The impact of teacher empowerment on schools' innovation climate

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Article Info	ABSTRACT
Article history: Received Dec 18, 2023 Revised May 14, 2024 Accepted May 18, 2024 *Keywords:* Innovation climate Innovative behavior School management Structural equation modeling Teacher empowerment	Teacher empowerment has been recognized as an imperative management practice to develop and implement innovations in schools. However, studies investigating the relationship between teacher empowerment and the innovation climate are scant, inhibiting the development of effective strategies to foster educational innovation. This study examines the impact of teacher empowerment on schools' innovation climate in Malaysia. The sample consisted of 376 teachers who were randomly selected from 12 primary and secondary schools in Kuala Terengganu. Structural equation modeling analysis revealed a strong positive effect of teacher empowerment on innovation climate, wherein teacher empowerment predicted 50% of the variability in the innovation climate. Findings of this study suggest that school leaders should invest in empowering teachers through programs that value their perspectives and actively encourage contributions to foster an innovation climate.

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1. INTRODUCTION

In today's dynamic educational landscape, schools are under immense pressure to innovate to align with the demands of both education and the world at large. This pressure to innovate is aimed at equipping students with the skills and competencies required to be successful in a world that is changing so rapidly. To innovate means to allow for new teaching methodologies, technologies, and curriculum designs to be explored and implemented in a way that promotes creativity, critical thinking, and problem-solving. Embracing innovation also enables schools to address diverse learning styles and individual needs, fostering a more inclusive and personalized educational experience. Furthermore, by being at the forefront of educational innovations, schools position themselves to attract and retain talented teachers and students, contributing to a lively and progressive academic environment.

The effective implementation of innovation in schools necessitates the establishment of a conducive climate for innovation that actively supports and encourages the generation, adoption, and implementation of new practices among teachers [1]. Ronquillo [2] defines innovation climate as "an atmosphere within an organization that fosters and propagates creative mechanisms to achieve organizational outcomes and has in place various traits among organization members that are conducive to creative and innovative ideas". This definition encapsulates the overall atmosphere and cultural framework within an institution that either encourages or impedes innovation. An alternative perspective on innovation climate is presented by Moolenaar *et al*. [3], who define it as "the shared perceptions of organizational members concerning the

practices, procedures, and behaviors that promote the generation of new knowledge and practices". Central to this definition are employees' perceptions regarding the degree to which the team or organizational environment fosters innovation and encourages innovative behavior among its members.

Scholarly literature asserts that a positive innovation climate within organizations is characterized by its receptiveness to new practices and change, along with a pervasive culture of collaboration among its members. This collaborative ethos is essential for developing fresh knowledge, refining practices, and aligning these endeavors with organizational goals [4]. It fosters a dynamic environment that encourages individuals to take initiative, leverages resources and facilities effectively, provides robust support for innovation, promotes teamwork, facilitates adaptation, and encourages the sharing and building upon each other's ideas and suggestions [5]–[8]. Notably, several researchers have highlighted that perceived support for innovation often outweighs actual support [7], [9]. This phenomenon is explained by the psychological climate theory, which postulates that individuals primarily respond to perceived environments rather than actual ones [10]. Within such an environment, employees experience a sense of empowerment, enabling them to venture into creative working methods, seamlessly integrate emerging technologies, and actively participate in ongoing professional development. Organizations fostering innovation climates, where members willingly embrace risks and commit to continuous learning for organizational enhancement, demonstrate heightened success in implementing tangible innovations [11].

However, establishing a favorable climate for innovation in schools encounters various challenges. In addition to organizational factors, teachers' personal barriers can substantially hinder the cultivation of an innovative climate within educational institutions. Resistance to change among teachers, stemming from entrenched beliefs, fear of the unknown, or reluctance to step outside established comfort zones, poses a formidable barrier [12], [13]. Additionally, a lack of openness to diverse perspectives, knowledge, skills, or attitudes among teachers can hinder collaboration and the exchange of innovative ideas [14]. Inadequate professional development opportunities and a dearth of intrinsic motivation to embrace new approaches can further stifle the adoption of innovative practices [15]. These personal factors collectively create a challenge for schools in cultivating a dynamic and forward-thinking environment that is essential for nurturing creativity and adapting to evolving educational paradigms.

