Antecedent of teacher agency: the role of teacher leadership

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Abstract: The practice of Teacher Leadership (TL) has gained momentum in the past two decades and is one pathway to produce favourable outcomes which can leverage sustainable school improvement and effectiveness. The study aimed to investigate the relationship between TL and Teacher Agency (TA) in Malaysian National Secondary Schools. A total of 898 schoolteachers from 60 schools completed the survey. Structural equation modelling was employed for data analysis. The findings found that (i) TL was significantly related to TA; (ii) all the six dimensions of TL were significantly related to the five dimensions of TA, respectively and (iii) 85% of the practice of TL by teacher leaders contributed to the enactment of TA. The study offers relevant parties a lens through which TL can steer systemic change in examining TA as a critical component towards effective school improvement specifically in developing countries with the similar background as Malaysia.

Keywords: teacher leadership; teacher agency; professional learning; professional identity; structural equation modelling.

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1 Introduction

The growing needs for educational excellence have prompted a need to recalibrate the educational leadership paradigms (Garg, 2020; Harris and Jones, 2019). It is a practical move for substituting the sole charismatic leaders in schools, i.e., the school principals by embracing Teacher Leadership (TL) as an indispensable component of school change particularly in terms of school improvement and effectiveness (Gumus et al., 2018). This shift not only eliminates the ineffectiveness of the conventional hierarchical leadership model, but it also meets the idea that leadership is shared amongst organisational members (Araşkal and Kılınç, 2019; Grant, 2019). It serves as a powerful collaborative relationship between vertical and lateral leadership processes to strengthen school capacity in coping with school change (Harris and Jones, 2019).

Indeed, teacher leaders are empowered to exercise leadership to achieve the above objective by developing collective responsibility among peers on student learning and school improvement (Friesen and Brown, 2022). Successful teacher leaders can utilise their professional expertise to influence decisions, actions and get buy-in from peers to work together to realise organisational change goal (Tai and Omar, 2023). By demonstrating their leadership dispositions and competence to guide other teachers to adapt to new changes, teacher leaders can stimulate a culture of learning and collaboration in schools (Xie et al., 2021). Consequently, teachers as followers tend to look up to teacher leaders and over time, this process of guidance and inspiration will enable teachers to be more willing to cope and to embrace school change (Oreg and Berson, 2011).

Meanwhile, change literature has long asserted that focusing on people is the most potent way to lead change effectively (Kotter, 1999). Juechter et al (1998) upheld that human agency is at the heart of every organisational change. Erdem (2020) revealed that Teacher Agency (TA) is one critical determinant in the pursuit of school change. It is widely believed that agentic teachers have the capacity to enact and influence school change as they can achieve educational goals with positive attitudes (Jenkins, 2019). School reform may not be implemented successfully if teachers abstain from buying into the change (Anghelachea and Bentea, 2012). Therefore, to identify how teacher leaders

exercise their leadership behaviours to nurture, shape and 'activate' TA among peers that can successfully get buy-in from them in leading school change was of paramount importance.

However, little was known about the relationship between TL and TA especially in the local literature. Since the nuanced mechanism of TA as a dependent variable of TL has received scant attention, it was deemed necessary to examine the intricate interplay between TL and TA to address this void in this field of literature. Thus, two Research Questions (RQs) were delineated as:

- *RQ1*: Was Teacher Leadership significantly related to Teacher Agency?

- *RQ2*: To what extent, did Teacher Leadership affect Teacher Agency?

2   Literature review

2.1   Teacher leadership

The practice of TL has gained momentum in the past two decades (Nguyen et al., 2019). However, the engendering literature features a divergent conceptualisation on TL, and definitions vary considerably (Wenner and Campbell, 2017). Basically, most of the studies agree that teacher leaders do not merely care about 'pedagogical excellence' within their classroom, but rather, amplify their influence on the school level and beyond to achieve the desired outcomes (Chew and Andrews, 2010). In other words, teacher leaders take on leadership responsibilities within and outside the classroom to impact school-wide teaching-learning practice.

Besides, most contemporary analysis viewed TL as a process of influencing other teachers (Wenner and Campbell, 2017) that can be practiced informally (Karabağ Kose, 2019). Teacher leaders manifest their leadership by establishing relationships, fostering collaboration, and supporting others while greasing the wheel of school change (Nguyen et al, 2019). With the common goal of improving student learning, reciprocal collaboration, mutual trust and respect between teacher leaders and peers are prerequisites to sustaining authentic TL (Leonard et al., 2012). Succinctly, TL is a fluid, expertise-based and shared process of influence led by teacher leaders to influence other teachers in enhancing student learning and school improvement (Oppi et al., 2022).

Another important focus in literature was about the factors that affect the enactment of TL (Nguyen et al., 2019). Supportive school culture enables authentic TL (Cooper et al., 2016) while disconnected culture hinders it (Poekert et al., 2016). A transparent and flexible school structure promotes TL (Woodhouse and Pedder, 2017) whereas a rigid structure suppresses it (Foster, 2005). School principals who provide time and opportunities to engage teachers in decision making (Cheng and Szeto, 2016), peer collaboration (Hunzicker, 2012) and develop teacher leaders (Cheng and Szeto, 2016) would encourage TL and vice versa. Mutually supportive peer relationship fosters authentic TL (Fairman and Mackenzie, 2015) while poor relationship impedes it (Wenner and Campbell, 2017).

Apart from this, one common hallmark of TL within the literature is the correlation with its impact and outcomes (Nguyen et al., 2019). TL was found to be effective in enhancing students' motivation (Li and Liu, 2022), student learning (Smith et al., 2017), teacher learning readiness (Mardati et al., 2019), teacher self-efficacy (Gümüş et al.,

2022; Kılınç et al., 2021), teacher professionalism (Allen, 2016), instructional practices (Smith et al., 2017), organisational learning climate (Sebastian et al., 2016), organisational effectiveness (Shah, 2020), and positive school change (Meyer and Slater-Brown, 2022). In short, TL was an effective independent variable that fostered positive impact on the dependent variables in school improvement.

2.2   Teacher agency

Although the conceptualisation of teacher agency has long been established, yet there is no consensus on its definition (Ngo, 2021). Largely, instead of being just an independent variable that is separate from social action, agency is understood to be a quality of the engagement of actors in responding to problematic situations (Biesta et al., 2015). In this sense, Biesta and Tedder (2007) emphasised that agency is an outcome of the interplay among one's efforts, accessible resources as well as contextual factors.

