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An Investigation into the Interplay between EFL Teachers' Ecological Agency and their Teaching Engagement: A Structural Equation Modeling

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Abstract

The growing literature on teacher professional development emphasizes the positive contribution of teacher engagement to the professional development of teachers. However, scant attention was given to the relationship between this concept and teacher ecological agency as one of the potential factors influencing teacher engagement and in turn professional development. To fill this research gap, a sample of 369 EFL teachers from different institutes in Iran selected through convenience sampling participated in this study. The required data was collected by administering two questionnaires: The teacher ecological agency questionnaire and the teacher engagement questionnaire. The relationship between teachers' ecological agency and teachers' engagement and their underlying components were investigated through structural equation modeling (SEM) and Pearson correlation. The outcomes of SEM revealed a significant association between teachers' ecological agency and engagement. The Pearson correlation results indicated that all three components of teacher ecological agency are correlated significantly with all five components of teacher engagement. The highest degree of correlation was found between emotional engagement and practical-evaluative agency (.711), agentic engagement, and practical-evaluative agency (.705) and cognitive engagement and practical-evaluative agency (.692). The pedagogical implications of this study enhance the efficiency of the educational system and teachers' professional development.

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1. Introduction

Research has indicated that teachers' professional development can improve the efficiency of the educational system (Gess-Newsome et al., 2019; Gümüş & Bellibaş, 2020; Ramírez-Montoya et al., 2021; Sadeghi & Ashegh Navaie, 2021). Hence, exploring the moderating factors that optimize teachers' professional growth is a promising area of research. Additionally, it has been documented that efficient teachers share several attributes (Wangdi & Shimray, 2022). Among various variables, teacher engagement is regarded as a positive predictor of teachers' professional development that requires more attention (Zhao et al., 2019). Engaged educators are typically much more committed to their goals and are also more capable and responsible (Picard et al., 2017). Teachers who are more engaged control their attention and put more effort into completing tasks connected to their jobs to improve their working conditions. As a result of their increased time and energy commitment, engaged instructors make a greater contribution to their students' learning (Granziera & Perera, 2019). The advantage is that when teachers are more emotionally and pedagogically invested in their teaching practice, students have higher levels of satisfaction (Kangas et al., 2017).

Numerous investigations have been made to determine the interaction between engagement and other factors that might affect teachers' professional development such as self-efficacy (Li et al., 2019), autonomy (Sokmen & Kilic, 2019), positive emotion (Noughabi et al., 2022), burnout (Fiorilli et al., 2020), L2 grit (Azari Noughabi et al., 2022), job satisfaction (Perera et al., 2018), professional development (Harper-Hill et al., 2020) psychological well-being (Wang et al., 2022) teacher immunity (Noughabi et al., 2020), and teacher identity (Ghamoushi & Mohamadi Zenouzagh, 2020), However, to our knowledge, no study has yet been done to investigate the relationship between teacher engagement and ecological agency which is a crucial element for handling the tensions between continually recognized demands, professional competencies, motivation, autonomy, and reflexivity (Ukkonen-Mikkola & Varpanen, 2020). Agency is generally identified as an individual's dynamic involvement in establishing conditions, which is a pivotal prerequisite for efficient performance in all areas of life, especially the workplace. (Leijen et al., 2022). In the last few decades, agency has been explicated in various professional contexts, particularly in teacher education. In their professional environments, teachers are supposed to take deliberate, agentic activities and make judgments that lead to substantial

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change. Additionally, they must exert effort and use the resources at their disposal to act within their settings rather than simply being in their context, and teachers with a strong sense of agency apply more changes in their teaching contexts. Agentic teachers positively contribute to the shaping of their work and its conditions which are assumed to be a vital component of decent and meaningful education (Harper-Hill et al., 2020).

While the influence of teacher engagement and ecological agency on teachers' professional development has been independently examined in prior studies, the potential synergistic effects of these factors have yet to be explored. Given the significance of both engagement and agency in shaping teachers' growth and practice, understanding their combined impact can provide valuable insights that may be overlooked when studying these factors in isolation. Moreover, exploring the association between teachers' engagement and the ecological agency is significant because there is evidence that not only individual factors are crucial for learning transfer in teacher professional development, but also ecological factors have substantial impacts. In fact, they moderate the effects of individual factors (Dreer et al., 2017). Besides, the pedagogical implications of this study can assist teachers and teacher educators in understanding how various elements of teachers' ecological agency, such as their personal and professional experiences, structural, material, and cultural characteristics, as well as their short- and long-term goals, are critical in forming their engagement and how pre-service and in-service professional initiatives could be devised to support teachers' transition into the profession.

Despite the moderating impact of ecological and contextual factors on teacher professional development and its importance as a significant predictor of teachers' engagement in teaching (Dong et al., 2019), as well as the key role of teacher agency on teacher professional development, school improvement and learners' achievement (Durrant, 2019), it is surprising why exploring whether there is a nexus between teacher ecological agency and engagement has received an untouched research area. Therefore, to bridge this research gap, the current attempt sought to investigate the interplay between EFL teachers' ecological agency and their engagement in the Iranian context.

2. Review of the Literature

2.1. Teacher Ecological Agency

Introduced by Emirbayer and Mische (1998), ecological teacher agency was initially described as the sort of engagement ephemerally built by those acting in various structural environments, described as the temporary relational settings involving actions. As a result of the interplay between factors like