Overcoming barriers to fostering an innovative climate demands a fundamental paradigm shift in school management practices, emphasizing a more human-centered approach that places the professional development and well-being of teachers at the forefront. In this context, teacher empowerment emerges as a strategic imperative for fostering an atmosphere conducive to innovation within educational institutions. Teacher empowerment is defined by Short et al. [16] as "a process whereby school participants develop the competence to take charge of their own growth and resolve their own problems". It involves individuals' conviction that they possess the skills and knowledge to improve their situations. Short and Rinehart [17] describe six ways through which teachers can experience empowerment:

i) Decision-making: teachers' participation in important decisions that directly impact their jobs, such as those concerning budgets, curriculum, and scheduling.
ii) Professional growth: the belief that their work offers opportunities for career advancement, learning new things, and broadening their skill sets.
iii) Impact: the belief that they have the power to influence and impact school life.
iv) Status: the belief that they receive professional respect and admiration from their colleagues.
v) Self-efficacy: the belief that they possess the knowledge and abilities to support students' learning and create curriculum.
vi) Autonomy: the belief that they have authority over various aspects of their professional lives, such as time management, curriculum creation, and lesson planning.

The results of empirical research have shown that teacher empowerment generally plays a positive role in an educational context. For instance, studies indicated that teacher empowerment increases teachers' job satisfaction [18], organizational commitment [19], professional commitment and organizational citizenship behaviors [20], professionalism and self-confidence [21], decreases teachers' professional burnout [21], and engages teachers in innovative work behavior [22]–[26]. Therefore, it is thought that empowering teachers and igniting their sense of empowerment can lead to many positive organizational behaviors and eventually they can play an important role in the formation of innovation climate in schools. Recent empirical studies conducted across both service and industrial sectors further underscore the role of teacher empowerment in shaping the innovation climate within organizations [27]–[29]. In parallel, there is a compelling expectation that empowering teachers will positively contribute to the cultivation of an innovation-friendly climate in schools. However, the current body of literature concerning the relationship between teacher empowerment and the innovation climate within the educational context remains scarce. Consequently, there exists a noteworthy gap in the scholarly understanding of this crucial relationship. From a practical standpoint, closing this gap is vital for unveiling insights that can guide the development of effective strategies aimed at promoting innovation within schools.

This study examines the impact of teacher empowerment on schools' innovation climate, aiming to bridge the existing gap in our understanding of how empowering teachers contribute to and potentially influences the innovation climate within schools. Figure 1 depicts the research framework devised for the present study, grounded in organizational empowerment theory. Organizations strive to foster individual empowerment among members and enhance the effectiveness of organizations, which is necessary for goal achievement [30]. Workplaces characterized by empowerment cultivate an environment where employees utilize a broader range of skills, consistently enhance the quality of their work, execute tasks in their entirety rather than in segmented parts, exercise greater control over decision-making related to their work, and promote an innovative and creative culture [31]. Ultimately, organizational empowerment theory emphasizes that empowering individuals within an organization is a key driver for fostering an innovation-conducive climate. Recent empirical studies conducted in both the industrial and services sectors affirm this proposition, consistently indicating the critical role that empowerment plays in influencing the innovation climate within organizations [27]–[29]. These findings lead to the development of the following hypothesis: H1: there is a positive effect of teacher empowerment on innovation climate in schools.
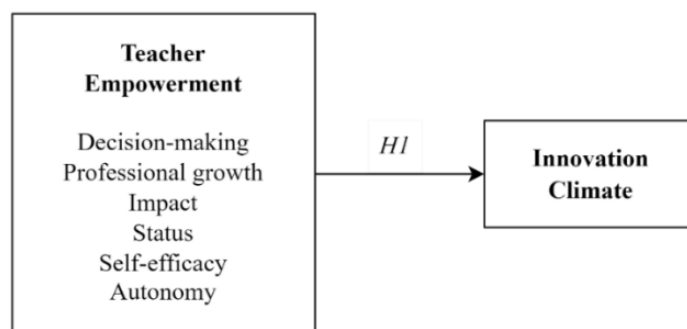

Figure 1. Research framework

2. METHOD

The data collected by means of a self-administered questionnaire. Teacher empowerment was measured using a Malay version of Short and Rinehart's [17] School Participant Empowerment Scale (SPES), translated by Yusoff and Ariffin [32], comprising 35 items to assesses teachers' general perspectives on six dimensions of empowerment. Each item is scored on a 7-point Likert type scale (1=strongly disagree; 7=strongly agree). Innovation climate was assessed using seven items, adapted from Moolenaar *et al.* [3], also scored on a 7-point Likert type scale. Following expert content validation, the questionnaire underwent pilot testing (n=58). Cronbach's alpha values for teacher empowerment subscales ranged from 0.721 to 0.858, and for the school innovative climate, it was 0.933, exceeding the threshold of 0.70, confirming the instrument's internal consistency [33].