Meanwhile, TA is broadly theorised as teachers' capacity to act purposefully, constructively and creatively in accordance with their own judgment and choice to devote to the growth of other colleagues while driving their own professional growth (Hadar and Benish-Weisman, 2019). This is the capability of taking ownership of their learning experience that is instrumental in transforming work practices, the proactive measures of taking actions, decision making and interacting with the contextual resources and constraints (Imants and Van Der Wal, 2020). In a nutshell, teachers with high agentic capacity are able to choose how to take principled action to pursue the value they embody and enact change pertaining to their professional life.

Parallel to the above perspective, studies that examined the antecedents of TA inclusive of personal and social driving factors (Ngo, 2021). Personal driving factors encompass teachers' beliefs (Lim and Yun, 2022), teacher identity (Kayi-Aydar, 2019), emotions (Wu, 2023), experiences (Na et al., 202 2), self-reflection (Heikonen et al., 2016) and professional competence (Leijen et al. 2022). Meanwhile, social driving factors such as educational policy support (Namgung et al., 2020), teacher education (Namgung et al., 2020), teacher professional learning (Earle and Bianchi, 2022), collaborative works (Leijen et al. 2022) or organisational affordances and constraints (Ashton, 2022) impede agency among teachers.

Interestingly, TA was also examined through the lens of ecological approach. Ashton (2022), Bellibaş et al. (2020) and Ghamoushi et al. (2022) echoed the view of Priestley et al. (2015) that TA is a dynamic temporal process by categorising it into three key dimensions: international (past experiences), projective (future aspirations) and practical-evaluative (present environment) dimension. Practically, it involves how teachers incorporate past experiences into current actions by making decisions in response to the current demands and complexities that are influenced by contextual factors while integrating their envisioned future actions in line with their goals within their work environment efficiently and effectively (Na et al., 2022). This approach explores deeply the dynamics of TA and is seen as a progressive achievement.
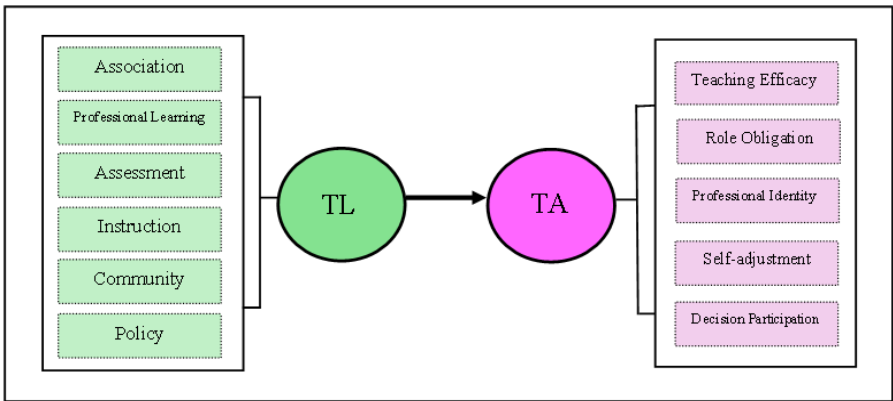
3   The conceptual background

The Malaysia Education Blueprint 2013–2025 was set in motion by the Ministry of Education (MOE) in September 2013 with the purpose of ensuring the Malaysian

education system stayed competitive and dynamic (MOE, 2013). 'Transform teaching into the profession of choice' is one operational shift that aims to enhance teacher quality and promote TL at all levels in schools. Ample resources have been channelled by the MOE towards different teacher professional development programmes in enhancing the practice of TL in schools, acknowledging the effectiveness of teacher leaders inspiring peers to improve instructional practices that contribute to successful school transformation (MOE, 2015). Thus, it was timely to examine the interconnected dynamics between TL and TA as we are moving into the last quarter of the implementation of the Blueprint. The findings may uncover meaningful information that can help MOE in navigating the complexities of the educational landscape to advance effective school improvement in the near future.

The study is confined to two latent variables, i.e., TL and TA whereby TL is coined as the independent variable while TA is employed as the dependent variable (see Figure 1). TL encompasses six dimensions: *Association*, *Professional Learning*, *Assessment*, *Instruction*, *Community* and *Policy* (Xie et al., 2021). *Association* examines how teacher leaders take the responsibility to develop a context of trust, respect and collegiality and share common goals in enhancing collaboration to generate productive interaction and collective action in schools. *Professional Learning* refers to the extent of teacher leaders in leading organisational learning to shape the learning culture of the schools and help teachers to engage in learning through modelling. *Assessment* measures how teacher leaders assist colleagues in assessing students' performance data, analysing student achievement and evaluating the effectiveness of teacher professional learning to make informed decisions and improve instructional practices (Xie et al., 2021).

Figure 1   The conceptual framework of the study (see online version for colours)

Note: TL = Teacher Leadership; TA = Teacher Agency.

Instruction examines the extent to which teacher leaders can demonstrate distinctive teaching to their colleagues, helping them to improve their teaching practices by enhancing collaboration, sharing best practices, giving sound feedback and supporting reflective dialogue grounded on students' needs. Community refers how teacher leaders work collaboratively with families or communities to increase opportunities for student learning and strengthen the outcomes of the school system. Policy measures how teacher leaders assist colleagues in understanding educational policies, appealing for relevant

resources to support teacher development and seeking recognition for professionalism (Xie et al., 2021).

Meanwhile, TA is inclusive of five dimensions: *Teaching Efficacy*, *Role Obligation*, *Professional Identity*, *Self-adjustment* and *Decision Participation* (Sang et al., 2019). *Teacher Efficacy* measures teachers' beliefs about their capability in conducting the tasks and obligations by applying effective teaching strategies and addressing students' learning difficulties. *Role Obligation* examines teachers' belief about their responsibility in the holistic development of the students and teachers. They are expected to address the needs of individual students and take charge of their own professional development in enhancing teaching and learning (Sang et al., 2019).

Professional Identity refers to the beliefs and attitudes of teachers about their personal and professional aspects of being a teacher. It can be developed through acquiring competence in their work performance. *Self-Adjustment* is the beliefs of teachers that they can cope with challenges and are able to adapt to any educational changes through engaging in self-reflection, innovation and problem solving. *Decision Participation* measures teachers' belief that they are influential to the implementation of school policies and reforms. This can be demonstrated through teachers' engagement in decision making, teachers' opportunities to express their opinions and openly getting feedback (Sang et al., 2019).

4 The theoretical framework of the study

The study is guided by the Human Agency Theory developed by Bandura (2006) to illuminate the dynamics between TL and TA. This theory highlights that human cognition is characterised by its generative, creative and self-reflective nature. Within this, agency is 'the power to originate action' (Bandura, 2001, p.3) – one's ability to control and regulate their cognition, motivation and behaviour in moulding and directing actions and decisions towards realisation of related task goals.

