacted TATC. Organisations need to provide an environment that is trustworthy for collective learning as learning collectively is inherently uncomfortable because social interactions are complex and are potent triggers of emotions (Hallam et al., 2015). Over the last 20 years, research has shown that *Collegial Understanding and Trust* is an indispensable resource for sustaining a PLC (Brücknerová and Novotný, 2017; Hallam et al., 2015). Pang et al. (2016) highlighted that *Collegial Understanding and Trust* would help teachers break out of isolation to develop efficient work collaboration through effective colleagueship; it provides a context for stability, safety and predictability that supports teacher learning. Within such a conducive environment, there is a high likelihood of teachers being involved, interacting with one another and engaging actively in organisational learning or PLC. Most probably such situations would bring about positive TATC in terms of cognition, affection and behaviour.

External Support System was also found as an important predictor of TATC. According to Osmond-Johnson et al. (2019), the inter-relationships between teachers and parents and local communities are of paramount importance in teacher learning. For example, active communication between teachers and parents about student learning would help open the collaborative space between them in improving student achievement whereas the local communities providing resources or financial support to improve school facilities and thus facilitate the implementation of PLC. Olivier and Huffman (2016) also found that support given by the district and state education departments such as providing teachers with effective professional development programmes on how to manage PLC adequately does bring impact to the schools to re-culture and sustain high quality collaboration in PLC. The significant contribution of *External Support System* towards TATC implies that support from different stakeholders can facilitate a positive change in TATC in terms of cognitive, affective and behavioural responses that can move forward the process of embracing school change.

Structural Support was also found as an important sub-dimension of PLC that related closely with TATC. Zhang and Pang (2016) highlighted that *Structural Support* is a significant factor in the development and the implementation of PLC. Similarly, Hipp and Huffman (2010) found that a conducive working environment and sufficient structural support would motivate teachers to work together to improve the implementation of PLC in schools. Importantly, by establishing the adequate process, routines and structure, creating effective coordination mechanisms, delegating authority, providing sufficient resources would enable teachers to appreciate school change. They recognise the significance of *Structural Support* and its need for the implementation of PLC that enhances school change (*Cognitive*); with sufficient *Structural Support* teachers may have positive feelings (*Affective*) toward school change as it supports and facilitate the implementation of PLC and consequently this would encourage them to take relevant actions to engage and support school change (*Behavioural*).

Shared Norms and Vision was another important sub-dimension of PLC that significantly associated with TATC. Hipp and Huffman (2010) found that *Shared Norms and Vision* are crucial for teachers to identify collectively the school goals rooted in the organisational norms to develop genuine collegiality and a collaborative culture that can enhance PLC and move the organisation to achieve change goals. This argument also echoes the views of Qiao et al. (2018) that if the vision aligns accordingly with the efforts initiated by school members in the development of PLC, it is much easy to manifest the vision into reality. In the study, *Shared Norms and Vision* were found contribute

significantly to TATC and this implies that this sub-dimension helped to guide teachers' decisions and mobilise them to take action in transforming schools into PLC. Subsequently, these could enhance TATC in the process of school change cognitively, affectively and behaviourally.

Thirdly, the study found that *Collaborative Learning, Collective Inquiry* and *Reflective Dialogue* of PLC did not contribute significantly to TATC. Indeed, a closer look at the literature of PLC showed that the above three Non-organisational Factor of PLC are often found in the PLC models, i.e. DuFour and Eaker (1998), Song and Choi (2017) and Zhang and Pang (2016), the common factor of PLC being that teachers involve in sustained cycles of inquiry-based and collaborative learning continuously that develops the strength of the teachers and improves student outcome (Song and Choi, 2017). Since teachers are seen as main actors in the development of PLC, the above three components are indeed the most critical components of PLC that promotes the professional development and growth of the teacher (Keay et al., 2019).