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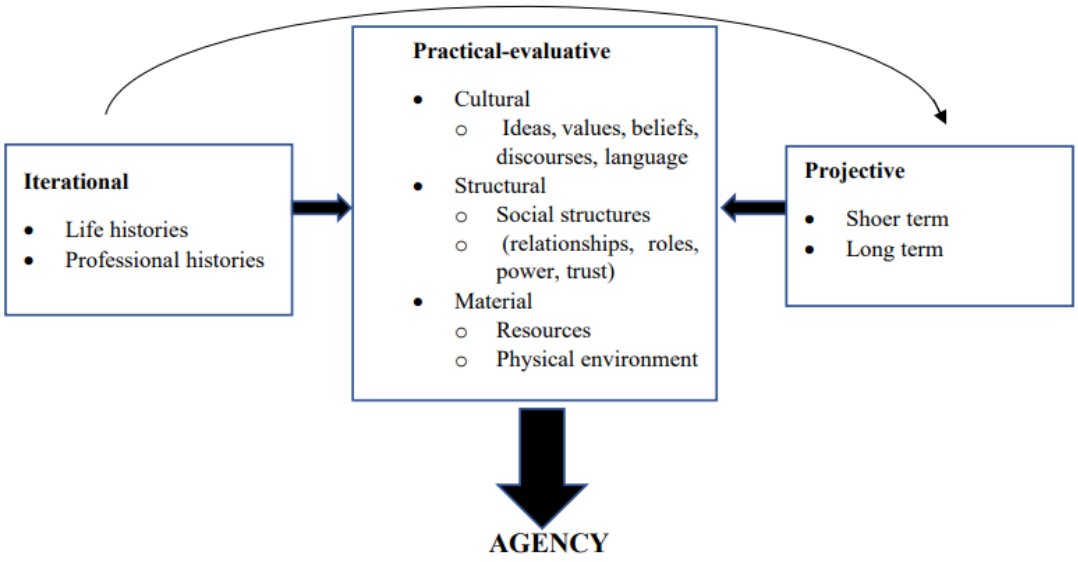
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imagination, judgment, and habit, such contexts reproduce and revolutionize some structures in reaction to the setbacks received because of the constantly changing historical environments.

Subsequently, using the information provided by Emirbayer and Mische (1998) about the ecology of teacher agency, Priestley et al. (2015) described the concept as a kind of situated and time-based achievement being the outcome of the interplay between the iterative, practical-evaluative, and projective aspects as the three vital dimensions of the ecological approach to teacher agency. The first dimension's reference, iterative, is to the life history and professional biographies of teachers. The second dimension, practical-evaluative, involves structural (social roles and relations), cultural (beliefs, opinions, and values), and material (available resources and physical setting) characteristics. The final dimension, projective, is a demonstration of the short-as well as long-term aims and ambitions (Figure 1). To put it another way, teacher agency is influenced by the teachers' preceding life and professional experiences, their current repercussions, affairs, conditions, and various possibilities and subsequent objectives (Kayi-Aydar et al., 2019).

Figure 1

Ecological Model of Teacher Agency (Priestley et al., 2015, p.30)



As shown in Figure 1, the iterative dimension is made up of teachers' capabilities, viewpoints, and values reflecting on their past experiences. This aspect can be improved by enhancing teachers' skills and knowledge as well as encouraging them to have a novel and questioning outlook. To shape their agency, teachers are recommended to go through their prior experiences as language learners (Shooshtari,

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et al., 2017), dialogic interactions with colleagues, everyday teaching practice, and other professional acts (Priestley et al., 2015).

The projective aspect then reflects teachers' work-related aspirations as well as their short and long-term objectives. Such ambitions can be totally positive focusing on students' improvement and resulting in saving their interests. In both cases, the basics of the teachers' desires and aims are in their viewpoints, experiences, and values permitting them to create practices in line with their possible upcoming trajectories (Priestley et al., 2015).

The third aspect, practical-evaluative, distinguishes between dissimilar contextual factors that influence teacher agency. It means that different structural contexts provide both the needed conditions and the resources for teachers to help them achieve agency. In fact, the practical dimension deals with what is practically feasible in a specific context whereas the evaluative dimension reflects the way teachers assess the present matters and possibilities for taking an action in that condition. Whether or not the agency is achievable depends on the availability of necessary resources being utilized in that situation. This aspect involves resources such as material, structural, and cultural. The focus of cultural resources is on 1) the way teachers think and comprehend the issues and the situations. Besides, it concerns teachers' own thinking rarely shown to others (i.e., inner dialogue) as well as their conversations and communications with others in a certain condition (i.e., outer dialogue); 2) both material and physical resources that teachers have access to, and 3) Teachers' interactions with others that either help or hinder the development of agency (Priestley et al., 2015). Therefore, according to Priestley et al.'s ecological perspective, agency is something that can be attained as a result of the regular acts and decisions that teachers make that are influenced by the numerous elements of the current context, their prior experiences, and their future goals.

Several empirical studies have explored the relationship between teacher agency, professional learning, and development, highlighting the role of various factors such as context, identity, and reflection. Lai et al. (2016) found that teacher agency fluctuates across different dimensions of professional learning and is shaped by factors such as power relations, social roles, and professional status. Ruan (2018) discovered that teachers create and recreate their agency through past experiences, present involvement, and future orientations, facilitated by self-regulation, reflection, and contextual support. Studies by Jones and Charteris (2017) and Reichenberg (2022) emphasized the importance of reflective practices in enhancing teacher agency, particularly through critical reflection and lesson video analysis. These practices can foster decision-making, instructional scaffolding, and learner engagement.

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Studies have also shown that teachers exhibit agency through various meaning-making attempts, promoting teaching efficiency in the classroom. Ruan et al. (2020) explored English department teachers' agency and speculated on the interplay between teachers' self-discrepancy and agency in the context of curriculum reform. Poulton (2020) identified elements that either promote or hinder teachers' agency in curriculum planning and teaching. Similarly, Insulander et al. (2019) examined teacher agency within professional development programs in Sweden, analyzing the interplay between teachers' agency, curriculum materials, and the role of the coach. Contrary to earlier research, it highlights that opportunities for facilitating enactment in professional development materials do not necessarily lead to increased teacher agency.

2.2. Teacher Engagement

Taken as a prominent facilitator for teachers' involvement in professional improvement, teacher engagement is considered a motivation to improve their career and a desire to work towards the intention (Li et al., 2019). Engaged teachers discern the teaching-learning atmosphere they work in, try their best to complete their work, are passionate about teaching, and teach with high levels of constantly available energy. Hence, engaged teachers are tireless and devoted teachers who (1) usually have positive feelings like interest, pleasure, and happiness; (2) are physically and psychologically healthier; (3) create their own work and personal possessions; and (4) pass their engagement to other colleagues and students as well (Al-Ruqaishi, 2017). Teacher engagement can be developed by providing better job resources, learning, and improvement opportunities, appropriate feedback at an accurate moment, taking actions independently, and benefitting from the peers' and managers' support (Coelho, 2017).

