**Quarterly Journal of Research on Issues of Education/ 1396- No. 57**

**Pages: 39--73**

# EFL Teachers' Efficacy in Relation to their Engagement in and with Research

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Received: August, 2019 Accepted: February, 2020

## Abstract

Over the years, both teacher research engagement (TRE) and teacher efficacy have received great attention from different scholars and researchers in second language teacher education due to their influence on different aspects of learning and teaching. The present study concentrated on the relation between EFL teachers' engagement in and with research (by reading, using, and doing it) and teacher efficacy. To this end, based on the information gleaned from teacher efficacy literature, a Likert-scale Analytic Hierarchy Process (AHP) questionnaire including context-specific teacher efficacy components followed by a single follow-up question was developed, checked, and administered to 15 expert teachers. The results

showed that teaching language skills and teaching language components were the most prominent teacher efficacy components while teachers would be most willing to do or read research on students' proficiency level and error correction. Therefore, the results suggest that there is a negative relationship between the two variables.

**Keywords:** Teacher efficacy, Collective teacher efficacy (CTE), Teacher research, Teacher research engagement (TRE),

## Introduction

EFL teachers and their crucial role have received considerable attention in the history of English language teaching, and as Harmer (2001) discusses, several significant roles are assigned to teachers concerning the desired student achievement in the context of the classroom. The importance of teachers in influencing educational contexts and students' learning outcomes has been acknowledged in the history of language education (Sanders, Wright, & Horn, 1997). As a result of constructivist approaches, these teachers have been acknowledged as more reflective practitioners in teacher education who can theorize their practice and practice their theories (Kumaravadivelu, 2003). The abovementioned shift of focus in teacher education literature led to an increasing interest in the study of teacher research engagement (TRE). The term ‘research engagement’ as Borg (2010) contends, "covers both engagement IN teacher research (i.e., by doing it) as well as engagement WITH research (i.e., by reading and using it)" (p. 391). Moreover, teacher's status has been elevated to a great extent due to all the developments taking place in the field of language teaching (Kumaravadivelu, 2003); accordingly, teachers' personal beliefs and prior experiences have come to be considered as informing their teaching ideology

and practice (Freeman & Johnson, 1998). Hence, teacher-related constructs including teacher beliefs (Ghaith & Yaghi, 1997), teacher identity (Beijaard, Meijer, & Verloop, 2004), teacher self-efficacy (Akbari & Tavassoli, 2014; Tschannen-Moran & Hoy, 2001), etc., have constituted a considerable part of mainstream education literature.

Despite the importance attached to research on interconnections between TRE and teacher efficacy, few TRE studies have included teacher efficacy as an essential variable into consideration, and the reciprocal influence the two variables might have on one another (Babaei & Abednia, 2016; Rahimi & Weisi, 2018). One major reason for the scarcity of studies in this line of research could probably be the challenges in the practical measurement of the construct. Against this backdrop, the present study aims to contribute to this line of inquiry by developing a measure of expert teachers' collective efficacy regarding teachers' research engagement in order to open avenues for further research into their relationship. Besides, in this study, collective teacher efficacy beliefs of teacher educators, supervisors and people in charge that on the one hand have prominent responsibilities, and on the other hand are involved in teaching concerned with TRE have been investigated. This new trend brings about more reliable results as will be highlighted in the following sections, and presents a more realistic image of ELT teachers' efficacy in dealing with English language teaching components when engaged in and with research compared to the previous studies. In what follows, teacher efficacy will be defined, its components will be explained, and research findings related to the relation between TRE and teacher efficacy will be reviewed.

## Review of Literature

Teacher efficacy refers to a teacher's beliefs of his or her capabilities in influencing student's outcomes (Tschannen-Moran, Hoy, & Hoy, 1998). Efficacy beliefs are thought to have four main sources: mastery experiences, i.e. the experiences of achievement or failure in conducting a certain activity, vicarious experiences, which are gained through observing others' successes and failures, social persuasion, i.e. encouragement received from others about one's abilities and competencies, and emotional and physiological states such as excitement, happiness, stress, and tension (Bandura, 1977). Teacher efficacy can show the quality of education to parents and the school system. Additionally, self-efficacy expectations determine whether an individual would be capable of capturing certain behaviors (in this case TRE) in the future (Stajkovic & Luthans, 1998). According to Stajkovic and Luthans (1998), individuals with high-self efficacy will exert higher effort into their courses of actions compared to the ones with low efficacy which would lead to successful outcomes in the future. More importantly, it has been widely documented that students taught by teachers with high efficacy make more progress than students taught by teachers with low efficacy (see Bray-Clark & Bates, 2003).

