Journal of Contemporary Educational Research, 2025, Volume 9, Issue 9
http://ojs.bbwpublisher.com/index.php/JCER
ISSN Online: 2208-8474
ISSN Print: 2208-8466

The Impact of Training Opportunities on Job Satisfaction Among Teachers: Mediating Role of AI Self-Efficacy

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Abstract: This study examines how training opportunities influence teachers' job satisfaction, emphasizing the mediating effect of AI self-efficacy among primary and secondary school teachers in Wuhan, China. Current research employed a quantitative, cross-sectional design. Data were collected using an online questionnaire from 655 primary and secondary school teachers in Wuhan. Structural equation modelling (PLS-SEM) was utilized for data analysis. Results confirmed significant positive relationships between training opportunities and both AI self-efficacy and job satisfaction. Besides, AI self-efficacy was found to significantly mediate the relationship between training opportunities and job satisfaction. This study contributes to the body of knowledge by empirically showed the relatively unexplored psychological pathway (AI self-efficacy) linking training opportunities to job satisfaction within AI-intensive educational contexts. The findings enhance understanding of how structured training in AI can positively influence teachers' attitudes and job-related outcomes. Educational policymakers and administrators can utilise these findings to develop specialised training programs, thereby improving teacher self-efficacy, job satisfaction and overall effectiveness in responding to technology changes.

Keywords: Training opportunities; AI self-efficacy; Job satisfaction; Teachers; Artificial intelligence

Online publication: Oct 21, 2025

1. Introduction

Job satisfaction is a prominent area of research due to its complex nature. There are many definitions of job satisfaction, and encompassed multiple aspects. Much earlier, Smith, et al. define job satisfaction as a function of the perceived relationship between what one wants from one's job and what one perceives it as offering or entailing [1]. Later, Locke suggested that job satisfaction is a positive feeling of a job, based on the appraisal of the person's job or job experiences [2]. Years later, Spector defines job satisfaction as "simply how people feel about their jobs and different aspects of their jobs [3]. It is the extent to which people like (satisfaction) or

dislike (dissatisfaction) their jobs". Judge, et al. describe job satisfaction as a collection of attitudes that workers have about their jobs [4]. Weiss also suggests that job satisfaction is an attitude that individuals have about their jobs and it results from their perception of their jobs and the degree to which there is a good fit between the individual and the organization [5]. These definitions highlight the multifaceted nature of job satisfaction, encompassing emotional, attitudinal, and perceptual dimensions of how individuals evaluate their work and work environment.

Previous research has indicated plenty of factors influencing job satisfaction, to name a few, the professional status and work engagement , relationship satisfaction, personal development, and basic demands, training, continue skill development, self-efficacy, and recently the artificial intelligence [6–12]. The proliferation of artificial intelligence (AI) on recent decades have fundamentally transformed various aspects of human existence. Defined broadly by Winston as the "study of the computations that enable perception, reasoning, and action", AI has permeated numerous sectors including engineering, healthcare, manufacturing, finance, and education [13]. Within educational settings particularly, AI technologies such as adaptive learning systems (e.g., Knewton, Dreambox), intelligent tutoring platforms (e.g., Squirrel AI), and automated grading tools have considerably altered instructional methods and administrative practices. As educational institutions increasingly integrate AI technologies, there is a consequential demand for educators to adapt pedagogically and administratively, often significantly reshaping their traditional professional roles. Such rapid technological advancements highlight critical considerations regarding educators' preparedness, satisfaction, and their self-efficacy in utilizing digital innovations.

Teacher job satisfaction, in particular, emerges as an essential construct for examination due to its proven associations with retention rates, instructional quality, and student academic outcomes [14]. Nevertheless, while literature consistently acknowledges job satisfaction's importance, it remains underexplored in relation to the availability and quality of AI-specific training opportunities and the psychological mechanisms underpinning these relationships, notably AI self-efficacy.

Teacher training is widely regarded as a cornerstone of professional development, enabling educators to enhance their skills, refine instructional practices, and adapt effectively to institutional transformations. The availability and quality of training significantly influence educators' perceptions regarding their roles and organizational futures. Prior research consistently supports a positive relationship between comprehensive training initiatives and job satisfaction [15–17,19]. Specifically in educational contexts, ongoing training initiatives remain essential. Recent studies by Humairah et al. and Ferreira et al. emphasize the necessity for continuous professional development to equip educators effectively with modern literacy skills and innovative teaching methodologies [17,18]. Collectively, these findings underscore the critical role of structured training opportunities in fostering educator satisfaction, enhancing professional competency, and ensuring institutional adaptability.