Notably, the Human Agency Theory (Bandura, 2006) is rooted in the Social Cognitive Theory advocated by Bandura (1997) that emphasises the importance of learning as a social process. Bandura (1997) highlighted that human behaviour in most situations is learned and shaped through observation and imitation. Individuals may observe and learn the behaviours in role models encountered in the organisation. They may filter the exemplary behaviours based on their working environment and situational needs.

Further, Bandura (2001) pointed out that the manifestation of human agency involves the initiative of individuals' acquisition of knowledge and skills, i.e., the process of learning. Through the learning process, individuals not only obtain knowledge and skills that may affect their agency in problem solving, but they may also refine and even create new knowledge and skills that could empower them to exert stronger agency to lead and to learn. This in turns, further enhance their agentic capacity in the process of dealing with a task or situation as they can act independently, constructively and effectively (Bandura, 2001).

In alignment with the realisation of individual agency in the Human Agency Theory (Bandura, 2006), the ability of teacher leaders in regulating other teachers' thinking, affection and behaviour to respond to their behaviour or leadership may affect other teachers' 'agency' along the pathway of school change (York-Barr and Duke, 2004). As

such, TL seems to correlate closely with TA as TL may impact TA greatly in the process of upholding and leading change to realise organisational goals in schools. The present study may secure a constructive solution on this issue.

5   Methods

5.1   Quantitative approach using survey method and SEM approach

The study applied a quantitative method by employing a survey approach. This method is cost effective and provides a fast way to collect abundant data systematically within a short duration (Chua, 2023). Structural Equation Modelling (SEM) was applied by employing AMOS model-fitting programme to analyse the data. SEM is a comprehensive tool for academic data analysis particularly for social science as it enables a thorough test of model fit and assessment of complex interrelationships among the variables (Hair et al., 2010).

5.2   Sample

One of the important requirements of SEM in estimating and interpreting the results is the sample size of the study (Chua, 2023). Though there is no consensus on the recommended sample size, one common presumption is that any sample greater than 200 is sufficient for valid data analysis and yield interpretable values (Hair et al., 2010). Nevertheless, if a sample size is too large, this may lead to the possibility of Type-II-error (Chua, 2023). Indeed, chi-square tests of fit and parameter estimates in modelling are sentient to sample size (Ullman, 2006). Therefore, the study engaged a sample size of between 500 and 1200 respondents by taking the consideration that other indices were also applied to assess the model fit simultaneously (Kline, 2011).

The schoolteachers from the National Day Secondary Schools (NDSSs) were the respondents of the study. NDSSs were chosen as it contributed 85% of the secondary schools in Malaysia (Tai and Omar, 2020). As shown in Table 1, a total of 1983 NSCs were found in the 16 states or federal territories in Malaysia, with every state having a proportionate number of NSCs. Stratified random sampling method was employed in the study so that each key segment of the population, i.e., schoolteachers of NSCs in each state or federal territory was represented in the sample (Creswell and Guetterman, 2018). According to Sekaran (2000), this is one efficient technique in sampling that offers a greater possibility of accuracy.

To achieve the above purpose of obtaining a sample size of 500 to 1200 respondents, grounded on the data provided by the education department of each state/federal territory, a proportionate of 2% of the total number of NSC was applied to identify the number of NSCs in each state respectively. This enabled NSCs from every state to be chosen based on the size of the total number of schools in the related state. Notably, no NSCs were selected from WP Putrajaya and WP Labuan because the numbers were too small to be stratified. Overall, there were 60 schools selected for the survey.

Table 1 Total number of schools and respondents involved in the survey for each state

State	Number of national secondary schools in each state	Number of schools selected based on proportion (2%)	Number of respondents selected from each schools	Total respondents selected from each state
Pahang	163	5	20	100
Terengganu	114	3	20	60
Kelantan	137	4	20	80
N. Sembilan	91	3	20	60
Melaka	61	2	20	40
Johor	231	7	20	140
Perak	202	6	20	120
Selangor	231	7	20	140
Perlis	23	1	20	20
Kedah	156	5	20	100
Penang	102	3	20	60
Sabah	198	6	20	120
Sarawak	169	5	20	100
WP KL	89	3	20	60
WP Putrajaya	9	0	0	0
WP Labuan	7	0	0	0
Grand Total	1983	60	–	1200

Following this, to meet the requirement of SEM analysis and to obtain a sample size of 500 to 1200 respondents as discussed above, a total of 20 schoolteachers were selected from each school as respondents by applying the simple sampling method. Consequently, there were altogether 1200 (60 × 20) teachers chosen for the study. This process not only met the specification of the overall fit assessment of the hypothesised models applying the SEM analysis (Chua, 2023), even at a low response rate, a higher sample size would ensure a high probability of getting a minimum required return rate.

5.3 Survey instrument

TL was examined by using Teacher Leadership Scale (TLS) which was developed by Xie et al. (2021). It encompasses six dimensions with 32 items, i.e., *Association* (6 items), *Professional Learning* (7 items), *Assessment* (4 items), *Instruction* (7 items), *Community* (4 items) and *Policy* (4 items). With the goodness-of-fit indices of $\chi^2/df = 1.77$, CFI = 0.95, TLI = 0.95, SRMR = 0.037, RMSEA = 0.055 and the Cronbach's alpha for each dimension is 0.96, 0.91, 0.96, 0.92, 0.94 and 0.90, respectively (Xie et al., 2021), its validity and reliability are highly ensured. The TLS adopts a four-point scale to gauge the frequency of the practice of teacher leadership in schools.

Meanwhile, TA was examined by applying the Teacher Agency Scale (TAS) which was developed by Sang et al. (2019). It consists of five dimensions with 23 items, i.e., *Teaching Efficacy* (7 items), *Role Obligation* (7 items), *Professional Identity* (3 items), *Self-adjustment* (3 items) and *Decision Participation* (3 items) (Sang et al, 2019). The

model fit of TA was: $\chi^2/df = 2.30$, CFI = 0.92, TLI = 0.91, SRMR = 0.050 and RMSEA = 0.068 whereas the Cronbach's alpha of each dimension is 0.91, 0.87, 0.82, 0.81, 0.82, indicating good validity and reliability of TAS (Sang et al., 2019). TAS adopts a five-point Likert scale to assess the level of agency.

5.4   Pilot test

A pilot study was carried out to validate the instruments based on the local context. According to Lucas et al. (2004), 50 respondents were sufficient to run a proper statistical testing. In line with this, a total of 70 teachers, or five teachers each from 14 schools, were chosen randomly with one school from each state or federal territory involved in the test. Altogether 65 sets of questionnaires were returned and after excluding the invalid questionnaires, 57 were kept for the analysis.