Research on teacher self-efficacy has highlighted its significant relationship with several teacher behaviors and student learning in mainstream education (see Henson, 2001a; Henson, 2001b). High efficacy perceptions have been associated with teachers' perseverance in unsupportive environments (Milner & Hoy, 2003), less teacher burnout (Skaalvik & Skaalvik, 2010), high student achievement and motivation (Bandura, 1977; Tschannen-Moran & Hoy, 2007), commitment to teaching (Coladarci, 1992), and using

alternative instruction methods and materials (Allinder, 1994). Besides, a low sense of efficacy is believed to result in a decreased effort (Atay, 2006), less job satisfaction, and higher levels of occupational stress (Betoret, 2006). Research has also shown that different factors may affect teachers' sense of efficacy to varying degrees. Some of these factors are gender (Romi & Leyser, 2006), student achievement (Muijs & Reynolds, 2015), and having a state-issued teaching credential (Tuchman & Isaacs, 2011). Additionally, research findings have proposed different ways through which teacher efficacy as a crucial construct can be improved. Babaei and Abednia (2016) have viewed teacher reflection as a facilitating factor. Action research has also appeared to be a prominent factor in improving teacher efficacy (Cooper-Twamley, 2009).

Several researchers in their teacher efficacy studies have discussed different teacher efficacy components which can be used as benchmarks according to which teachers' efficacy levels would be determined. Ashton, Olejnik, Crocker, and McAuliffe (1982) for instance in their study have recognized "Discipline," "Working with parents," "Planning," "Socializing," "Motivation," and "Evaluation" as this constructs' component. Other components include "Student performance", "Instructional effectiveness", "Classroom management and control" (Gibson & Dembo, 1984), "Decision-making", "Instructional efficacy", "Disciplinary efficacy", "Enlisting parental involvement", "Enlisting community involvement", "Creating a positive school climate" (Bandura, 2006), "Instructional strategies", "Classroom management", and "Student engagement" (Tschannen-Moran & Hoy, 2001).

Although the above-mentioned components have been widely agreed upon in mainstream education, the field seemed to strive for ELT context-specific components. Akbari and Tavassoli (2014) in their seminal paper filled this gap. According to them and in their semi-finalized checklist, they considered teacher efficacy to have eight components among which were "Teaching language skills", "Teaching language components", "Dealing with students' age", "Dealing with students' proficiency level", "Error correction", "Assessment", "Curriculum and syllabus implementation", and "Dealing with critical social aspects". However, they added another component taken from efficacy literature to their checklist in their finalized framework which was "General Teaching Efficacy" capturing the general efficacy of teachers; this component itself was composed of a couple of other components including affecting students' learning outcomes, motivating reluctant students, and so forth. The eight context-specific teacher efficacy components in Akbari and Tavassoli's (2014) semi-finalized checklist whose definitions are provided in Table 1, were used in this study.

### *Collective Teacher Efficacy (CTE)*

Collective efficacy is driven from the concept of self-efficacy; however, rather than focusing on the beliefs and efforts of the individuals, it focuses on the beliefs and efforts of a group. Bandura (1997) defines collective efficacy as " *a group's shared belief in the conjoint capabilities to organize and execute the courses of action required to produce given levels of attainment."* In an educational context where teachers are working to the same purpose, their collective efforts and beliefs lead to CTE. Collective teacher efficacy is the collective belief of teachers in their ability to positively affect students. The massage seems to be quite clear; together teachers can achieve more, specifically when they collectively believe that

**Table 1**
Components of the " English Language Teaching Efficacy" in the Study

| Components | Definitions |
|---|---|
| Efficacy in Language Skills | Including listening, reading, speaking, writing |
| Efficacy in Language Components | Including grammar, vocabulary, pronunciation |
| Efficacy in Student-Related Issues (Students' Age) | Including kids, adolescents, adults |
| Efficacy in Student-Related Issues (Students' Proficiency Level) | Including elementary, intermediate, advanced levels |
| Efficacy in Error Correction | Including teacher correction, peer correction, self-correction, correcting receptive skills, correcting productive skills, correcting language components |

| Components | Definitions |
|---|---|
| Efficacy in Assessment | Including assessing classroom performance, developing tests, using a variety technique in assessment |
| Efficacy in Curriculum and Syllabus Implementation | Including selecting textbooks, selecting extra-curricular materials, using realia, developing materials |
| Efficacy in Critical Social Aspects | Including poverty, social class, gender discrimination, environmental issues, relating classroom situation to the real world |