Nevertheless, an essential construct connecting training opportunities and job satisfaction is self-efficacy, particularly AI self-efficacy, an individual's belief in their competence to effectively employ artificial intelligence technologies within professional settings. Rooted in Bandura's Social Cognitive Theory, self-efficacy influences individuals' motivation, performance, and resilience, notably in contexts involving technological innovation and adaptation [19].

Empirical findings consistently affirm that training opportunities significantly enhance self-efficacy, which in turn positively influences job satisfaction [20,21]. Nonetheless, as educational institutions increasingly adopt AI tools for administrative and instructional purposes, educators' AI self-efficacy becomes a strategic determinant of successful technological integration and overall job satisfaction. Contemporary research emphasizes that

targeted training programs specifically designed to enhance AI-related competencies substantially bolster teachers' AI self-efficacy [22, 23]. Simosi demonstrates that training programs explicitly aligned with individuals' self-efficacy levels significantly enhance the likelihood of skill transfer and successful adaptation in professional contexts [21]. Likewise, Bausch et al. highlight that training that realistically assesses capabilities and provides positive reinforcement considerably increases post-training self-efficacy, consequently predicting higher performance and satisfaction levels [20].

Specifically, within AI-intensive contexts, Obenza demonstrates that training programs enhancing AI self-efficacy effectively foster positive attitudes toward AI integration, thereby reducing resistance and enhancing overall job satisfaction [23]. Chen et al. further corroborate these findings, revealing that increased AI self-efficacy directly correlates with heightened satisfaction in AI-oriented courses and stronger intentions to engage in AI-related tasks [22]. Conversely, research by Ullah suggests that excessively high self-efficacy might reduce reliance on AI, necessitating balanced training strategies that empower educators while encouraging constructive engagement with AI technologies [24].

Furthermore, studies across diverse contexts corroborate the critical role of self-efficacy in determining professional outcomes. For example, Ganefri et al. in entrepreneurship education and Lee et al. in healthcare have shown that targeted, practice-oriented training significantly enhances participants' self-efficacy, thereby improving performance outcomes and satisfaction [25,26]. Collectively, this literature underscores the pivotal role of self-efficacy-oriented training interventions, particularly those tailored toward technological competencies like AI, in facilitating successful organizational adaptation and individual professional growth.

However, despite these extensive findings, the psychological pathways explaining how training translates into satisfaction, particularly within AI-intensive contexts, remain inadequately explored. Specifically, AI self-efficacy i.e., teachers' belief in their capability to effectively employ AI tools has emerged as a critical psychological mechanism linking training experiences to job satisfaction [22,23], yet this construct is largely under-investigated within educational contexts. Recognizing this significant gap, the present study aims to explicitly investigate how training opportunities related to AI influence teachers' job satisfaction through the mediating role of AI self-efficacy among secondary school teachers in Wuhan, China, a city that is undergoing profound educational transformations via extensive AI integration. As such, based upon the literature review and research gap, current study proposes the below hypotheses:

(1) There is a positive relationship between training opportunities and AI self-efficacy among school teachers in Wuhan, China.
(2) There is a positive relationship between training opportunities and job satisfaction among school teachers in Wuhan, China.
(3) AI self-efficacy mediates the relationship between training opportunities and job satisfaction among school teachers in Wuhan, China.

2. Methodology

This study is a quantitative cross-sectional study using questionnaire survey method. To measure the dependent variable, i.e., job satisfaction, the Chinese version of 3-items Job Satisfaction Scale was adopted from Liu, et al. [27]. This scale examines the perspectives of employee self-perceive degree of satisfaction or fulfilment derive from their work. Liu, et al. use it to evaluate the influence of work environment stress on the employees of China and United Sates. The internal consistency coefficients of the job satisfaction scales were .67 for the Chinese version and .82 for the American version [27].

Meanwhile, to measure the training opportunities, the instrument was adopted from Giovanni Mariani et al. with alpha coefficient of 0.74 [28]. This instrument required respondents to indicate the degree of agreement or disagreement with a 5-Likert scale for the following 2 statements: (1) Opportunities for training and professional development are offered by my school, and (2) I can access specific training courses on the IT that I use. Lastly, to measure the, 10-items of AI self-efficacy was adopted from Hong , with α = .87 [29]. Originally, the instrument is a revised technology self-efficacy scale developed by Holden and Rada [30]. Some of the questions are as following: In general, I could complete any desired task using the AI technology if (a) there was no one around to tell me what to do as I go; (b) I had never used technology like it before. Both the measurement for job satisfaction and AI self-efficacy was using 7-likert scale, 1=very disagree to 7 = very agree.