Assessment of Cronbach's alpha was the first approach to measure the internal consistency reliability of the scales. The threshold was set at 0.7 as suggested by Nunnally and Bernstein (1994). As showed in Table 2, the Cronbach's alpha of all the dimensions of the two scales were greater than 0.7 and therefore no item was deleted. Item-scale correlation was the second approach to examine the internal consistency reliability of the scales. The threshold was 0.4 as recommended by Kim and Mueller (1978). The item would be excluded too if it was with negative value. There were altogether four items deleted from TLS, i.e., one item respectively from the dimension of *Association* (ASC6) and *Instruction* (INS7) and two items from *Professional Learning* (PRL6 and 7). For TAS, three items were removed: one from *Teaching Efficacy* (TEF7) and two from *Role Obligation* (ROB6 and ROB7). Finally, the remaining 28 and 20 items of TLS and TAS, respectively were ready for the survey.

Table 2   The pilot test of TLS and TAS and the retained items for the final survey

Scale	Dimension	Cronbach's alpha	No. of original item	No. of item deleted during pilot test	Item retained for final survey
Teacher Leadership (TL)	Association	.92	6	1	5
	Professional Learning	.89	7	2	5
	Assessment	.92	4	0	4
	Instruction	.91	7	1	6
	Community	.90	4	0	4
	Policy	.93	4	0	4
Teacher Agency (TA)	Teaching Efficacy	.92	7	1	6
	Role Obligation	.91	7	2	5
	Professional Identity	.91	3	0	3
	Self-adjustment	.93	3	0	3
	Decision Participation	.90	3	0	3

5.5   Data collection

There were altogether 1200 sets of questionnaires posted to the targeted schools for data collection. The data collection adhered to all ethical considerations. Informed consent was addressed by obtaining a formal approval from the Educational Planning and Research Division, MOE. Following this, permission was also granted from each related state education department to perform the survey. Next, 60 school principals were contacted personally via telephone calls to acquire approval and support. Besides, anonymity was enhanced whereby the names of the schools were kept confidential.

   A few initiatives were taken to ensure a smooth data collection. A reminder via telephone call was dropped to those schools that had not returned the questionnaires two weeks after the first mailing. A data closure process was executed if the total response rate reached 80%. Finally, a total of 941 sets were returned by the corresponding schools. However, there were 43 sets of questionnaires with unacceptable technical errors. Finally, a total of 898 sets of questionnaires were reserved for further analysis, indicating a response rate of 74.83% for the study.

5.6   Data analysis

The descriptive statistic was employed to analyse the demographic information of the respondents, such as gender, age and academic qualification. Furthermore, SEM was applied for multivariate analysis to examine the models of TL and TA to answer the research questions. To achieve the above purpose, steps were taken to test the measurement and structural models of TL and TA, respectively. For the assessment of measurement model of TL and TA, two stages, i.e., the first and second order model of TL and TA were examined, respectively. The thresholds for the model fitness were normed chi-square <5, TFI and CFI >.90, and the RMSEA $\leq$ .06) (Hair et al., 2010). If the model fit indicates an inadmissible fitness, the modification indexes suggested in the AMOS output would be scrutinised and model re-specification would be executed until the best fit model was acquired. Once the thresholds of the above were met, a hypothesised structural model inclusive of both the models would be established to analyse the data and answer the research questions.
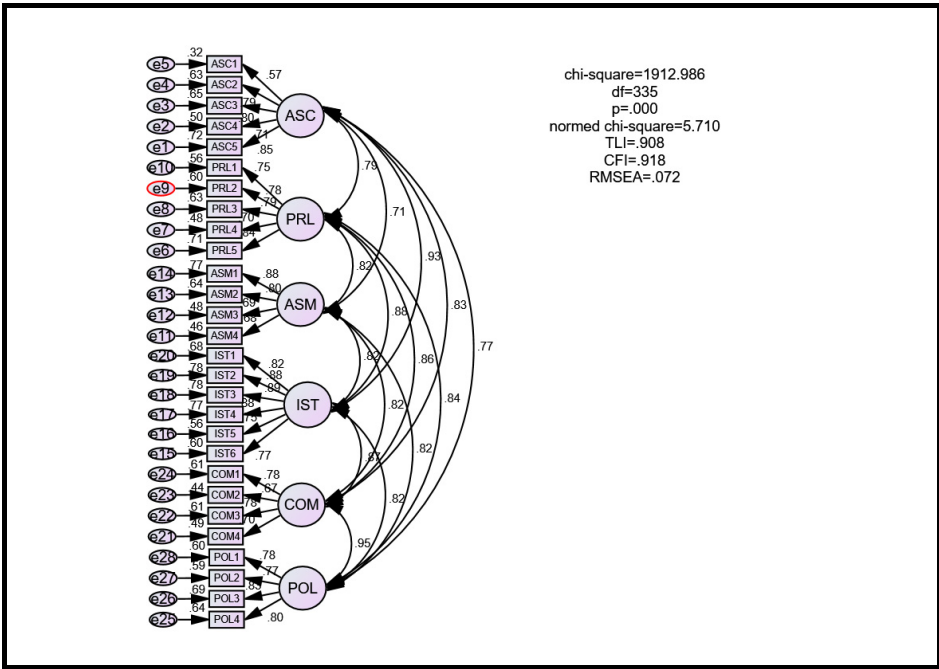
6   Demographic characteristics