Furthermore, Klassen et al. (2013) introduced a multi-faceted conceptualization of teacher engagement involving the three aspects of cognitive, emotional, and social. Cognitive engagement is a matter of people's judgment regarding their work whether it is worthwhile, psychologically, emotionally, and physically safe, and/or whether sufficient resources needed to carry out the work are available (Imandin et al., 2014; Shuck & Reio, 2014). Some preceding viewpoints towards engagement, like that of Kahn (1990), portray the cognitive-physical aspects presented by Klassen et al. (2013). That is, Kahn (1990) characterized engagement as a kind of controlling power organizations employ to keep the members engaged with their responsibilities at the workplace, to let them express themselves emotionally, physically, and cognitively at the time they are going about their professional tasks. Such an immediate expression of the members' most important energy resources is thought to be a sign of

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psychological involvement including the task of bringing growing depths of a sense of self into what they are doing (Kahn, 1990).

Besides, Klassen et al. (2013) believed that the cognitive-physical aspect of engagement further comes from Schaufeli et al.'s (2002) perspective who considered it a positive, gratifying, job-related condition of mind described by vigor, absorption, and dedication. Note that vigor and absorption correspond with the cognitive-physical aspects in Klassen et al.'s (2013) engagement framework depicted by the amount of members' effort at doing their work tasks (Perera et al., 2018).

Emotional engagement, according to Shuck and Reio (2014), is related to the number of emotional resources each member allocates at the time of carrying out their job. Those engaged emotionally dedicate their own resources like self-confidence, fulfillment, and knowledge. Such positive feelings are the outcome of decisions they made about different situations throughout the cognitive engagement phase, the time individuals think of their work as meaningful, their workplace environment as safe, and the necessary resources to achieve their tasks as adequate. Crabb (2011) proposed that controlling emotions is in fact the individuals' ability to be self-knowledge and realize and discern our feelings, thoughts, and emotions. Furthermore, he added that individuals need to be utterly engrossed in the tasks they are doing and try their best not to be distracted by negative thoughts, something happening in case they have created the correct form of mindset for engagement.

The basis of Klassen et al.'s (2013) emotional engagement is the engagement conceptualization defined by Schaufeli et al. (2002) in which work engagement is described as a positive, satisfying, and work-related mind condition portrayed by vigor, interest, and hard work. Considering such a definition, the concept of emotional engagement is related to the hard work reflecting the positive emotional reception of the teachers towards their careers. Thus, teachers engaging emotionally have positive feelings like activation, elation, encouragement, energy, interest, and enjoyment whilst conducting their work (Al-Ruqaishi, 2017; Perera et al., 2018).

Klassen et al. (2013) introduced social engagement as a new dimension in their model and supported this notional inclusion by asserting that the current conceptualizations of work engagement fail to appropriately justify teachers' devotion of energy to creating connections with colleagues and students. This signifies a chief oversight since building and promoting social relationships is vital to the teachers' profession (Perera et al., 2018). Therefore, Klassen et al. (2013) presented the concept of social engagement with coworkers and students, a concept derived from the relevant literature about fulfilling vital psychological needs in educational conditions. Being socially engaged would help teachers have

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good relations with their colleagues and students since it is an important matter to motivate the students (Moghadam & Ahmadi, 2019). The point is that engaged teachers have better interaction with their students, and a good relationship also affects teacher engagement. Furthermore, a good relationship between a teacher and the students can promote students' both social and cognitive outcomes even at later stages (Al-Ruqaishi, 2017).

The agentic engagement was a concept first introduced by Reeve and Tseng (2011) as students' useful contribution to the way through which they receive instruction. Hence, agentic engagement of the students is related to their intentions and efforts that personalize learning conditions and environment, the points necessary for developing their findings. A plethora of research (Jiang & Zhang, 2021; Matos et al., 2018; Pineda-Báez et al., 2019; Reeve & Shin, 2020; Wang & Lee, 2021) investigated the prominence of agentic engagement of students in accomplishing desired learning results.

However, the current teacher engagement field has never addressed the concept of agentic engagement and the only focus has been on its three dimensions of emotional, social, and cognitive whereas teacher agency is now being discerned as a crucial factor for enhancing the quality of education by Yangın Ekşi et al. (2019). They also defined the concept as teachers' planned actions taken and principled decisions made to bring about considerable positive changes. Teachers being agentically engaged play significant roles in building and promoting genuine knowledge, actively participating in their colleagues' work community, and in the case of emerging problems, challenges, difficulties, and dilemmas paying a considerable extent of professional attention and judgment (Chaaban & Sawalhi, 2020). Agency has a vital role in language teachers' careers as well (Hiver & Whitehead, 2018) for possessing the skills as well as the desire to implement professional tasks, enable them to enjoy lifelong learning, and achieve novelty and disparity (Ruan & Zhang, 2019). Considering such a significant role teacher agency plays in the latest inquiries of teacher education, there exists a need to involve the agentic engagement concept in inventories used for evaluating various dimensions of teacher engagement, particularly concerning foreign language teaching.

A body of research has investigated the relationship between teacher engagement and various factors, such as job resources, self-efficacy, social support, job satisfaction, and burnout. These studies collectively suggest that teacher engagement is influenced by a range of variables and, in turn, impacts teachers' attitudes and experiences in the workplace. Job resources, including supervision, support, and social context, can enhance teachers' emotional engagement and foster positive emotions (Bakker & Bal, 2010). Additionally, teacher engagement has been found to correlate with job satisfaction and self-

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efficacy (Minghui et al., 2018). In particular, self-efficacy positively predicts teacher engagement, autonomy, and job satisfaction while negatively predicting burnout (Sokmen & Kilic, 2019). Continuing professional development also plays a role in the relationship between teacher engagement and self-efficacy, with its mediating effect moderated by teaching experience (Li et al., 2019). In the context of professional learning, teachers' engagement positively impacts their attitudes toward their job, but burnout may negatively affect their confidence in in-service training (Fiorilli et al., 2020). Han et al. (2020) examined the job demands-resources model in the context of Chinese teachers, revealing that job demands, such as teaching demands and teaching-research conflict, decreased job satisfaction through emotional exhaustion, while job resources like teaching resources and social support enhanced job satisfaction via teacher engagement. Regarding teacher immunity, Noughabi et al. (2020) investigated its relationship with teacher engagement. who found that engagement, emotions, and autonomy significantly predicted language teacher immunity. Moreover, Ji (2021) conducted a mixed-method study to explore the relationship between teachers' engagement in professional development (PD) and their classroom teaching practice. Key findings revealed a reciprocal relationship between teachers' engagement in PD and their teaching practice. Additionally, a gap was identified in teachers' engagement in PD, suggesting it may play a mediating role between PD and classroom teaching practice.