they can do so. This construct is strongly correlated with student achievement and learning (Goddard, Hoy, & Hoy, 2000; Tschannen-Moran & Barr, 2004). Besides, as Hoy, Sweetland, and Smith (2002) state, strong CTE encourages individual teachers to make a more effective use of their skills. It also binds the teachers together and gives the school a distinctive identity (Hoy & Miskel, 2008). More benefits even accrue with the existence of high CTE including the existence of teachers who are not discouraged with failures, and are more persistent in their efforts, and play with different teaching strategies (Bandura, 1977; Goddard et al., 2000). Besides, high CTE brings about higher engagement of teachers in instructional

experimentation, and innovative methods implementation (Goddard et al., 2000). Although self-efficacy and CTE appeared to be two different constructs, research tends to agree that both constructs influence each other (Schechter & Tschannen-Moran, 2006). The point is as Goddard et al. (2000) claim, " It is through individuals that organization act" (p. 484); thus, these individuals' CTE levels matters to a great extent regarding EFL contexts as well.

**Research Engagement and Teacher Efficacy**

While extensive research has been conducted on teacher research engagement, teacher efficacy, and their relationships with several variables, only a few studies have investigated their interconnections. Most of these studies have unanimously agreed on the mutual positive impact of these two variables on one another. For instance, Stallions, Murrill, and Earp (2012) have observed contributions of reflection as a type of TRE to teacher self-efficacy when facing crisis and challenges specifically at early career stages. Additionally, Babaei and Abednia (2016) observed a significant positive relationship between the general factors of teacher reflectiveness and self-efficacy; however, as they further in their seminal paper discuss, one might not be certain on the constant positive relationship between the two constructs; sometimes low perceived efficacy on the part of teachers would result in their higher reflection upon their teaching.

In another related strand of research, Boran (2018) investigated the impact of teachers' research engagement after an INSET course on their motivation and efficacy in engaging with and in research. The findings of their study indicated that teachers' efficacy for research engagement increased significantly. In another research work, the researchers had to

some extent the same purpose; Cooper-Twamley (2009) investigated the impact of participation of content and math teachers in action research on teacher efficacy. Based on the information gleaned from their instruments, it was reported that participation in action research as a type of teacher research did impact teacher efficacy specifically in the area of instructional practices. Seider and Lemma's (2004) findings also corroborated the results of the previous study in that they stated teachers' sense of professional efficacy was remarkably enhanced after their action research even after a couple of intervened years.

**Problems with the Available Teacher Efficacy Instruments and the Need for the Development of a New One**

Teacher efficacy is a topic of significance in mainstream education, and various instruments have been developed to measure this construct (e.g., Bandura, 2006; Gibson & Dembo, 1984; Tschannen-Moran & Hoy, 2001). Most of the available measures, however, are general both in terms of their subject matter and context and appeared to be vague for ELT field. To compensate for this generality, Akbari's (2014) questionnaire components which are context-specific, i.e., related to ELT contexts have been taken into account as the main components of teacher efficacy in the present study. Moreover, such questionnaires, even in investigating teacher efficacy in relation to TRE, have addressed typical teachers, while in this study, expert teachers' collective teacher efficacy beliefs have been explored.

Besides, all the previous instruments have treated teacher efficacy as a construct which can be simply measured. However, these researchers have neglected the issue that in analyzing this variable, one deals with human beings from whom collecting valid data would be a very difficult job due to the effect of uncertainty combined with human thinking when it comes to

decision making (Kahraman, Çevik, Ates, & Gülbay, 2008; Li & Reeves, 1999). Finally, none of the available instruments are appropriate for the aim of this study which is collecting data only from a handful of expert teachers. Therefore, the development of a questionnaire which can hopefully lead to a more meaningful interpretation of the probable effect of TRE on ELT teacher efficacy components was considered necessary.

## Method

### Participants

Through purposive sampling procedure, a total of 15 Iranian EFL teachers were selected to participate in this study. Participants ranged in age from 18 to 59, and their teaching experience varied from less than five years to 30 years. The teachers taught English at either public schools or private institutes (see Appendix A for detailed information). They were considered as expert teachers due to the fact that they had specific features; they were experienced in teaching, had either an MA or PhD in TEFL, and had a couple of prominent responsibilities in their own workplace such as classroom observation, teacher education, syllabus and curriculum development. More importantly, they were completely aware of teacher professional growth and student growth dimensions in their context. The main criterion for the selection of these experts in this study (despite accessibility to teacher educators or university professors), was that they were simultaneously involved in teaching, i.e., they were quite familiar with the reality of the ELT classrooms. Therefore, by eliciting their perspectives of TRE, more comprehensive and realistic information of TRE and the issues related to it could be successfully provided.