The sample of the study comprised of 69.49% ($N = 624$) female and 30.51% ($N = 274$) male. Respondents aged between 31 years and 40 years ($N = 331$, 36.86%) was the largest group in the study. This was followed by the groups between 41 years and 50 years ($N = 287$, 31.96%) and 51 years and 60 years ($N = 174$, 19.38%). Those aged between 21 years and 30 years ($N = 106$, 11.80%) was the smallest group. In terms of academic qualification, 81.96% ($N = 736$) of the respondents had a Bachelor's degree, 9.47% ($N = 85$) with Certificate or Diploma qualifications and the remaining 8.57% ($N = 77$) with a Master's degree.
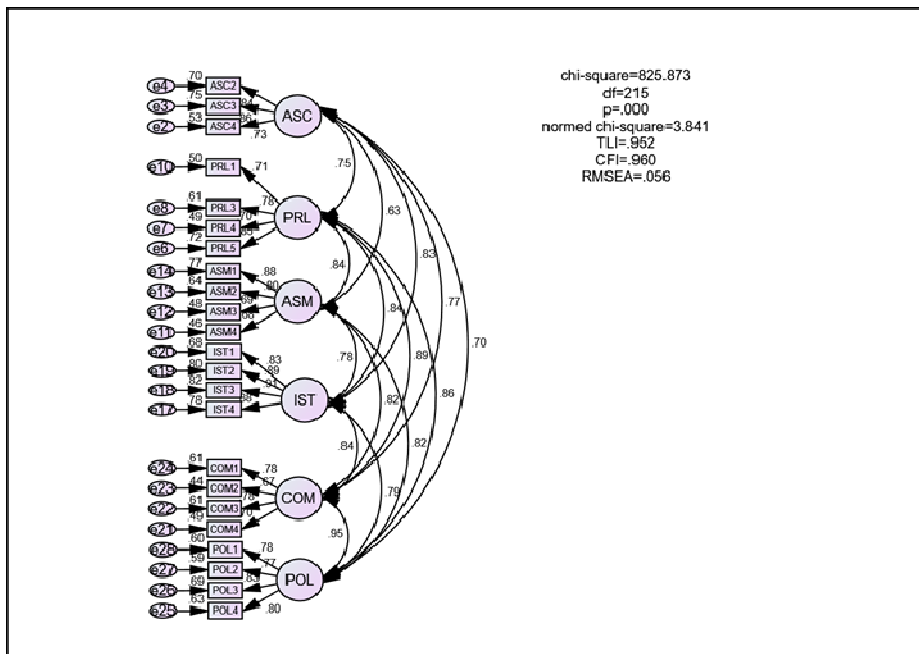
7   Results

Initially, the first order model of TL was examined. As shown in Figure 2, with a value of 5.710, the normed chi-square of TL did not meet the threshold of less than five. However, the TLI (.908) and CFI (.918) exceeded the required cut off .90, demonstrating a reasonable fit. On the other hand, the RMSEA or root mean square error of approximation was .072 and therefore did not meet the threshold of ≤ .06. To obtain better fitness, the model was re-estimated. For every re-estimation, the deletion of the unfit item was carried out one by one based on the highest modification index because any deletion of items might give impact to other parts of the model simultaneously (Chua, 2023). A total of five items were deleted (ASC1, ASC5, PRL2, IST5, IST6). Notably, items were deleted during Confirmatory Factor Analysis to ensure the validity and reliability of the latent variables and their indicators in the context of the study, i.e., the suitability of the application of both the instruments in the research (Chua, 2023). The revised model demonstrated very encouraging indexes with normed chi-square = 3.841; TLI = .952; CFI = .960 and RMSEA = .056 (see Figure 3).

Figure 2   The first order model of teacher leadership (see online version for colours)

Note: ASC = Association; PRL = Professional Learning; ASM = Assessment;
           IST = Instruction; COM = Community; POL = Policy.

Figure 3 The revised first order model of teacher leadership (see online version for colours)

Note: ASC = Association; PRL = Professional Learning; ASM = Assessment;
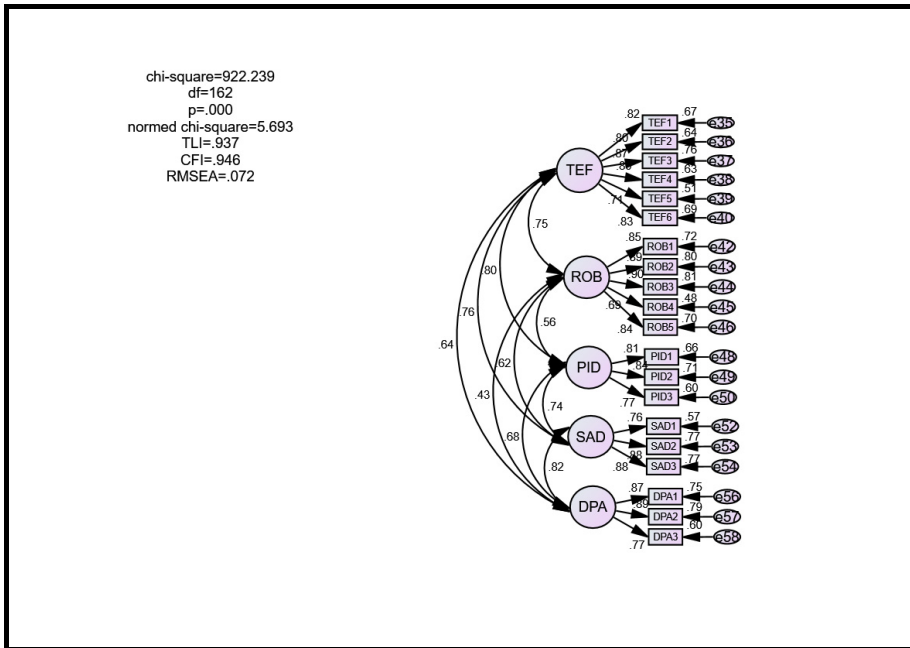IST = Instruction; COM = Community; POL = Policy.

Following this, the second order of the model of TL was examined. The normed chi-square of the second order model of TL was 4.540; TLI = .941; CFI = .947 and the RMSEA = .063. Obviously, only the RMSEA did not meet the threshold of ≤ .06. Consequently, with the highest modification indexes, the item of COM1 was deleted. As a result, all fit indexes of the TL model met the cut off value: normed chi-square = 4.210; TLI = .948; CFI = .954 and RMSEA = .060. This indicated that the revised model fits the data well.
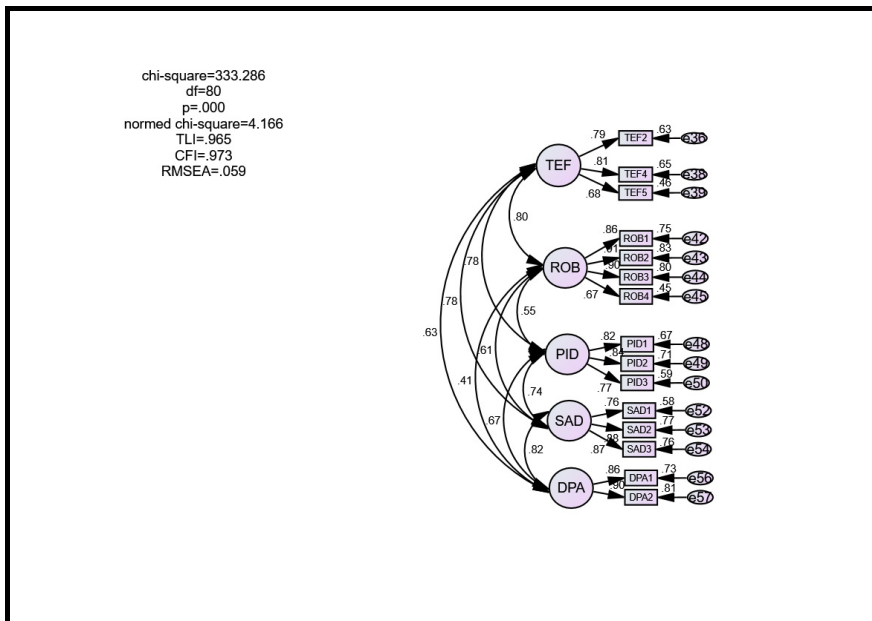
Next, the first order model of TA was examined. As shown in Figure 4, with a value of TLI = .937 and CFI = .946, it exceeded the required threshold of .90, demonstrating a reasonable fit. However, with a value of 5.693, the normed chi-square of TA did not meet the threshold of less than five. Similarly, with the RMSEA of .072, it also did not meet the cut-off value of ≤ .06. To obtain better fitness, the re-estimation of the model was conducted. A total of five items were deleted (TEF1, TEF3, TEF6, ROB5 and DPA3). After the deletion of the items, the revised model demonstrated good indexes with normed chi-square = 4.166; TLI = .965; CFI = .973 and RMSEA = .059 (see Figure 5). Following this, the second order of the TA model was examined. As the normed chi-square of the second order model of TA was 4.225; TLI = .948; CFI = .953 and the RMSEA = .060, no deletion of items was needed as all fit indexes met the cut off value; it was a model with good fit statistics.