The target population consists of permanent teachers currently teaching at primary and secondary school in Kuala Terengganu, Malaysia. By utilizing the formula for sample size determination [34], a calculated sample size of 352 would be adequate for representing a population of 4,199 teachers in Kuala Terengganu. This sample size also satisfies the minimum requirement of 200 cases for structural equation modeling (SEM) analysis to produce reliable results [35], [36]. The decision was made to select the sample from 12 schools, factoring in considerations like cost, time, and accessibility. To select the schools, a stratified random sampling technique with proportionate representation was applied to ensure that representative samples were obtained [37].

Prior to data collection, approval to conduct the survey was obtained from the Ministry of Education Malaysia as well as the Department of State Education. After approval was granted, consent was sought from the head teachers of the chosen schools by submitting a formal letter of application, followed by individual appointments with the respective head teachers. The questionnaires were distributed between April and May 2022 using "drop-off and pick-up" (DOPU) method. Out of 500 questionnaires distributed during the survey, the total number returned was 465, with 376 were deemed usable. Women represented 80.1% of the total sample. Among the age groups, the highest number of respondents was those 41 and 50 years old. In terms of education, the majority, 84%, held a bachelor's degree. Regarding years of service, 69.2% of the respondents had served for more than 16 years, 23.1% had a service duration between 11 and 15 years, while 7.7% had served for less than 10 years.

3.   RESULTS AND DISCUSSION

AMOS version 24 software was utilized to conduct SEM. Following a two-step approach for SEM analysis [38], the process commenced with confirmatory factor analysis (CFA) to evaluate how well the indicators accurately measure the latent constructs of interest (measurement model) prior to examining the structural relationships between these constructs (structural model).

3.1. Measurement model

A pooled CFA with a maximum likelihood (ML) estimation was applied on all constructs at once. This method is more preferred than individual CFA since it can prevent the model identification issue and is more thorough and efficient, particularly if some of the constructs have less than four measuring items [35]. Five standard measures were used to assess the overall model fit, namely χ^2/df, root mean square error of approximation (RMSEA), goodness of fit index (GFI), comparative fit index (CFI) and Tucker-Lewis index (TLI). The initial measurement model's fit indices indicated that the model did not satisfy the necessary requirements for an adequate fit, which might be caused by low factor loadings and redundant items. To improve its goodness of fit, the model was re-specified by removing observed variables with factor loading of less than 0.50. In addition, modification indices were examined to pinpoint possible areas of misfit. Items were only removed if they had modification indices of greater than 15 [35]. As a result of these procedures, 17 items were removed from the model. Following this, all model fit measures were satisfied. Table 1 presents the fit indices for both the initial and modified model.

Table 1. Fit indices of the measurement model

	Parsimonious fit	Absolute fit		Incremental fit	
	χ^2/df	RMSEA	GFI	CFI	TLI
Level of acceptance	<3.0	<0.08	>0.90	>0.90	>0.90
Initial model	3.133	0.075	0.741	0.843	0.831
Modified model	1.796	0.046	0.911	0.965	0.959

The measurement model of latent constructs was assessed for undimensionality, reliability, and convergent validity. Unidimensionality is considered achieved when all the measurement items for the respective constructs obtain acceptable factor loadings, which should be higher than 0.50 [35]. The composite reliability (CR) is employed to estimate reliability in the structural equation model, and it should be at least 0.70 [35]. The convergent validity of a construct can be verified by calculating the average variance extracted (AVE), which should exceed 0.50 [33], [35]. As depicted in Table 2, all items from each construct have surpassed the required factor loading values of 0.50. Additionally, the CRs for all constructs were above the 0.70 threshold, indicating a relatively high level of construct reliability. The AVE of latent constructs ranges from 0.515 to 0.727, also surpassing the recommended threshold value of 0.50.

Table 2. Factor loading, CR, and AVE

Construct	Loading	CR	AVE
Teacher empowerment	0.511–0.836	0.873	0.539
Decision-making	0.673–0.859	0.879	0.648
Professional growth	0.665–0.821	0.832	0.555
Impact	0.803–0.869	0.867	0.686
Status	0.658–0.911	0.849	0.656
Self-efficacy	0.836–0.873	0.889	0.727
Autonomy	0.545–0.837	0.756	0.515
Innovation climate	0.752–0.905	0.918	0.693

SEM analysis requires both univariate and multivariate normality of data [35]. Univariate normality was assessed by analyzing skewness and kurtosis values for each variable. Skewness values ranged from -0.93 to 0.05, and kurtosis values ranged from -0.837 to 1.223, indicating a normal distribution as they fell between -3 to +3 for skewness and between -10 to +10 for kurtosis [39]. For multivariate normality, Raykov and Marcoulides [40] suggested that Mardia's coefficient should be less than $p(p+2)$, where p is the number of observed variables. With 25 observed variables in our model, the threshold was set at 675. The Mardia's coefficient obtained was 161, indicating that multivariate normality can be assumed.