Collaborative Learning provides opportunities for teachers to engage regularly in the practices and experiences of learning that are emergent, interactive and self-oriented (Zhang and Pang, 2016). *Collective Inquiry* is viewed as continuous debates or conversations in various school spaces that enable teachers to engage and sustain the establishment of their educational vision and the foundation of their knowledge (Keay et al., 2019). *Reflective Dialogue* enables teachers to support, examine and consolidate their instructions honestly and based on the response and feedback they might create opportunities and frame their actions for on-going learning that affects the direction and capacity of teachers' continued enactment of school change (Zhang and Pang, 2016). These practices help teachers to create possibilities for sustained meaningful learning that build confidence and efficacy to sustain the development of their professional agency – the inner strength that enable them to deal with external driven agendas and challenges (Imants and Van der Wal, 2020).

One possible reason why the above three components did not contribute significantly to TATC could be that teachers of DSS may not have the competencies to build genuine learning relationship through collaborative initiatives. Basically, the above three practices demand genuine cooperation and collaboration among teachers (Wagner et al., 2019). PLC is a complex form of organisational learning and teachers are subject to and constrained by their own personal traits and expectations, besides dealing with workplace situations and boundaries while engaging in organisational learning. The complex interaction and combination of personal traits (e.g. needs, expectations and motives), workplace affordances and situated boundaries can easily cause feelings of conflict; the non-fulfilment of obtaining the alignment of these factors may create tensions that would hinder greatly the process of learning (Vangrieken et al., 2017).

In fact, teacher learning is embedded within the teachers' daily work environments and learning only takes place in an environment where teachers demonstrate close relationships (Vangrieken et al., 2017). Showing benevolence by maintaining patience and kindness among members, being open-minded (Hallam et al., 2015), be mutually respectful, showing interpersonal support and sharing information and resources (Brücknerová and Novotný, 2017) all allow teachers to develop close relationships that enable them to acknowledge and embrace vulnerability so that learning can be maximised (Vangrieken et al., 2017). Conversely, learning is unlikely to take place if, i) the workplace tends to be a contested environment (Hallam et al., 2015); ii) there is an individual-oriented culture of learning in the community of school (Brücknerová

and Novotný, 2017); and iii) a lack of interest or engagement from colleagues (Vangrieken et al., 2017).

Teachers of DSS could have encountered both personal and workplace situations as described above, thus impeding the promotion of PLC, especially in *Collaborative Learning*, *Reflective Dialogue* and *Collective Inquiry*. Only with cooperative and collaborative initiatives can teachers come out of the conservative individualistic learning culture and promote values, ideas and visions sharing through the practices and the socialisation of teachers' thought processes (Lopes and D'Ambrosio, 2016). In doing so, this would enable knowledge construction and independent judgement that encourage the enhancement of students' quality experiences of classroom learning. However, teachers of DSS may not have the competencies to build genuine learning relationship through collaborative initiatives, which could explain why they did not execute effectively in *Collaborative Learning*, *Reflective Dialogue* and *Collective Inquiry*, and why these three components were unable to exert influence on TATC.

Another possible reason why *Collaborative Learning*, *Reflective Dialogue* and *Collective Inquiry* did not contribute significantly to TATC in DSS may due to the long-established privatised practice culture in Malaysian schools that is not conducive for teacher collaborative learning. This culture does not provide the teachers sufficiently with a sense of improved self-worth and congruence with others that might encourage initiative-taking, curiosity and creativity within teachers that are linked significantly to school change (Andrew et al., 2020). In other words, this culture hardly positions the agency of the teachers in the context of professional development (Imant and Van der Wal, 2020). The ability of teachers to make selections and react on those selections that have professional significance thus tends to be neglected.

Consequently, professional learning is cognitively recognised as thing created by sources from external for teachers; instead of acting as actors, teachers view themselves as factors (Imant and Van der Wal, 2020). Affectively, teachers may have feelings of friction and a sense of disempowerment that resigns them to the need to be realistic and to accept boundaries within their local context and those posed as external accountability (Keay et al., 2019). As a result, behaviourally, teachers tend not to involve or engage actively in *Collaborative Learning*, *Reflective Dialogue* and *Collective Inquiry* as they do not perceive that these activities are able to assist them sustain the adaptability and continuous development of their professional learning (Keay et al., 2019). Oftentimes, this situation does not position teacher learning or PLC within a dynamic set of a nested system comprising the school, the teacher and the learning activity that can impact teachers' attitudes (Andrew et al., 2020). This could explain why *Collaborative Learning*, *Collective Inquiry* and *Reflective Dialogue* did not contribute positively to TATC in the study.