## Instruments

An AHP questionnaire was developed to the end of understanding how efficaciously EFL teachers would handle different aspects of their classes while engaging in and with research. In order to measure teachers' collective efficacy of the probable effect of TRE on ELT context-specific teacher efficacy components, semi-finalized teacher efficacy components provided by Akbari and Tavassoli (2014) which are highly related to ELT context were used. The finalized version of this model was ignored as the components of this model at the end of the study were representative of two or more teaching aspects and would make it a little bit difficult for the participant in this study to have a pairwise comparison among single components. The semi-finalized version includes eight underlying teacher efficacy components including "Teaching Language Skills (listening, reading, speaking, writing)", "Teaching Language Components (grammar, vocabulary, pronunciation)", "Dealing with Students' Age", "Dealing with Students' Proficiency Level", "Error Correction", "Assessment", "Curriculum and Syllabus Implementation", and "Dealing with Critical Social Aspects". Fifteen expert teachers were supposed to select the more important teacher efficacy component compared to the other one. This questionnaire can be accessed in Appendix B. The participants in this phase were also needed to answer a single follow-up question whose data in addition to the AHP questionnaire answered the question of the present study.

## Procedure

To answer the research question of the study, the first step was to develop an AHP questionnaire to the end of evaluating the most important teacher

efficacy components; in order to identify teacher efficacy components, an intensive review of the related literature (e.g., Akbari & Tavassoli, 2014; Tschannen-Moran & Hoy, 2001) was the initial necessary step taken in this phase. After identifying ELT context-specific teacher efficacy components, a Fuzzy TOPSIS AHP questionnaire was developed for ranking teacher efficacy components by expert teachers. The results of this questionnaire were based on pairwise comparisons between teacher efficacy components. Teacher efficacy components which informed the items of this questionnaire were presented in Table 1.

The rationale behind using the AHP method was as Saaty (2008) claimed, its appropriateness for dealing with complex decision problems and performance evaluation, (in this case the most prominent teacher efficacy components); the reason this model was preferred to observations, tests, or any other techniques was that firstly, a researcher by using such method collects data from a handful of experts in a field who have comprehensive information on different aspects of the profession. Besides, the reason why fuzzy technique was taken into consideration in answering this question was to evaluate teacher efficacy components in a fuzzy environment where the vagueness and subjectivity of linguistics values given by human beings (e.g., very much, little, etc.) (Kahraman, Çevik, Ates, & Gülbay, 2008; Li & Reeves, 1999), are handled by fuzzy numbers (e.g. 1, 3, 5) (see Saaty, 2008). Ranking of teacher efficacy components was another rationale behind using the TOPSIS technique.

The questionnaire is comprised of three sections; in the first section, an explanation of teacher efficacy was provided to the participants. In the second section, participants' demographic pedagogic characteristics including age, gender, education, major, teaching context, and teaching

experience were solicited. Finally, in the third part of the questionnaire, 28 items on a 9-point Likert-scale ranging from "*Equally important*" to "*Absolutely more important*" were taken into account. The questionnaire was in English, and it took 10 minutes to be filled out by each participant. The decision makers/participants were supposed to choose among the two components (criteria), and express the extent to which they thought each of the components would be more important compared to the other; i.e., ranking these criteria according to their importance. One of the items in this questionnaire is presented in Figure 1.

| OPTION 2 | Absolutely more important | between | Much more important | between | Relatively more important | Between | Slightly more important | None of them | Equally important | 1 OR 2 | OPTION 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching language skills (listening, reading, speaking, writing) | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Teaching language components |

Figure 1. Sample item from the newly developed AHP questionnaire

The questionnaire reproduced in Appendix B was sent to 15 expert teachers. However, before being sent to the participants, once the draft version of the questionnaire was ready, it was given to two Applied Linguistics professors with language teacher education background for checking its relevance and intelligibility. To answer the research question of the study, in addition to the AHP questionnaire discussed above, a single follow-up question had to be put forward as well. With such a question, expert teachers' collective efficacy beliefs regarding the effect of TRE on teacher efficacy components were explored; answers to the AHP

questionnaire were compared to their responses to this question, and finally, the relationship between TRE and teacher efficacy in the EFL context of Iran was determined. This question is presented below:

*What are the teacher efficacy components on which EFL teachers with their research engagement might have an impact? Please write them from the most to the least important.*

**Data Analysis**

The design of the study was quantitative and correlational. It was correlational because the purpose was to find out a possible relationship between ELT teacher research engagement and teacher efficacy. Correlational design is considered ex-post facto as there is no control over the selection or manipulation of the variables in a study (Cohen, Manion, & Morrison, 2002), as was also the case in this study. Analytic Hierarchy Process (AHP) fuzzy TOPSIS method followed by a Friedman test were used to answer the research question of the study. Results of AHP questionnaire were analyzed using Expert Choice, and Friedman test findings were analysed through SPSS.