The aforementioned studies have investigated various aspects related to teacher engagement within the context of professional development. A substantial body of research has explored the interconnections between teacher engagement and other factors pertinent to their continuous growth and learning. Furthermore, the relationship between teacher engagement and professional development has been a subject of scholarly inquiry in several previous works. Despite these valuable insights, the dynamic interplay between teacher engagement and ecological agency remains a largely unexplored area of research. Given the recognized significance of both teacher engagement and ecological agency in promoting professional development, investigating the relationship between these two constructs is crucial. Understanding the interconnection between teacher engagement and ecological agency can potentially inform strategies for fostering teacher development and enhancing educational outcomes. As such, this study aims to bridge the gap in the existing literature by examining the relationship between Iranian EFL teachers' ecological agency and their engagement, thereby contributing to a more comprehensive understanding of teacher development in this critical domain. For so doing, the following research questions are posed:

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Q1. How are EFL teachers' ecological agency and their engagement related??

Q2. How are the components of EFL teachers' ecological agency and engagement related?

3. Method

3.1. Participants

Table 1

Characteristics of Participants

Participants' characteristics		Frequency
Age range	20-30	116
	31-40	191
	>40	53
Degree	B.A.	130
	M.A.	148
	Ph.D.	82
Major of study	TEFL	153
	Translation	121
	Literature	86
Teaching experience	1-5	58
	6-10	106
	11-15	144
	>15	52
Gender	Male	129
	Female	231
Total		360

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This study included a total of 369 female and male EFL teachers from a range of ages and teaching experiences. They were chosen using a convenience sampling method. In other words, those who were available and willing were invited to participate. (Best & Kahn, 2006). After checking the data for univariate and multivariate outliers, 9 respondents whose z-score of the components of the two questionnaires was higher than +/_ 3.20 (Tabachnick & Fidell, 2014) dropped out and the data analysis was carried out with 360 participants whose demographic features are illustrated in table 1.

3.2. Instruments

3.2.1. Teacher Ecological Agency Questionnaire (TEAQ)

In order to examine the ecological agency of participating teachers, the current study's researchers used the teacher ecological agency questionnaire (Appendix A), which was developed and validated by Ghamoushi et al. (2022a). This 33-item questionnaire measures three facets of teachers' ecological agency. The first component, iterational factor, includes 9 items that focus primarily on the teachers' prior professional and personal experiences. The practical-evaluative factor, the second element of the TEAQ, has 14 items and is comprehensive and multidimensional, covering a variety of topics like cultural, structural, and material dimensions. Finally, teachers' short- and long-term objectives are the focus of the projective factor, which has 10 items as its final component. Content and face validities were inspected by a panel of 5 experts in the field. The exploratory and confirmatory factor analysis resulted in three factors accounting for 48.38% of the variance in respondents' scores and Cronbach's alpha coefficients for the iterational, practical-evaluative, projective, and total were 0.87, 0.92, 0.91, and 0.89, respectively, indicating the TEAQ enjoys good psychometric properties.

3.2.2. Teacher Engagement Questionnaire (TEQ)

To assess participants' level of engagement, the teacher engagement questionnaire (TEQ) (Appendix B) was used which is developed and validated by Ghamoushi et al. (2022b). This inventory consisted of 44 items measuring EFL teachers' engagement in five areas: emotional engagement is the first factor including 11 items that reflect the degree of emotional investment teachers experience while carrying out their teaching duties. The second factor of the TEQ, is social engagement (colleagues), with 5 items dealing with teachers' relationships with their colleagues. Social engagement (students), with 8 items is the third factor that refers to teachers' relationships with their students. Teachers' level of attention to and investment in their instructional activities is the focus of the fourth TEQ factor, cognitive

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engagement, which has 8 items. Lastly, agentic engagement with 11 items as the last factor addresses teachers' agentic engagement while doing teaching-related activities. The construct validity of the instrument was assessed by running exploratory and confirmatory factor analyses. Factor analysis results indicated that all items contributed to their respective components and were loaded on five factors: 1) emotional, 2) social (colleagues), 3) social (students) 4) cognitive, and 5) agentic. The results of Cronbach's alpha indicated that TEQ has an acceptable level of reliability. Cronbach alpha reliability indices for emotional, cognitive, social (colleagues), social (students), agentic, and overall engagement were respectively 0.87, 0.85, 0.78, 0.89, 0.90, 0.88.

3.3. Procedure

The required data for this paper was collected by administering two questionnaires namely the TEAQ and the TEQ. The questionnaires were given out online by using the Google Forms platform and disseminating the web URL to participants via email or other social media due to the COVID-19 outbreak and lack of access to face-to-face classes. 369 participants in total, chosen through convenience sampling, responded to the questionnaires from among 9 respondents who were eliminated. The participants were informed that the data collected from the questionnaires would be utilized for research purposes and would be kept confidential. After collecting the data, they were analyzed by running structural equation modeling (SEM) in Amos software and Pearson correlation via SPSS software (version 29).

4. Results

This study was undertaken to explore any significant correlations between teachers' engagement and their ecological agency, and their components. The two research questions raised in this study were analyzed through a structural regression model and Pearson correlations. Before discussing the result, it should be noted that the data were checked for any significant univariate and or multivariate outliers. Table 2 displays the minimum and maximum values for the standardized scores (z-scores) for the components of the two questionnaires. None of the z-scores were higher than +/- 3.29 (Tabachnick & Fidell, 2014). Thus, it can be concluded that the present data did not include any significant univariate outliers.

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Table 2

Minimum and Maximum Values of Standardized Scores

	N	Minimum	Maximum
Zscore(EmotionalE)	369	-2.40	2.02
Zscore(SocialEC)	369	-2.53	2.16
Zscore(SocialES)	369	-2.46	1.92
Zscore(CognitiveE)	369	-2.34	2.09
Zscore(AgenticE)	369	-2.49	2.16
Zscore(Iterational)	369	-2.50	2.15
Zscore(Practical)	369	-2.44	2.00
Zscore(Projective)	369	-2.75	1.92
Valid N (listwise)	369		

Table 3 illustrates the descriptive statistics for the Mahalanobis Distances (MD). The maximum MD value of 24.30 was compared against the critical value of 15.54 at .001 levels for eight components of the two questionnaires. An inspection of the data revealed that nine participants, i.e., ID numbers (16, 54, 175, 180, 253, 264, 297, 362, and 363), had MD values higher than 15.54. These participants were dropped out, consequently reducing the sample size to 360.