3.2. Structural model

After establishing validity and reliability in the measurement model, a structural model was constructed to test the proposed hypothesis. The structural model was measured through ML estimation, a robust method widely used for parameter estimation in SEM [35]. Figure 2 shows the structural model, depicting the relationship between teacher empowerment and the innovation climate. To evaluate the model's explanatory power, we utilized the coefficient of determination (R^2). The R^2 value indicates the proportion of variance in the dependent variable explained by the independent variable(s) in the regression model, serving as a critical metric for assessing model fit and predictive accuracy [33]. According to Hair *et al.* [41], R^2 values of 0.75 suggest substantial explanatory power, 0.50 indicate moderate, and 0.25 signify weak explanatory power.

In this study, the R^2 value for the innovation climate was found to be 0.50. This suggests that teacher empowerment predicts a moderate proportion, specifically 50%, of the variance in the innovation climate. In practical terms, this implies that half of the changes or variations in the innovation climate can be attributed to the levels of teacher empowerment. The moderate R^2 value underscores a significant, yet not overwhelming, influence of teacher empowerment on fostering an innovation climate, suggesting that while teacher empowerment is an important factor, other variables also contribute to the innovation climate within educational environments.
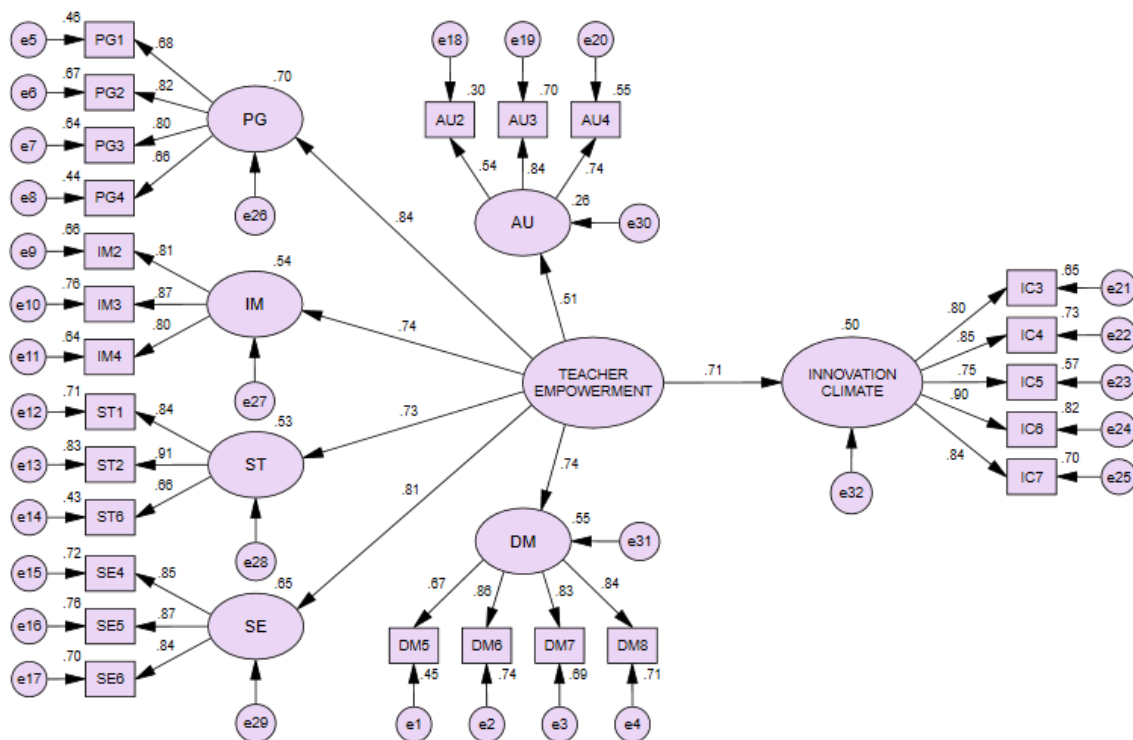

Figure 2. Standardized estimates of the structural model

The standardized regression weight (β) measures the strength and direction of the relationship between an independent variable and a dependent variable, considering the variability of both variables. According to Cohen's [42] guidelines for effect sizes, β values between 0.10 and 0.29 are considered small, values between 0.30 and 0.49 are deemed medium, and values of 0.50 or greater are considered large. In Table 3, it is evident that teacher empowerment has a significant impact on schools' innovation climate. Specifically, there is less than a 0.001 chance of obtaining a critical ratio with an absolute value of 9.181. In other words, at the two-tailed 0.001 level, the standardized regression weight for teacher empowerment in predicting the innovation climate differs significantly from zero. The β estimate between teacher empowerment and the innovation climate is large (β=0.71), classifying it as a large effect size according to

Cohen's [42] guidelines. This large β value indicates that teacher empowerment is a very strong predictor of the innovation climate in schools.