This study employed a non-probability purposive sampling technique, targeting primary and secondary school teachers in Wuhan. Data were collected via an online questionnaire administered through the Wenjuanxing platform. An initial total of 803 responses was obtained; after applying a trimming procedure to enhance reliability and eliminate unengaged participants, 655 usable responses were retained for data analysis. Findings show that slightly more than half of the respondents are female (58.5%), and majority of them are well educated with bachelor degree and above (95.7%). Seventy-six percent of the respondents have work experience of five years and above, and lastly, slightly more than half of them are in 25–35-year-olds (55.30%).

3. Findings

The statistical data analysis for this study was carried out with the assistance of SPSS 29 and Smart PLS 4.1. The partial least squares structural equation modelling (PLS-SEM) modeling method was utilized in order to analyze the data. Smart PLS software was utilized in this study. The examination of the mediator model can be taken into consideration simultaneously by PLS. The PLS Algorithm was selected to examine the reliability and validity of the measurement model after the first step of the evaluation process, which involved evaluating the measurement model. In the second step, the structural model was validated, and the bootstrapping approach was chosen to determine the relevance of the indirect effect path coefficients. The measuring model is presented in the following **Table 1**, which examines the item factor loadings, Cronbach's alpha (CA), and composite reliability (CR), in addition to convergent validity through the use of average variance extracted (AVE). This methodology has been utilised in prior research, as demonstrated in the papers by Jiang et al. and Li et al. [31,32].

The results in **Table 1** show that Cronbach's alpha (CA) and composite reliability (CR) values exceed the 0.70 threshold recommended by Hair et al. confirming that construct reliability has been established in this study, with values ranging from 0.797 to 0.956 [33]. As referring to **Table 1**, the item factor loadings range anywhere from 0.816 to 0.916. Items that have loadings that are greater than 0.500 may be preserved if the average variance extracted (AVE) for the construct is greater than 0.500 [34]. This is despite the fact that Hair et al. indicate that factor loadings should preferably be greater than 0.708 [33]. **Table 1** also demonstrates that the AVE values for all constructions vary from 0.684 to 0.831, which is higher than the threshold of 0.500. As a result, all of the items were kept for further study. The convergent validity of each construct is demonstrated by the AVE values that are more than 0.500.

This study also utilized the Heterotrait–Monotrait Ratio of Correlations (HTMT) technique to evaluate and validate the discriminant validity of the instrument [35], that HTMT threshold of less than 0.85 is applied [35,36]. **Table 2** shows all of the HTMT values are lower than 0.85, which demonstrates that the required criterion has been completely satisfied and that discriminant validity has been demonstrated in this data set.

Table 1. Measurement model for reliability and validity

Dimension	Items	Loading	CA	CR	AVE
AISE	AISE1	0.817	0.949	0.956	0.684
	AISE2	0.836			
	AISE3	0.821			
	AISE4	0.838			
	AISE5	0.820			
	AISE6	0.844			
	AISE7	0.826			
	AISE8	0.817			
	AISE9	0.829			
	AISE10	0.822			
JS	JS1	0.891	0.861	0.915	0.782
	JS2	0.869			
	JS3	0.893			
TO	TO1	0.916	0.797	0.908	0.831
	TO2	0.907			

Notes: AISE - AI self-efficacy, JS - Job Satisfaction, TO - Training opportunities

Table 2. Heterotrait-Monotrait ratio (HTMT)

Dimension	AISE	JS
JS	0.479	
TO	0.445	0.477

Notes: AISE - AI self-efficacy JS - Job Satisfaction, TO- Training opportunities

The analysis approach employs bootstrapping, with 10,000 data resamples, and utilizes one tailed test to evaluate directional hypotheses. The two hypotheses tested were found to be statistically significant and supported. The relationship between (i) training opportunities and AI self-efficacy ($\beta = 0.387$, $t = 11.704$, $p < 0.00$), and (ii) training opportunities and job satisfaction ($\beta = 0.268$, $t = 6.737$, $p < 0.00$). Thus, Hypothesis 1 and 2 are supported. A comprehensive clarification of the graphical representation depicted in **Figure 1**.

For testing the indirect effect hypothesis in the structural model, the study also employed a bootstrap procedure with 10,000 resamples as recommended by Guenther et al. [37]. Results at **Table 3** indicated that AI self-efficacy mediated the relationship between training opportunities and job satisfaction ($\beta = 0.128$, $t = 6.838$, $p < 0.00$). Thus, Hypothesis 3 is supported.