Table 3

Descriptive Statistics of Mahalanobis Distances

	N	Minimum	Maximum	Mean	Std. Deviation
Mahalanobis Distance	369	1.58	24.30	7.9783	3.37645
Critical Value of Chi-Square (df = 8, alpha = .001)	15.54				

Table 4 shows the skewness and kurtosis indices of univariate normality, and Mardia's index of multivariate normality. Since the absolute values of the skewness and kurtosis indices were lower than 2 (George & Mallery 2020), it was concluded that the assumption of univariate normality was retained. The Mardia's index of -5.711 was lower than 80, it was concluded that the assumption of multivariate

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normality was also met. It should be noted that Mardia's index should be compared against the critical value of k*(k+2) (Khine, 2013), where k refers to the number of dependent variables; i.e., 8 in this study.

Table 4

Tests of Univariate and Multivariate Normality

Variable	skew	Kurtosis
EmotionalE	-.091	-.732
SocialEC	-.145	-.585
SocialES	-.155	-.638
CognitiveE	.001	-.523
AgenticE	-.102	-.515
Projective	-.203	-.454
Practical	-.247	-.431
Iterational	-.262	-.642
Mardia		-5.711

As reported in Table 5 below, the overall teachers' engagement and ecological agency enjoyed reliability indices of .967 and .946 respectively. The reliability indices for the five components of the teachers' engagement were as follows; emotional engagement (α = .947), social engagement with colleagues (α = .908), social engagement with students (α = .926), cognitive emotion (α = .944), and agentic emotion (α = .948). The iterational, practical-evaluative, and projective components of ecological agency enjoyed reliability indices of .904, .931, and .904 respectively. All these reliability indices can be considered "excellent" based on the criteria suggested by George and Mallery (2020).

Table 5

Cronbach's Alpha Reliability Statistics

		Cronbach's Alpha	N of Items
Teachers'	EmotionalE	.947	11
	SocialEC	.908	5
	SocialES	.926	8

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Engagement	CognitiveE	.944	8
	AgenticE	.948	12
	Total	.967	40
Ecological Agency	Iterational	.904	9
	Practical-Evaluative	.931	14
	Projective	.904	10
	Total	.946	33

A structural regression model, a class of structural models in which latent variables are correlated, was run to probe any significant relationship between Iranian EFL teachers' engagement and their ecological agency. The findings demonstrated that the model had a good fit (Table 6). The chi-square badness of fit was not significant (χ^2 (19) =29.834, p>.05). The ratio of chi-square over the degree of freedom, i.e., 29.834/19=1.57, was lower than 3. The root mean square of error approximation and its lower and upper confidence intervals (RMSEA=.040, 90 % CI [.000, .066]) supported the fit of the model. It should be noted that the RMSEA fit indices lower than 0.1 support a good fit (Byrne, 2016). The probability of close fit (PCLOSE=.708) which was higher than .05 supported the fit of the model. The standardized root mean residual (SRMR) of .034 was lower than .05. All other fit indices were higher than .95; GFI=.980, NFI=.988, RFI=.982, IFI=.996, and CFI=.996[†]. Finally, since the Hoelter index (363) was higher than 200, the current sample size was sufficient to run the model.

The unstandardized and standardized regression coefficients (Table 7) indicate the contribution of independent variables to their latent variables. Before going into detail about the findings, it should be mentioned that an unstandardized regression coefficient indicates the amount of change in an indicator (dependent variable) due to one unit change in a latent variable, while a standardized regression coefficient shows the amount of change in an indicator due to one standard deviation change in a latent variable. For example, the unstandardized and standardized regression coefficients for the practical-evaluative variable are 1.679 and .768 respectively. If the ecological agency increases by one unit, the practical-evaluative variable increases by 1.679 units. On the other hand, the standardized regression

[†] GFI = goodness of fit index, NFI = normed fit index, RFI = relative fit index, IFI = incremental fit index, and CFI = comparative fit index.

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coefficient of .768 indicated that if ecological agency increased one standard deviation, the practical-evaluative variable increased by .768 standard deviations.

Table 6

Fit Indices

Indices	Fit Indices	Criterion
Chi-square	29.834	--
df	19	--
P	.054	>.05
Ratio	1.57	<=3
RMSEA	.040	<0.1
CI RMSEA	.000, .066	<0.1
PCLOSE	.708	>.05
NFI	.988	>=.95
CFI	.996	>=.95
IFI	.996	>=.95
RFI	.982	>=.95
SRMR	.034	<.05
GFI	.980	>=.95
Hoelter	363	>200

Table 7 displays the unstandardized and standardized regression coefficients which show the contribution of independent variables to their latent variables. Before discussing the results, it should be noted that an unstandardized regression coefficient indicates the amount of change in an indicator due to one unit change in a latent variable; while a standardized regression coefficient shows the amount of change in an indicator due to one standard deviation change in a latent variable. For example, the unstandardized and standardized regression coefficients for the practical-evaluative variable are 1.679 and .768 respectively. That is to say if ecological agency increases by one unit, the practical-evaluative variable increases by 1.679 units. On the other hand; the standardized regression coefficient of .768

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indicated that if ecological agency increased one standard deviation, the practical-evaluative variable increased by .768 standard deviations.

Table 7

Unstandardized and Standardized Coefficients

			B	S.E.	C.R.	P	Beta
Iterational	<---	EcologicalA	1.000‡				.681
Practical	<---	EcologicalA	1.679	.101	16.619	.000	.768
Projective	<---	EcologicalA	1.071	.069	15.449	.000	.685
AgenticE	<---	TEngagement	1.000				.770
CognitiveE	<---	TEngagement	.652	.039	16.938	.000	.703
SocialES	<---	TEngagement	.613	.037	16.617	.000	.688
SocialEC	<---	TEngagement	.339	.023	14.530	.000	.585
EmotionalE	<---	TEngagement	.923	.051	18.105	.000	.755

The results indicated that all components of ecological agency had large contributions to their latent variable; iterational (Beta = .681), practical-evaluative (Beta = .768), and projective (Beta = .685).