6 Implications

The study offers several insights about the relationship between PLC and TATC. The findings not only shed light on the importance of Organisational Factor such as *Principals' Commitment and Support*, *Collegial Understanding and Trust*, *External Support System*, *Structural Support* and *Shared Norms and Vision* on TATC, it unfolds the fact that without the genuine and effective practice of Non-organisational Factor especially *Collaborative Learning*, *Collective Inquiry* and *Reflective Dialogue* that value

teachers as knowledge developers instead of service suppliers, PLC is unlikely to enhance TATC greatly and influence teachers' behavioural intention to embrace school change and to achieve change goals.

The finding that *Collaborative Learning*, *Collective Inquiry* and *Reflective Dialogue* did not contribute significantly to TATC clearly indicates the need for further research to help the MOE to identify the factors that are hindering the development of effective PLC. It would seem that the MOE need to give due consideration to fostering effective PLC in designing programmes that focus on how to equip teachers with competencies of building effective learning relationship so that teachers are able to engage in *Collaborative Learning*, *Collective Inquiry* and *Reflective Dialogue* effectively. Specifically, to explicitly investigate tensions that may arise in a school community brought about by factors such as teacher's personal traits (needs, expectations, motivations, etc.), workplace affordances as well as situated boundaries that may impede teachers' engagement in PLCs.

The findings also bear significant implications for the change agents – the school leaders. They are keys in enhancing teacher professional development in schools by preparing professional and authentic learning cultures for teachers to develop themselves in schools. The finding that *Collaborative Learning*, *Collective Inquiry* and *Reflective Dialogue* did not contribute significantly to TATC also demonstrates the need for a deeper understanding of teacher agency in PLC by school leaders. In order to transform PLC so that they really support teacher learning, more attention must be given to the practice of Non-organisational Factor of PLC that correlate with the development of teacher agency as it impacts the efficacy and the learning of the teachers across all levels of professional development (Wagner et al., 2019). Moreover, the agency role and the awareness of teachers in professional development is an important predictor of school change capacity as teacher agency is crucial for teachers to apply or adapt learning inside the classroom (Andrew et al., 2020).

7 The limitation of the study and future direction

The current study poses several limitations. Firstly, as PLC and TATC are complex subjects, by just conducting a survey study within a short time is like a brief dipstick study and therefore not conclusive in framing the actual situation. Future research may make a significant contribution to the literature if mixed method is conducted by employing observations, interview, focus group discussions and survey in measuring PLCs and TATC. Secondly, although the finding revealed that there was a significant relationship between PLC and TATC, however it probably seems too simplistic to make such an assumption as there may be a mediator between PLC and TATC. Hence, there is a need to find out if there is any mediating mechanism linked to these two variables. Thirdly, the assumption about the potential reasons why *Collaborative Learning*, *Collective Inquiry* and *Reflective Dialogue* did not contribute significantly to TATC need to be examined further by applying adequate instruments. Any future research to explore data using such approach would ensure that those reasons are accurately predicted and interpreted, thus advancing our understanding of this phenomenon.

8 Conclusion

The implementation of PLC in schools has significant relationship with TATC that influences teachers' behavioural intention and ultimately determine their attitudes to embrace school change. Despite the importance of the Organisational Factor of PLC that has close relationship with TATC, if teachers of DSS are able to practise effectively the Non-organisational Factor, especially the collaborative practices among teachers that value teachers as partners and collective decision makers such as *Collaborative Learning*, *Collective Inquiry* and *Reflective Dialogue*, PLC is able to enhance TATC greatly that will increase the possibility of the teachers to buy-in to the change. As a whole, the study not only provides empirical evidence that deepen our understanding about the relationship between PLC and TATC, it also provides valuable insights for schools in developing countries with the similar background as Malaysia specifically those in Asia or Africa in crafting pragmatic directions for the implementation of PLC in enhancing positive TATC in schools.

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