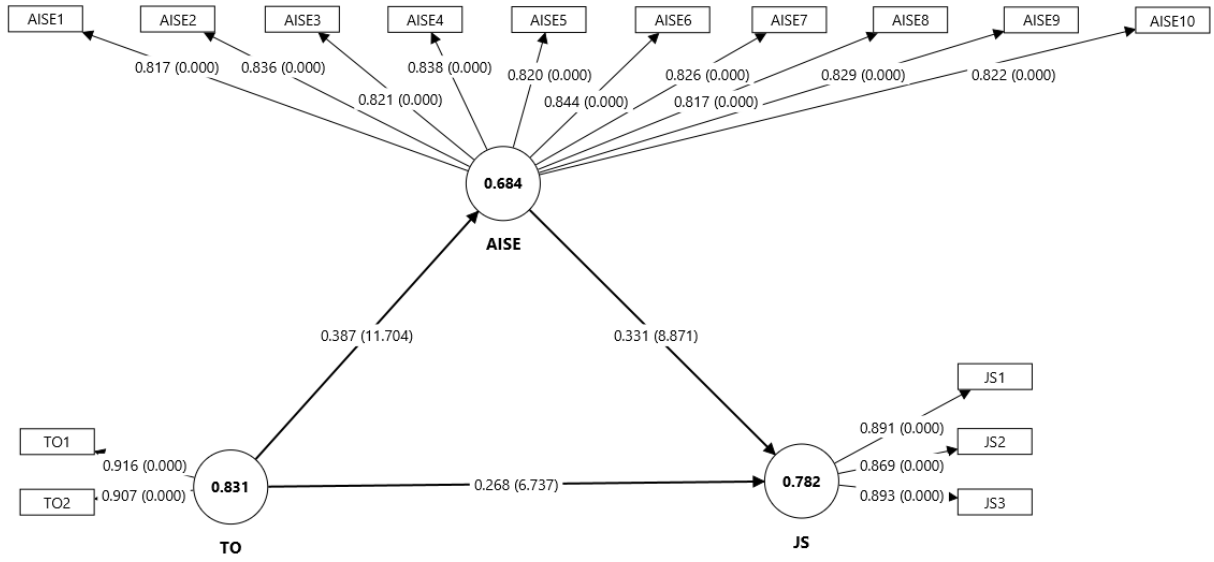

Figure 1. Hypothesis testing.

Table 3. Path coefficients for direct and indirect effects

Hypothesis	Direct Effect	Beta	SE	T-Statistics	*p* Value	Result
H1	TO -> AISE	0.387	0.033	11.704	0.000	Supported
H2	TO -> JS	0.268	0.040	6.737	0.000	Supported
	Indirect Effect	**Effect**	**SE**	**T-Statistics**	***p* Value**	**Result**
H3	TO -> AISE -> JS	0.128	0.019	6.838	0.000	Supported

Notes: AISE - AI self-efficacy JS - Job Satisfaction, TO- TO - Training opportunities

4. Discussion and conclusion

Current research findings indicated that training opportunities enable and enhance the school teachers' AI self-efficacy. While specialised research on AI self-efficacy remains nascent, a considerable amount of literature on technology training (e.g., ICT, generative AI) substantiates the claim that professional development markedly bolsters instructors' self-confidence in adopting new technologies. For example, Chiu et al. indicated that K-12 teachers who developed a deeper understanding of AI through structured professional development demonstrated increased confidence in their ability to learn and implement AI. Current research finding also aligned with previous research by Aper et al. that showed the impact of training toward self-efficacy that tailored training programs can enhance self-efficacy, leading to improved performance in professional settings [38,39].

As such, current research findings highlight training opportunities and AI self-efficacy as critical determinants of job satisfaction, particularly within education's evolving technological landscape. It identifies a clear gap in current literature, particularly regarding the integration of these constructs within Chinese educational settings and outlines focused objectives to empirically investigate this dynamic interplay. By addressing this gap, the current study significantly advances scholarly understanding of organizational behavior, technology adaptation, and psychological mechanisms influencing teacher outcomes in AI-intensive educational environments and to strengthen the implementation of the Sustainable Development Goals, particularly within educational settings [32,40]. Additionally, this research provides actionable insights for educational policymakers

and administrators aiming to enhance teacher satisfaction and institutional effectiveness amid ongoing technological transformations. Future research could take into the opinions of more variety subjects and samples such as those lecturers working in higher education institutions as to gather a more diverse views and deeper understandings on the issues.

Disclosure statement

The authors declare no conflict of interest.

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