Table 3. Standardized regression weight

Path	Estimate	C.R.	p	Result
TE --> IC	0.710	9.181	< 0.001	Supported

3.3. Discussion

The evidence from this study strongly indicates that teacher empowerment positively impacts schools' innovation climate. Prior studies in service and industrial settings also highlight the importance of employee empowerment in shaping the innovation climate within organizations [27]–[29]. The significant positive relationship between teacher empowerment and the innovation climate suggests that teachers who experience higher levels of empowerment perceive a more innovative atmosphere at their schools. Empowered teachers are given the freedom, confidence, and support to make decisions and take responsibility for their teaching practices [16], [17], which enhances their motivation, job satisfaction, and commitment to innovation. Feeling valued and respected fosters a positive and collaborative working environment where teachers are more inclined to take risks, try new approaches, and implement innovative teaching methods. Teacher empowerment also promotes collaboration and the sharing of innovative practices among teachers, creating a collective intelligence that propels the growth of an innovation climate. Additionally, empowered teachers are more likely to engage in professional development, stay updated on research and best practices, and integrate new technologies into their classrooms. Overall, teacher empowerment provides the foundation for a vibrant and dynamic innovation climate within schools.

The findings of this study have significant practical implications for school leaders and administrators. To cultivate a positive innovation climate, schools should prioritize empowering teachers by giving them decision-making authority and involving them in developing educational strategies. Recognizing teachers as key stakeholders and investing in their professional growth not only enhances their skills but also fosters a sense of ownership and dedication to the school's mission. Creating avenues for collaboration and open communication among teachers fosters a culture where innovative ideas can be freely exchanged, promoting a dynamic learning environment. Practical steps include establishing mentorship programs, encouraging teacher-led initiatives, and providing resources for ongoing training and skill development. Moreover, school leaders should actively seek teacher input in decision-making processes related to teaching methods, curriculum development, and technology integration. Acknowledging and celebrating innovative teaching practices through recognition programs further reinforces a culture of empowerment. Implementing flexible policies that allow teachers to experiment with new pedagogical approaches and providing a supportive framework for risk-taking contribute to an innovation climate within schools. By prioritizing teacher empowerment, schools can harness the collective expertise and creativity of their teaching staff, ultimately creating a learning environment that adapts to evolving educational needs and prepares students for future challenges.

This study has several limitations and offers directions for further investigation. First, the sample included teachers from 12 public schools in Kuala Terengganu. Future research should involve a larger, more diverse sample from various regions in Malaysia to enable multigroup analyses based on factors like school type and location. Secondly, this study employed a fully quantitative approach. Future research should consider a mixed-methods approach for a more comprehensive understanding of the phenomenon. Third, the study operationalized the innovation climate as a unidimensional construct. Future studies could explore its multidimensionality to gain a more comprehensive understanding of this critical factor. Finally, as the present study relied on cross-sectional data, future research might conduct a longitudinal study of teacher empowerment and the innovation climate in schools to enable a comprehensive analysis of the dynamic relationship between these variables.

4. CONCLUSION

Teacher empowerment stands as a primary driver for fostering an innovation-conducive climate in schools. Empowerment, manifested through freedom, confidence, and support, translates into heightened motivation, job satisfaction, and a strong dedication to innovation among teachers. This empowerment cultivates a culture where teachers feel valued and respected, fostering a positive and collaborative working environment. The resultant willingness of empowered teachers to take risks, experiment with novel approaches, and share innovative practices contributes to a collective intelligence that propels the growth of an innovation climate. Considering these insights, it is imperative for school leaders to adopt a proactive

approach, strategically investing in structures and policies that prioritize teachers' freedom, confidence, and support. This involves creating effective channels for professional development, promoting open communication, and providing resources that empower teachers to explore innovation. Furthermore, school leaders should actively cultivate a culture that not only recognizes but celebrates the invaluable contributions of empowered teachers, reinforcing a positive and collaborative ethos within the educational institution.

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