Figure 4   The first order model of teacher agency (see online version for colours)

Note: TEF = Teaching Efficacy; ROB = Role Obligation; PID = Professional
          Identity; SAD = Self-adjustment; DPA = Decision Participation.

Figure 5   The revised first order model of teacher agency (see online version for colours)

Note: TEF = Teaching Efficacy; ROB = Role Obligation; PID = Professional
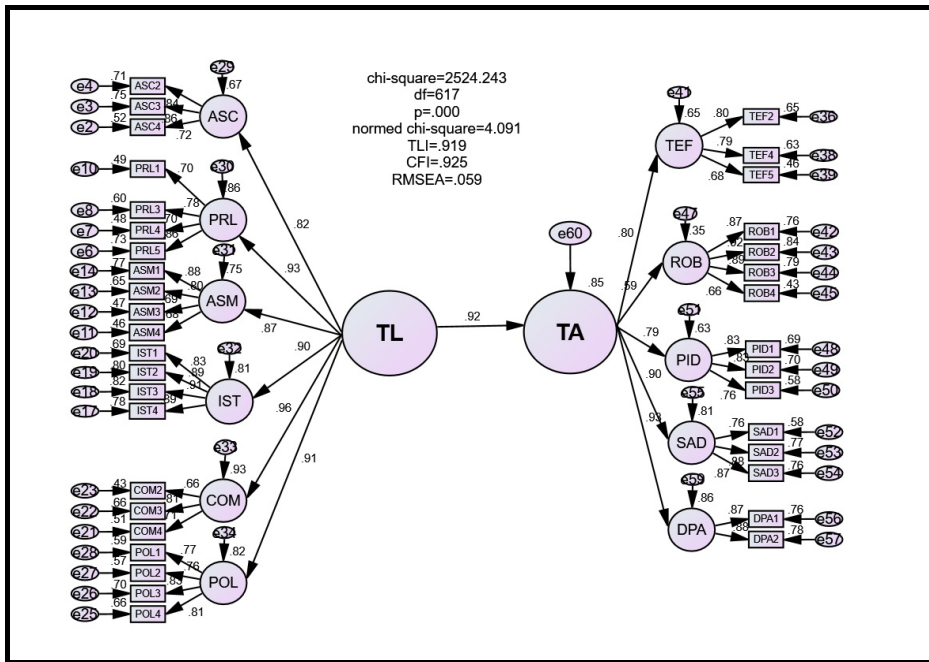   Identity; SAD = Self-adjustment; DPA = Decision Participation.

Subsequently, a hypothesised structural model was established to examine the relationships between TL and TA as demonstrated in Figure 6. The SEM analysis revealed that the normed chi-square (4.091) was above the cut-off of <5 (Hair et al., 2010), the TFI (.919) the CFI (.925) exceeded .90 and the RMSEA (.059) also met the threshold of $\leq$ .06 (Hair et al., 2010). Simply put, the estimated structural model designated a moderate goodness-of-fit value.

Figure 6 The structural model of teacher leadership and teacher agency (see online version for colours)

Note: TL = Teacher Leadership; ASC = Association; PRL = Professional Learning; ASM = Assessment; IST = Instruction; COM = Community; POL = Policy; TA = Teacher Agency; TEF = Teaching Efficacy; ROB = Role Obligation; PID = Professional   Identity;   SAD = Self-adjustment;   DPA = Decision Participation.

As the structural model adhered to all the fitness indexes, steps were taken to examine RQ1 and RQ2. For RQ1, it was found that TL was significantly related to TA as the regression path coefficient between TL and TA was .92, with *p*-value .001 (see Figure 6). For RQ2, to examine to what extent TL affected TA, firstly, a close examination of the dimensions of TL and TA (see Table 3) found that with *p*-value of .001, the six dimensions of TL were significantly related to the five dimensions of TA, respectively. Secondly, it was found that the R^2-value was greater than 0.10 and thus considered adequate for a variance to be explained by the independent variable (Falk and Miller, 1992). The result of R^2 = .85, indicating a total of 85% TA, was due to the practice of TL.

Table 3   The *p*-value of the sub-dimension of TL and TA and its significance for each path

Construct	Path	Sub-dimension	p-value	Result
Association	←	Teaching Efficacy	.001	Significant
Professional Learning	←	Teaching Efficacy	.001	Significant
Assessment	←	Teaching Efficacy	.001	Significant
Instruction	←	Teaching Efficacy	.001	Significant
Community	←	Teaching Efficacy	.001	Significant
Policy	←	Teaching Efficacy	.001	Significant
Association	←	Role Obligation	.001	Significant
Professional Learning	←	Role Obligation	.001	Significant
Assessment	←	Role Obligation	.001	Significant
Instruction	←	Role Obligation	.001	Significant
Community	←	Role Obligation	.001	Significant
Policy	←	Role Obligation	.001	Significant
Association	←	Professional Identity	.001	Significant
Professional Learning	←	Professional Identity	.001	Significant
Assessment	←	Professional Identity	.001	Significant
Instruction	←	Professional Identity	.001	Significant
Community	←	Professional Identity	.001	Significant
Policy	←	Professional Identity	.001	Significant
Association	←	Self-adjustment	.001	Significant
Professional Learning	←	Self-adjustment	.001	Significant
Assessment	←	Self-adjustment	.001	Significant
Instruction	←	Self-adjustment	.001	Significant
Community	←	Self-adjustment	.001	Significant
Policy	←	Self-adjustment	.001	Significant
Association	←	Decision Participation	.001	Significant
Professional Learning	←	Decision Participation	.001	Significant
Assessment	←	Decision Participation	.001	Significant
Instruction	←	Decision Participation	.001	Significant
Community	←	Decision Participation	.001	Significant