**Results**

As it was previously discussed, eight context-specific ELT teacher efficacy components were compared two by two in a Fuzzy TOPSIS AHP questionnaire for investigating the importance of each of them compared to the other. To this end, 15 English language expert teachers' collective teacher efficacy beliefs concerned with this issue were explored. These components were "Efficacy in Language Skills (A1)", "Efficacy in Language Components (A2)", "Efficacy in Dealing with Students' Age (A3)",

"Efficacy in Dealing with Students' Proficiency Level (A4)", Efficacy in Error Correction (A5)", "Efficacy in Assessment (A6)", "Efficacy in Curriculum and Syllabus Implementation (A7)", and "Efficacy in Critical Social Aspects (A8)".

To answer the research question, according to Saaty (2008), firstly through Fuzzy TOPSIS analysis, it was necessary to rank the teacher efficacy components to see which ones are the most important. As discussed previously, after determining the decision makers, a pair-wise comparison matrix was created with the help of a scale of relative importance. For data analysis, the matrix was changed to a fuzzified pair-wise comparison matrix. The geometric mean was used to calculate the fuzzy weights and crisp values for every criterion. Next, the crisp weights/values went through defuzzification, and their normalized weights were calculated. After altering the data to unfuzzy numbers, criteria's' closeness coefficient was calculated which was .00 (<.1). Finally, the items were ranked. The Fuzzy TOPSIS AHP analyses can be seen in Appendix C.

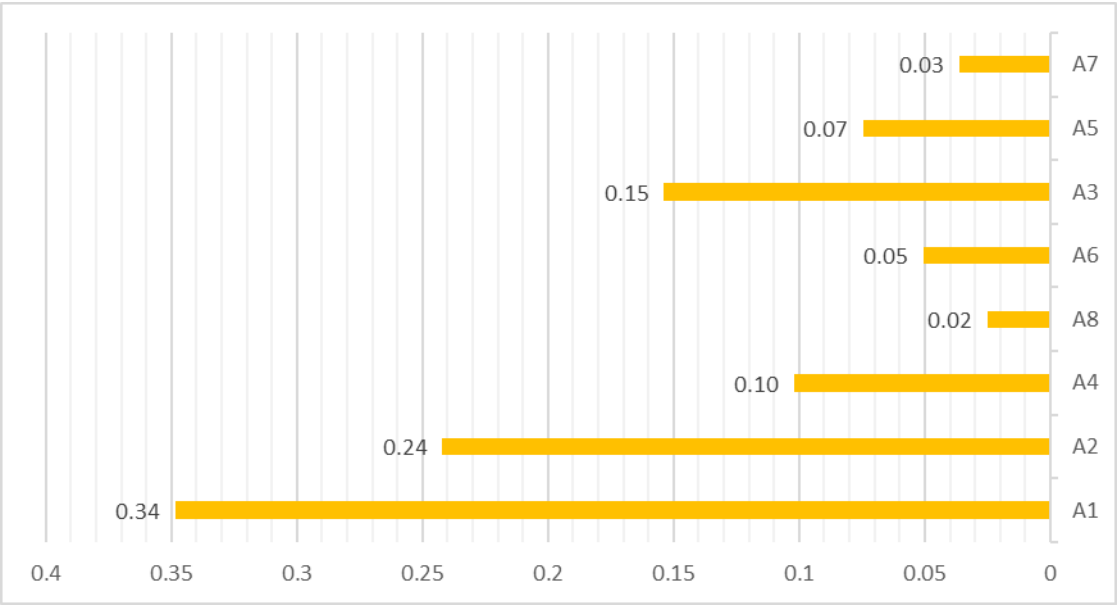


**Figure 2.** *Ranking of teacher efficacy components*

As demonstrated in Figure 2, expert teachers believe that teaching language skills (A1), teaching language components (A2), dealing with students' proficiency level (A4), error correction (A8), curriculum and syllabus implementation (A6), dealing with students' age (A3), assessment (A5), and dealing with critical and social aspects (A7) were important in language teaching and learning, respectively. To answer the research question of the study, the second step was to put a single follow-up question forward. This question is presented below.

*What are the teacher efficacy components on which EFL teachers with their research engagement might have an impact? Please write them from the most to the least important.*

Error correction—Dealing with critical and social aspects—Assessment—Curriculum and syllabus implementation—Dealing with students' age—Dealing with students' proficiency level—Teaching language skills—Teaching language components.