The results also revealed that all components of teachers' engagement had large contributions to their latent variable; agentic (Beta=.770), cognitive (Beta=.703), social engagement with students (Beta=.688), social engagement with colleagues (Beta=.585), and emotional engagement (Beta=.755). Figure 2 displays the standardized regression model of teachers' ecological agency and teacher engagement.

The results of unstandardized and standardized regression coefficients for the relationship between ecological agency and teachers' engagement (Table 8) revealed that there was a significant relationship between the two variables (B=61.10, Beta=1.245, $p<.05$).

‡ In order to compute the regression coefficients, AMOS automatically assigns a value of 1 to some of the variables.

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Figure 2

Structural Regression Model of Teachers' Ecological Agency and Teachers' Engagement

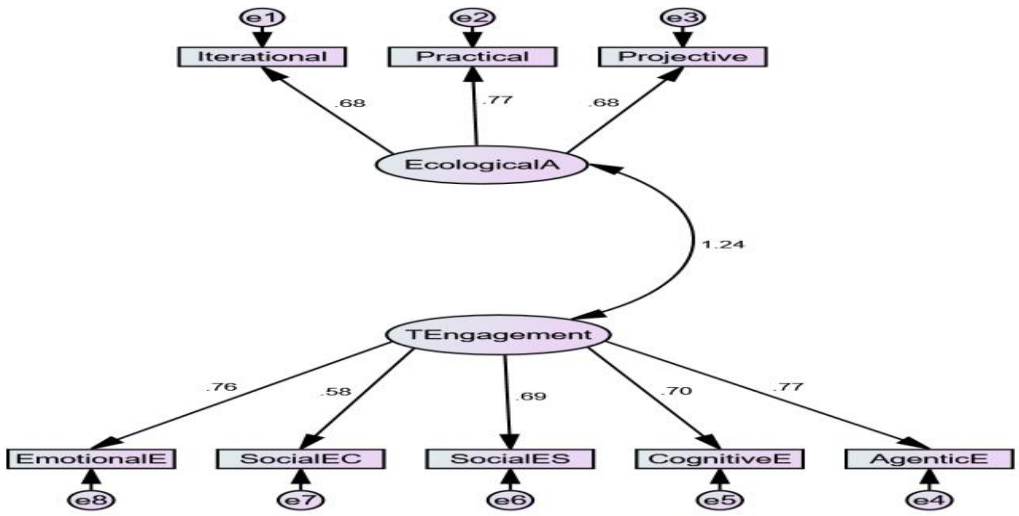


Table 8

Unstandardized and Standardized Coefficients Relationship between Ecological Agency and Teachers' Engagement

			B	S.E.	C.R.	P	Beta
EcologicalA	<-->	TEngagement	61.100	5.542	11.024	.000	1.245

The outcomes of Pearson correlations between components of the ecological agency and teachers' engagement (Table 9) indicated that; a) emotional engagement had significant and large correlations with iterational (r (358)=.607, p<.05), practical-evaluative (r (358)=.711, p<.05), and projective (r (358)=.648, p<.05). b) social engagement with colleagues had significant and large correlations with iterational (r (358)=.559, p<.05), practical-evaluative (r (358) =.576, p<.05), and projective (r (358)=.569, p<.05). c) social engagement with students had significant and large correlations with iterational (r (358)=.677, p<.05), practical-evaluative (r (358)=.705, p<.05), and projective (r (358)=.617, p<.05). d) Cognitive engagement had significant and large correlations with iterational (r (358)=.559, p<.05), practical-evaluative (r (358)=.576, p<.05), and projective (r (358)=.569, p<.05). And finally, agentic engagement with colleagues had significant and large correlations with

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iterational (r (358)=.559, p<.05), practical-evaluative (r (358)=.576, p<.05), and projective (r (358)=.569, p<.05).

Table 9

Pearson Correlations between Components of Ecological Agency and Teachers' Engagement

		Iterational	Practical-Evaluative	Projective
EmotionalE	Pearson Correlation	.607**	.711**	.648**
	Sig. (2-tailed)	.000	.000	.000
	N	360	360	360
SocialEC	Pearson Correlation	.559**	.576**	.569**
	Sig. (2-tailed)	.000	.000	.000
	N	360	360	360
SocialES	Pearson Correlation	.603**	.650**	.621**
	Sig. (2-tailed)	.000	.000	.000
	N	360	360	360
CognitiveE	Pearson Correlation	.620**	.692**	.540**
	Sig. (2-tailed)	.000	.000	.000
	N	360	360	360
AgenticE	Pearson Correlation	.677**	.705**	.617**
	Sig. (2-tailed)	.000	.000	.000
	N	360	360	360

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 3 illustrates the scatter matrix for the components of ecological agency and teachers' engagement. This matrix fulfills three purposes. First, the histograms on the diagonal can be used to check the normality of the data. All histograms were symmetrical indicating that the present data retained the assumption of normality. Second, the upper diagonal shows the Pearson correlations between all components of ecological agency and teachers' engagement. All Pearson correlation coefficients were significant, i.e., they received two asterisks; moreover, they all enjoyed large effect sizes, i.e. emotional engagement (*r*:0.60), social engagement (colleagues) (*r*:0.55), social engagement (students) (*r*:0.60),