8   Discussion

Several important findings were observed in the current study. The first finding found that TL was significantly related to TA as the regression path coefficient between TL and TA was .92 with *p*-value of .001 (see Figure 6). This entailed that a unit change of TL would cause a .92 units change in TA. The above results suggested that TL greatly impacted TA and changes in TA were the outcome of changes in TL. In other words, TL was a strong driver or an imperative factor that enhances TA specifically in moulding

and directing teachers' actions and decisions towards realisation of goals in enacting change pertaining to student learning and school improvement.

The above findings mirrored the essence of the Social Cognitive Theory advocated by Bandura (2001) that individuals may observe, learn and be influenced by the behaviours of leaders in the organisation. In the process of facilitating school improvement, although school principals are the key agents in managing change in schools, however, teacher leaders are those who interact directly and actively with other teachers at the forefront of school change (Harris and Jones, 2019). More so, with professional and technical expertise, they serve as role models for their colleagues. Social learning is established when schoolteachers are captivated by the behaviour or leadership demonstrated by teacher leaders. By providing guidance, inspiration and motivation through the day-to-day work processes at all levels in schools, teacher leaders can stimulate a learning orientation in teachers. Importantly, this learning orientation creates an atmosphere of open-mindedness and knowledge sharing within the organisation, thereby facilitating the desire of the teachers in the acquisition of knowledge and skills (Middleton et al., 2019).

This learning orientation might have an inordinate impact on teachers in organisational learning over time and teacher leaders are able to regulate schoolteachers' thinking, affection and behaviour (i.e., agency) in response to this orientation. This resonates with the Human Agency Theory (Bandura, 2006) that by acquiring the related knowledge and skills, schoolteachers can foster agentic capacity in problem solving. They may even refine it or create new knowledge and skills in dealing with the specific task given. This would further enhance the agentic role of schoolteachers by actively engaging them in organisational learning, while offering them confidence to face challenges, strengthening their sense of efficacy and fostering their identity as professionals. Therefore, it was not surprising to find that that TL was significantly related to TA, in other words, TL is an imperative factor that enhances TA.

For RQ2, to examine to what extent TL impacted TA, firstly, the finding revealed that all the six dimensions of TL were significantly related to all the five dimensions of TA, respectively (see Table 3). In other words, teacher leaders who demonstrated subsequent leadership behaviours in terms of *Association*, *Professional Learning*, *Assessment*, *Instruction*, *Community* and *Policy* were able to greatly improve and enhance the five key elements of TA, i.e., *Teaching Efficacy*, *Role Obligation*, *Professional Identity*, *Self-adjustment* and *Decision Participation*, respectively. On top of this, the finding also revealed that a total of 85% of TA was due to the practice of TL (see Figure 6).

From the perspective of *Association*, it is likely that teacher leaders in the study were able to develop a context of trust, respect and collegiality among teachers in enhancing collaboration and collective action in schools. With such consistent and ongoing positive interactions between teacher leaders and their colleagues, teachers feel comfortable, safe, supported and thus confidence grows (Cranston, 2011). This probably would strengthen the availability of teachers' personal psychological resources and reduce vulnerability that promotes positive *Self-Adjustment* – a process between teachers' personal and professional contexts that is reflective of their judgment, reflection and adjustment that guides their behaviour and mobilise them to act purposefully in realising any related task goals, thus enacting the agentic capacity of teachers.

In terms of *Professional Learning*, the capacity of teacher leaders to take ownership of other teachers' professional learning is a crucial component of TL. Substantial

research has shown that the way teachers accept the notion of supporting mutual learning of teacher leaders could determine the extent teachers to which they would delve into professional learning (Brücknerová and Novotný, 2017). Twyford and Le Fevre (2019) highlighted that learning is influenced by the dynamic interplay of emotion and cognition. Thus, the way in which teachers feel supported and cared for by teacher leaders is a determinant that facilitates a professionally enriching learning relationship that would engage more teachers in organisational learning. In this sense, teacher leaders should model learning by designing more job-embedded, integrated and differentiated learning activities based on the teachers' needs (Xie et al., 2021). Moreover, professional learning experiences can be customised to better support the professionalisation of the teachers as learning not only enhances teachers' instructional solving skills and leverage pedagogical innovations, it can also lay the foundation for a dynamic learning organisation that prioritises professional growth (Nolan and Molla, 2019). Largely, these initiatives would enhance TA through one of its dimensions, i.e., *Professional Identity*.

Assessment would be effective in enhancing TA if the initiatives taken by teacher leaders to address teachers' academic needs in assessing students' performance, analysing student achievement and evaluating teaching effectiveness to make informed decisions and improve instructional practices (Xie et al., 2021). Most likely teacher leaders in the current study exhibited commitment consistently in leading other teachers in assessments at all levels in teaching and learning. For instance, they probably provided valuable input in identifying the relevant techniques, designing appropriate strategies including integrate ICT in assessment and developing the skills of assessment among teachers. As a result, teachers were more capable and willing to fulfil their individual responsibilities assigned in student assessments as they were able to provide adequate feedback to students in maximising learning impact. This requires not only a substantial degree of support from teacher leaders, but rather a substantial degree of professional competence (Brücknerová and Novotný, 2017). Over time, by experiencing a shared intellectual responsibility (*Role Obligation*), this would hold teacher leaders and other teachers together within the group. This further fosters a sense of accomplishment that results in high efficacy (*Teaching Efficacy*) in conducting effective assessments in schools and thus able to enhance TA effectively.

In terms of *Instruction*, teacher leaders are expected to be competent in articulating ideas and thoughts to influence other teachers specifically in facilitating their role in constructing knowledge on instructional practices to improve student learning (Goh and Blake, 2015). Most presumably, teachers in the current study tend to learn from teacher leaders as they believed in their competence in helping them to improve instructional practices, sourcing relevant expertise, supporting reflective dialogue and offering constructive feedback (Xie et al., 2021). Besides, teachers were mostly given chances to express their opinions and allowed to engage in decision making for instructional improvement. These would result not only in the engagement of teachers in *Decision Participation*, but also the enhancement of teacher competence that boost their *Teaching Efficacy*. Consequently, this would foster teachers' *Professional Identity* especially the professional aspects of being a competent teacher as they can act constructively in instructional practices, thus enhancing their TA.