Friedman test as an alternative to One-way ANOVA, used for non-parametric data, has been used to determine the ranking of the criteria, based on the responses of the 15 experts. A chi-square of 18.7 with a degree freedom of 7, and a significant p-value of 0.01 indicated that the components were rated differently. The mean ranks of the components were merely compared whose results are presented in Table 3**.**

As illustrated in Table 3, expert teachers identified the most important teacher efficacy components. While according to experts the most important teacher efficacy components are teaching language skills and components, teachers would be most willing to do or read research on students' proficiency level and error correction. Therefore, the information gleaned from these two analyses rejects the existence of an effective relationship between teacher research engagement and teacher efficacy in the EFL context of Iran. Therefore, the null hypothesis was rejected as well.

## Discussion

Contrary to the findings of several previous studies in which teachers' research practice made them more self-efficacious in dealing with their teaching issues in the classroom (see Babaei & Abednia, 2016; Cabaroglu,

2014; Henson, 2001), the results of the present study showed no such effect. The findings may be the result of data collection from a handful of expert teachers rather than a large number of teachers, and not taking advantage of a teacher efficacy questionnaire which could directly measure teachers' efficacy in relation to TRE. In addition, neglecting academicians' views on the effect of TRE on teacher efficacy, and not using other techniques such as observation at this stage could have also influenced the results. However, it

**Table 3**

Results of the Friedman test for teacher efficacy components concerned with TRE

| Dimension | Mean rank | rank |
|---|---|---|
| 1- Error correction | 6.24 | 2 |
| 2- Dealing with critical and social aspects | 3.84 | 5 |
| 3- Assessment | 4.22 | 4 |
| 4- Curriculum and syllabus implementation | 4.65 | 3 |
| 5- Dealing with students’ proficiency level | 6.88 | 1 |
| 6- Dealing with students’ age | 3.71 | 6 |
| 7- Teaching language skills | 3.67 | 8 |
| 8- Teaching language components | 2.79 | 7 |

is worth mentioning that low collective efficacy of expert teachers with regard to TRE is not always undesirable, and low perceived efficacy can sometimes encourage teachers to be more reflective and improve their teaching (Wheatley, 2002). In the same vein, low collective efficacy of expert teachers in this study can encourage expert teachers to direct teachers' research engagement to the areas which are of higher importance in the field of language teaching.

Overall, the results of this phase also indicate how attitudinal barrier exists among expert teachers. They do not consider teachers as individuals who would be able to research on prominent aspects of language teaching and learning; maybe they consider research as an activity which can be done merely by academicians. With the existence of such important barriers in the EFL context of Iran, grave doubts must be raised with the assumption that TRE is an appropriate alternative to invest in. As Allwright (2003) suggests, it is a wrong assumption to abide by the statement that improvement will be best accomplished through teacher research. Therefore, the system needs to be critically explored. Besides, teachers' positive or negative attitudes towards TRE have to be taken into account in every single setting in the first place due to the fact that organizational culture is developed out of shared beliefs of its members; this is particularly pertinent when a new research culture is being built in a context. In the EFL context of Iran, supervisors and managers in different schools and institutes should make sure that there would be no attitudinal barrier on the part of the teachers who have a central role in TRE before policy making since teachers' attitudes towards TRE has a critical role in their research engagement. Supervisors and managers should help teachers with negative TRE attitudes to have a change in their views either by providing an experimental TRE culture through practice and

hands-on experience in their workplace or by having discussions with such teachers to know more about their reasons for holding such attitudes.

Finally, since according to expert teachers' perspectives, TRE affected none of the teacher efficacy components which were needed to be affected in the EFL context of Iran, taken collectively, this analysis makes a powerful statement that it is important for teachers, managers, supervisors, and most notably policymakers to identify areas in which they can bring about improvements by the help of TRE, and make TRE revolve around these related and necessary aspects. Additionally, policymakers, system and school leaders' efforts toward successful TRE might be better served by strategically and intentionally considering how to foster collective efficacy among expert teachers in later steps.

## Conclusion

The need for investigating the relationship between teacher research engagement and teacher efficacy in the EFL context of Iran motivated the researchers to conduct the present study. It becomes obvious that teachers and teacher experts' collective efficacy regarding teacher research engagement matters to a great extent when it comes to making related policies since even attitudinal barriers at this level would deter TRE in one way or another. Additionally, no desirable relationship between teacher efficacy and TRE shows that teachers, supervisors, and language centers' leaders are supposed to look for areas in the field that are required to be researched by English language teachers. However, a more meaningful and richer understanding of how TRE and teacher efficacy are related is gained if the topic is approached through other research methodologies. Additionally, studying the relationship between ELT teachers' degree of teacher research engagement and their students' performance in the classroom can provide more information on the important role

of TRE in students' learning outcomes. Finally, as it was not possible to cover all teacher variables in a single study, one of them – teacher efficacy – was selected for this study.