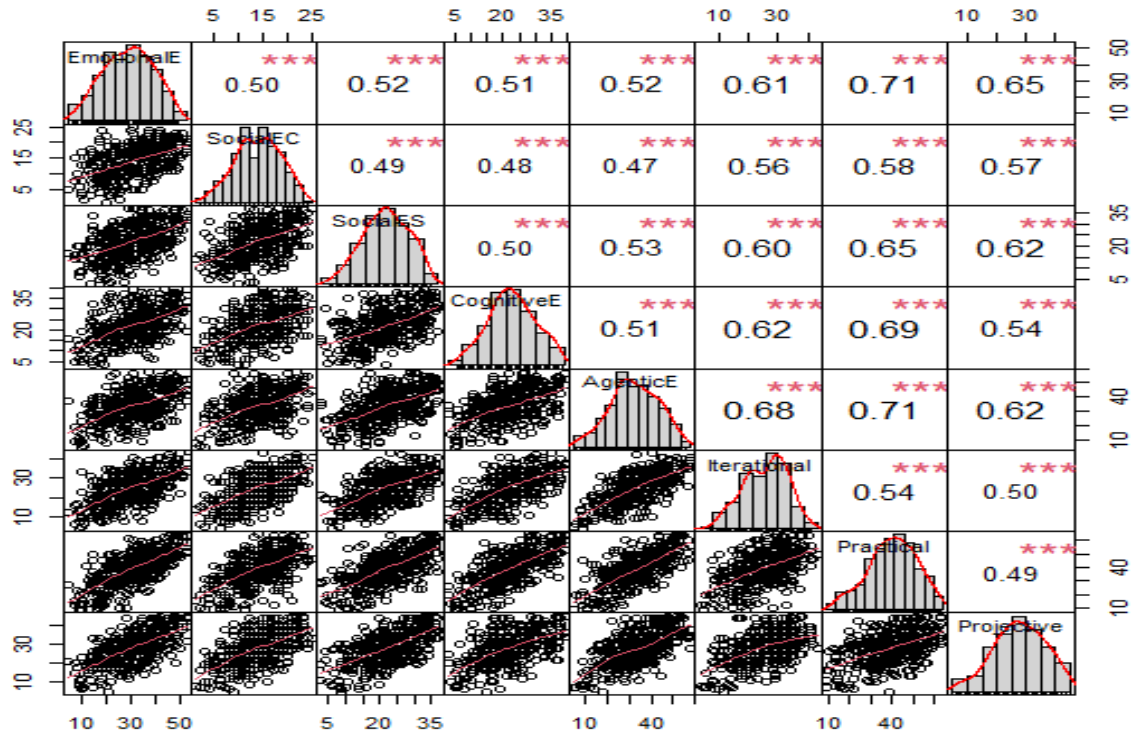
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cognitive engagement (*r*:0.62), agentive engagement (*r*:0.67). They were all higher than .50. And finally, the lower diagonal shows the scatter plots for the relationships between any two variables. None of the histograms showed a curve-like pattern; thus, it can be concluded that the relationships between the variables were all linear.

Figure 3

Scatter Matrix of Ecological Agency and Teachers' Engagement



5. Discussion

Despite the recognized significance of teachers' professionalism for both teachers themselves and their students, little focal attention was paid to probing the association between two influential variables i.e., teacher engagement and teacher ecological agency. To consolidate our knowledge of the interplay between factors that are important for teachers' professional growth, the current attempt tried to explore the relationship between EFL teachers' ecological agency and their engagement in the context of Iran. For this purpose, two questions were raised: 1) How are EFL teachers' ecological agency and their

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engagement related? 2) How are the components of EFL teachers' ecological agency and engagement related? The first research question was addressed by running a structural regression model. The results revealed that the model enjoyed a good fit and that all components of teachers' ecological agency and engagement had large contributions to their latent variables. In addition, unstandardized and standardized regression coefficients for the relationship between ecological agency and teachers' engagement revealed a significant relationship between these two variables. These findings are supported by Noonan's (2016) study emphasizing the interconnectedness of teacher engagement and teacher agency within the realm of professional development (PD). By examining PD through the lenses of self-determination theory, professional identity, and teacher agency, it becomes apparent that empowering teachers in their learning experiences is crucial for fostering impactful and satisfying PD. The findings emphasized the importance of addressing teachers' psychological needs for autonomy, competence, and relatedness in powerful PD experiences. This aligns with key dimensions of teacher agency, highlighting the significance of providing teachers with a sense of control over their learning experiences. The results also highlighted the value of fostering an environment where teachers actively participate in shaping various aspects of their PD, including content, facilitation, and community. By doing so, enhancing teacher agency serves as a powerful tool to bolster teacher engagement in PD and contribute to more meaningful and impactful professional growth. In a similar vein, the outcomes of the present study are in line with those of Harper-Hill et al. (2020), who reported the importance of considering both the content and internal characteristics of teachers when planning professional learning experiences to ensure practice change in the classroom. Key messages from teachers revealed the crucial role of teacher agency in mediating the impact of professional learning on their practice. Thus, it becomes evident that teacher engagement and teacher agency are interconnected dimensions in the context of professional development. To foster teacher engagement and promote practice change, professional learning experiences must acknowledge and accommodate the complex interplay between the nature of the content and the internal characteristics that influence teacher agency. Hence, recognizing the interconnectedness of teacher engagement and agency within this intricate landscape can contribute to the development of more effective PD design and policymaking. Ultimately, this approach can lead to more equitable, effective, and satisfying PD experiences that successfully drive practice change and enhance overall educational outcomes.

The Pearson correlations between the components of the two variables were conducted to respond to the second research question. The results showed that all three components of teacher ecological agency were correlated significantly with all five components of teacher engagement. Among the

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correlations calculated, the highest degree of correlation was found between emotional engagement and practical evaluative agency, agentic engagement and practical-evaluative agency, and cognitive engagement and practical-evaluative agency.

The significant relationships between EFL teachers' emotional engagement and their practical evaluative agency confirm previous studies highlighting the critical role of collegial support, social structures, and relationships in the enhancement of teachers' motivation, enthusiasm, and willingness to teach (De Costa et al., 2018; Holzberger & Prestele, 2021; Klehr, 2015; Usher, 2021). To illustrate this connection, Klehr (2015) reported the significant contribution of community engagement to pre-service teachers' agency and reflection which agrees with the results of our study. That is, teachers' level of engagement can predict their ecological agency. It suggests that language teachers are more emotionally engaged in institutional contexts where they experience horizontal social relationships rather than hierarchical social relationships (Leijen et al., 2022). Moreover, teachers who are provided with the required materials and resources are more motivated and engage more in their teaching practice (Priestley et al., 2016). In-service teachers' confidence in implementing revised instructional strategies may rise if school leaders offer additional training and resource assistance (Dong et al., 2019). Similarly, De Costa et al. (2018) found the interconnectedness of agency and emotions in mathematics teachers in China and Nepal, highlighting the influence of sociocultural contexts on these aspects. In line with De Costa et al.'s (2018) insights, the present study extended this understanding to the context of EFL teachers, showcasing the reciprocal relationship between engagement and agency. By examining the dynamics between teachers' emotional engagement and their agency, the current study emphasized the importance of considering sociocultural factors and power relations in shaping these aspects of professional development. This perspective contributes to a more nuanced understanding of the complex interplay between emotions, agency, and context in the realm of teacher professional development.