In terms of *Community*, teacher leaders can interact and work effectively with families or local communities to strengthen the possibility for student learning and enhance the achievement of the school system (Xie et al., 2021). This competency is essential for teacher leaders in analysing environmental facts, making sense of a

situation, and coming up with effective solutions in the process of improving student performance. Teacher leaders in the study might have adopted an effective communication and open-minded orientation that helped them to gain trust and respect from families and communities. These initiatives encourage mutual respect, sharing of ideas without fear, taking critiques comfortably and allowing mutual disagreement (Tallman, 2019). This may result in being able to obtain sufficient data to help other teachers to make collective and effective instructional decisions that improve student learning (Brücknerová and Novotný, 2017). The modelling of behaviour by teacher leaders in reaching families and communities would break down walls of prejudgement and promoting collaboration between schools and communities. Importantly, this effort strengthened teachers' role in school-community partnership that supports student learning and improves schools. It reinforced teachers' *Role Obligation* in the holistic development of the students specifically in addressing the needs of individual students, thus enhancing teacher's agentic role in student-learning effectiveness.

In terms of *Policy*, teacher leaders in the present study were probably able to help colleagues to stay informed about various educational policies, appeal for relevant resources to support teacher development and help teachers to gain professional recognition (Xie et al., 2021). By keeping teachers up to date with educational policies, it is not only enabling teachers to have an active voice in influencing instructional practices at school level and education policies at national level, it also supports and encourages teachers engaging in *Decision Participation* that can inform effective educational practices. Over time, this in turn, promotes teachers in self-reflection, enabling them to identify and implement solutions effectively during school change (*Self-Adjustment*) as teachers were empowered to increase the reliability of conducting their assigned tasks effectively. Consequently, this would strengthen teachers' *Professional Identity* – the alignment of roles, responsibilities and values in teaching profession as they believe that their expertise and knowledge can meet the needs of the students and gain professional recognition.

It is beyond the scope of this paper to discuss how the six dimensions of TL affected the five key components of TA, respectively. However, based on the brief and concise discussion above, it can be seen that TL was a strong driver for the enhancement of TA in schools whereby a total of 85% of TA was due to the practice of TL. Succinctly, by fostering a collaborative atmosphere in schools, stimulating and leading organisational learning, enhancing individual instructional capabilities, facilitating collective decision-making, promoting positive dialogue with families and communities, advocating for resources and recognition to support teacher professional growth, teacher leaders can strengthen teachers' agentic capacity. Largely, this inclusive participatory and dynamic approach of leadership certainly would affect the agentic role of teachers in school reform because agency can be realised through collaborative action, collective understanding, as well as shared beliefs in efficacy to the maximum (Bandura, 2001) that produces gains in student outcomes and school improvement.

9 Implications of the study

A few important implications have been drawn from the findings for discussion. Firstly, as the study found that teacher leaders hold a pivotal role in nurturing TA, the teacher training institutions, which are the leading organisations in developing and conducting

professional programmes for schoolteachers should embark on purposeful endeavours to conduct an extensive review on teacher leadership professional training programmes. Focus should be given to unleash the maximum potential in fostering positive TA specifically on how to inspire, guide and lead teacher leaders to leverage their leadership styles in enhancing TA among teachers. By revising the related training programme with a relevant and effective approach, it holds promise in shaping professional development initiatives for existing teacher leaders and establishing benchmarks for aspiring teacher leaders in the field.

Secondly, the findings extend its implication to school principals, the change initiators. As the finding revealed that TL is a significant predictor of TA, school principals should rethink their roles to strategically enhance change endeavours that encourage and support the practice of TL to successfully enact TA among teachers. The development of effective TL should be given priority by school principals in empowering teacher leaders with autonomy, supporting teacher leaders' decisions, assigning responsibilities strategically as the turnaround progresses, providing career growth opportunities and academic leadership positions such that leadership capacity grows. When school principals demonstrate strong support for the practice of TL, teacher leaders will show greater efficiency in engaging teachers to embrace school change. Increased leadership capacity for teacher leaders reduces school principals' burden and ultimately, fosters gain in school improvement and effectiveness.

Thirdly, the current study empowers teacher leaders with a profound understanding of TL and its intricate interplay with TA. Despite prior investigations within the domain of educational leadership that have predominantly centred on probing the repercussions of principal leadership behaviours on TA, the results provide empirical evidence and support the notion that TL plays a substantial role in enacting TA. This study serves to outline behaviours intricately linked to the multifaceted aspects of TL in enhancing the agentic capacity of schoolteachers. Armed with these insights, teacher leaders can engage in deliberate interactions with teachers, skilfully recalibrating their competence to help teachers enhance their TA in embracing change and translating change goals into tangible outcomes.

10 Limitations of the study and future directions

A few limitations and future directions should be noted in the present study. Firstly, as the practice of TL is an intricate process in enacting TA that generates the stimulation and persistence of teachers' behaviour, the prevalent nature of the study that had been conducted at a single point in time limits our understanding of the interplay between these two variables. Adopting a longitudinal approach that encompasses surveys, field observations and interviews would probably contribute greater to the body of knowledge. Secondly, there is a need to further examine the correlation between TL and TA across various types of secondary schools in Malaysia. For instance, this can be carried out in the residential and religious secondary schools that would ensure a better capture of a comprehensive picture to verify whether the findings can be generalised. Thirdly, instead of teachers' self-reports, the findings would be more persuasive if the data can be incorporated from both school principals and senior assistants; triangularly measuring the relationship between TL and TA in future research would minimise the possibility of data inaccuracy.

11 Conclusion

The teacher leader-teacher relationship is one dynamic collaborative relationship that influences diverse aspects of teaching and learning and navigates transformational change in schools. This demands not only a considerable degree of guidance, support and motivation from teacher leaders, but also a substantial degree of professional competence. By helping teachers to regulate, control and enhance their cognition, motivation and behaviour that are directed by the change goal, the likelihood that teacher leaders can enhance the agentic capacity of schoolteachers that produces gains in student outcomes is relatively high. The study holds practical value for bridging a gap in the literature and inspecting the existence of the Human Agency Theory (Bandura, 2006) in the context of the educational arena by offering insights in enacting TA via TL effectiveness. It offers relevant parties a lens through which TL can steer systemic change in examining TA as a critical component towards continuous and sustainable school improvement specifically in developing countries with the similar background as Malaysia in crafting pragmatic directions for the implementation of TL in enhancing positive TA in schools.

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