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## Appendix A

Characteristics of the participants in the study

| Pedagogic features | Number of participants |
|---|---|
| Teaching Experience | |
| Novice | 0 |
| Experienced | 15 |
| Teaching Context | |
| School | 6 |
| Institute | 9 |

## Appendix B

AHP teacher efficacy questionnaire

**Dear expert,**

**Thank you in advance for contributing to my thesis. After receiving and analyzing your detailed and deep responses, a copy of the comments of all experts will be sent to your email address.**

**In this questionnaire, Teacher research engagement (TRE) refers to teachers' engagement in research (by doing research), and teachers' engagement with research (by reading research) to the end of their teaching improvements.**

**Age: ……** **Gender….**

| Expert questionnaire: Determining the most important teacher efficacy components |
| --- |
| In your opinion, which of the following teacher efficacy components are the most important ones. Please make a comparison between the first and second options and write the appropriate one. In each row only one answer is |

**Education:** **BA/BS** ☐ **MA/MS** ☐ **PHD** ☐

**Major: ……**

**Workplace:** **Ministry of education** ☐ **Language Institutes** ☐

**Experience:** **under 5 years** ☐ **5-10 years** ☐ **11-20 years** ☐ **over 20 years**

| enough. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OPTION 2 | **Absolutely more important** | **Between** | **Much more important** | **Between** | **Relatively more important** | **Between** | **Slightly more important** | **Between** | **Equally important** | 1 OR 2 | OPTION 1 |
| Teaching language skills (listening, reading, speaking, writing) | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Teaching language components |
| Teaching language skills | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with students' age |
| Teaching language skills | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with students' proficiency level |
| Teaching language skills | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Assessment |
| Teaching language skills | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Curriculum and syllabus implementation |
| Teaching language skills | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with critical social aspects |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching language skills | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Error correction |
| Teaching language components (grammar, vocabulary, pronunciation) | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with students' proficiency level |
| Teaching language components | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Assessment |
| Teaching language components | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Curriculum and syllabus implementation |
| Teaching language components | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with critical social aspects |
| Teaching language components | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Error correction |
| Teaching language components | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with students' age |
| Dealing with students' age | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with students' proficiency |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dealing with students' age | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Assessment |
| Dealing with students' age | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Curriculum and syllabus implementation |
| Dealing with students' age | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with critical social aspects |
| Dealing with students' age | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Error correction |
| Dealing with students' proficiency level | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Assessment |
| Dealing with students' proficiency level | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Curriculum and syllabus implementation |
| Dealing with students' proficiency level | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with critical social aspects |
| Dealing with students' proficiency level | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Error correction |
| Assessment | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Curriculum and syllabus implement |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | ation |
| Assessment | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with critical social aspects |
| Assessment | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Error correction |
| Curriculum and syllabus implementation | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Dealing with critical social aspects |
| Curriculum and syllabus implementation | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Error correction |
| Dealing with critical social aspects | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | Error correction |

## Appendix C

AHP Questionnaire Analysis

Table 1
Geometric Means and Fuzzy Weights of Experts' Collective Beliefs regarding the Effect of TRE on ELT Teacher Efficacy Components

| Options | Fuzzy Geometric Means | | | Fuzzy Weights of the Criteria | | |
|---|---|---|---|---|---|---|
| A1 | 3.28 | 3.89 | 4.46 | 0.24 | 0.33 | 0.45 |

| | | | | | | |
|---|---|---|---|---|---|---|
| A2 | 2.30 | 2.70 | 3.09 | 0.17 | 0.23 | 0.31 |
| A3 | 1.44 | 1.71 | 1.98 | 0.10 | 0.14 | 0.20 |
| A4 | 0.94 | 1.13 | 1.32 | 0.07 | 0.09 | 0.13 |
| A5 | 0.71 | 0.82 | 0.96 | 0.05 | 0.07 | 0.09 |
| A6 | 0.47 | 0.55 | 0.65 | 0.03 | 0.04 | 0.06 |
| A7 | 0.33 | 0.39 | 0.47 | 0.02 | 0.03 | 0.04 |
| A8 | 0.23 | 0.27 | 0.32 | 0.01 | 0.02 | 0.03 |