The findings also revealed a strong relationship between EFL teachers' practical-evaluative agency and agentic engagement. These findings give credence to previous studies that found that teachers' agentic engagement is affected by the social structures of the education setting (Hamid & Nguyen, 2016). In their study, Hamid and Nguyen (2016) reported that teachers exercised agency to meet new English proficiency standards while facing challenges in some Asian countries. However, the researchers argued that policymakers often failed to consider the demands of policy implementation, leading to an increased burden on teachers to carry out these policies. These outcomes are in agreement with the results of the current attempt which shed light on the dynamic interplay between teachers'

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practical-evaluative agency and agentic engagement, emphasizing the importance of policymakers taking into account the demands placed on teachers and fostering conducive environments that encourage teacher agency and engagement. Similar findings indicating the restrictive role of top-down practices in forming Iranian private-school teachers' agency and evaluation literacy were also documented by Mansouri et al. (2021). In this regard, there has been a degradation of the teachers' professional competencies (such as dedication and retention) due to the conflict between the specific policies and teacher agency. Research suggests that dictatorial policies limit teachers' agency and have a detrimental impact on their commitment to their work (Hamid & Nguyen, 2016). Similarly, Karimpour et al.'s (2022) study showed that institutional policies were the main thing preventing instructors from taking agentive activities. Teachers' self-efficacy, emotions, and autonomy had been affected negatively by the school's top-down practices, which also caused stress and conflicts for their interpersonal and institutional identities.

The outcome of the current study also revealed a strong relationship between cognitive engagement and practical-evaluative agency which is consistent with those of a study by Ghamoushi and Mohamadi Zenouzagh (2020) who reported a significant impact of EFL teachers' participation in collaborative reflection on the improvement of their engagement. This suggests the importance of fostering opportunities for educators to collectively reflect on their practices and exchange insights, which in turn enhances professional engagement within the field of English language teaching. Furthermore, the bidirectional relationship between cognitive engagement and practical-evaluative agency highlights the presence of a positive feedback loop that reinforces a teacher's sense of fulfillment and agency, thus promoting ongoing professional growth and enhancing teaching practices (Tao & Gao, 2017). The underlying rationale for these findings lies in the crucial role that reflective practice plays as an indicator of a teacher's cognitive engagement. The interplay between cognitive engagement and practical-evaluative agency can be explained through the presence of professional discourse and community support within the educational environment. In fostering a collaborative atmosphere where teachers establish strong social relationships with their peers, opportunities for reflective practice and collective learning are facilitated, ultimately enhancing overall teacher engagement and promoting their development as educational professionals.

In essence, these findings revealed that enhancing EFL teachers' ecological agency can lead to an improved level of engagement. This goal can be attained by providing teachers with not only the required material and resources but also collegial collaboration and a supportive institutional atmosphere

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where teachers are given the voice and power to exert changes and take action in their teaching practice. In the case of having a higher amount of engagement, teachers control their attention and put their utmost effort into achieving profession-related tasks to reach more acceptable working conditions. As such teachers put more time and energy into the way they run their classes, and they play a major role in the process of their students' learning improvement (Granziera & Prera, 2019).

6. Conclusion

The current attempt investigated the Interplay between EFL teacher ecological agency, teacher engagement, and their underlying components. The findings of this study revealed not only a strong correlation between EFL teachers' engagement and ecological agency but also demonstrated a significant relationship between their respective components, such as emotional engagement, practical-evaluative agency, agentic engagement, and cognitive engagement. This emphasizes the importance of fostering a supportive and empowering environment for teachers to promote their professional growth and effectiveness. Teachers who feel emotionally connected to their work, have the freedom to make decisions and implement their own strategies, and are part of a collaborative community are more likely to be engaged and effective educators. These findings suggest that empowering teachers through providing resources, opportunities for professional development, and a supportive institutional structure is crucial for enhancing their agency and promoting a more positive and productive learning environment for students.

Different stakeholders can benefit from the results of this study. For teachers, recognizing the interconnectedness of engagement and ecological agency can draw their attention to the importance of empowering EFL teachers in their professional journeys. Empowerment involves giving teachers the agency to make decisions, shape their teaching environments, and actively contribute to the larger educational context. When teachers feel empowered, they are more likely to be emotionally invested and driven in their roles. Consequently, teachers should pursue and advocate for environments that foster collaboration, provide resources, and prioritize professional development while valuing teacher input. Recognizing the influence of institutional structures on agency, educators can become change agents, promoting adjustments that support their growth and development. Teacher educators need to acknowledge the interdependence of ecological agency and engagement and adapt their pedagogical strategies accordingly. This entails transitioning from traditional, skills-centric training methodologies

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to an approach that cultivates a strong sense of agency among pre-service and in-service teachers. Achieving this goal necessitates the promotion of collaborative learning experiences, exemplifying empowered leadership, and instilling habits of critical thinking and reflection in teacher candidates. By equipping teachers with the skills, knowledge, and attitudes required to be proactive professionals, teacher educators can contribute to a more gratifying and impactful teaching experience. The findings of the current study also urge policymakers to transition from top-down policies toward a teacher-centric approach. This necessitates investment in professional development, promotion of collaborative practices, and recognition of teacher expertise through shared governance, teacher leadership, and inclusive policy development. By valuing teachers' insights and capabilities, policymakers and school leaders should empower them with resources, autonomy, and a platform to express their voices. Acknowledging the pivotal role of teacher engagement and agency contributes to an educational system where teachers feel appreciated, motivated, and capable of significantly impacting students' lives. This results in a more effective and equitable education system overall.

While this study offers valuable insights into the relationship between EFL teachers' engagement and ecological agency, it also suffers from some limitations that present avenues for future research. One opportunity for further investigation lies in the utilization of additional data collection methods. This study relied primarily on teacher self-reports; incorporating alternative techniques, such as interviews and observations, could provide a more comprehensive understanding of the dynamics between engagement and agency. Another potential area for exploration involves examining teachers' agency from different perspectives. This study focused on the ecological approach to teacher agency; however, future research could consider alternative frameworks, such as socio-cognitive or positioning approaches, to further enrich the understanding of teacher agency and its interplay with engagement. Furthermore, this study concentrated on EFL teachers' engagement and ecological agency. Expanding the scope to include teachers from other disciplines could reveal valuable insights and comparisons across various educational contexts, broadening the understanding of teacher agency and engagement.

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