Table 2

Calculation of Crisp Values of the Criteria

| c | Fuzzy Geometric Means | | | Fuzzy Weights of the Criteria | | | Crisp values of the criteria |
|---|---|---|---|---|---|---|---|
| | r | | | w | | | BNP |
| A1 | 3.28 | 3.89 | 4.46 | 0.24 | 0.33 | 0.45 | 0.34 |
| A2 | 2.3 | 2.7 | 3.09 | 0.17 | 0.23 | 0.31 | 0.24 |
| A3 | 1.44 | 1.71 | 1.98 | 0.1 | 0.14 | 0.2 | 0.15 |
| A4 | 0.95 | 1.13 | 1.33 | 0.07 | 0.1 | 0.13 | 0.10 |
| A5 | 0.71 | 0.82 | 0.96 | 0.05 | 0.07 | 0.1 | 0.07 |
| A6 | 0.48 | 0.55 | 0.66 | 0.04 | 0.05 | 0.07 | 0.05 |
| A7 | 0.34 | 0.39 | 0.48 | 0.03 | 0.03 | 0.05 | 0.03 |
| A8 | 0.24 | 0.27 | 0.33 | 0.02 | 0.02 | 0.03 | 0.02 |

Table 3
Normalized Fuzzy Decision Matrix

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 |
|---|---|---|---|---|---|---|---|---|
| A1 | 0.40 | 0.66 | 0.42 | 0.32 | 0.22 | 0.2 | 0.19 | 0.11 |
| A2 | 0.09 | 0.15 | 0.39 | 0.28 | 0.24 | 0.19 | 0.16 | 0.15 |
| A3 | 0.08 | 0.03 | 0.09 | 0.29 | 0.25 | 0.18 | 0.11 | 0.12 |
| A4 | 0.07 | 0.03 | 0.02 | 0.06 | 0.20 | 0.18 | 0.15 | 0.14 |
| A5 | 0.09 | 0.03 | 0.02 | 0.01 | 0.05 | 0.19 | 0.19 | 0.13 |
| A6 | 0.08 | 0.03 | 0.02 | 0.01 | 0.01 | 0.04 | 0.15 | 0.13 |
| A7 | 0.07 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 | 0.03 | 0.18 |
| A8 | 0.12 | 0.03 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 |

Table 4
Weighted Normalized Fuzzy Decision Matrix

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 | Mean |
|---|---|---|---|---|---|---|---|---|---|
| A1 | 0.40 | 0.66 | 0.42 | 0.32 | 0.22 | 0.2 | 0.19 | 0.11 | 0.31 |
| A2 | 0.09 | 0.15 | 0.39 | 0.28 | 0.24 | 0.19 | 0.16 | 0.15 | 0.21 |
| A3 | 0.08 | 0.03 | 0.09 | 0.29 | 0.25 | 0.18 | 0.11 | 0.12 | 0.15 |
| A4 | 0.07 | 0.03 | 0.02 | 0.06 | 0.2 | 0.18 | 0.15 | 0.14 | 0.11 |
| A5 | 0.09 | 0.03 | 0.02 | 0.01 | 0.05 | 0.19 | 0.19 | 0.13 | 0.09 |
| A6 | 0.08 | 0.03 | 0.02 | 0.01 | 0.01 | 0.04 | 0.15 | 0.13 | 0.06 |
| A7 | 0.07 | 0.03 | 0.03 | 0.01 | 0.01 | 0.01 | 0.03 | 0.18 | 0.05 |
| A8 | 0.12 | 0.03 | 0.02 | 0.01 | 0.01 | 0.01 | 0.01 | 0.03 | 0.03 |

Table 5
Unfuzzy Matrix

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 |
|---|---|---|---|---|---|---|---|---|
| A1 | 1 | 4.36 | 4.84 | 5.61 | 4.67 | 4.82 | 5.64 | 3.47 |
| A2 | 0.23 | 1 | 4.5 | 4.86 | 5.11 | 4.76 | 4.67 | 4.97 |

| | A1 | A2 | A3 | A4 | A5 | A6 | A7 | A8 |
|---|---|---|---|---|---|---|---|---|
| A3 | 0.21 | 0.23 | 1 | 5.18 | 5.31 | 4.54 | 3.26 | 3.87 |
| A4 | 0.18 | 0.21 | 0.2 | 1 | 4.18 | 4.48 | 4.44 | 4.54 |
| A5 | 0.22 | 0.2 | 0.19 | 0.25 | 1 | 4.62 | 5.65 | 4.32 |
| A6 | 0.21 | 0.21 | 0.23 | 0.23 | 0.22 | 1 | 4.55 | 4.27 |
| A7 | 0.18 | 0.22 | 0.31 | 0.23 | 0.18 | 0.22 | 1 | 5.62 |
| A8 | 0.3 | 0.21 | 0.26 | 0.23 | 0.23 | 0.24 | 0.18 | 1 |
| | 2.53 | 6.63 | 11.15 | 17.58 | 20.9 | 24.67 | 29.39 | 32.07 |

λ >>>>> 10.73 CI >>>>> 0.39 CR >>>>> 0.00

n=8, RI=1.41

Figure1. Criteria' closeness coefficient