

Developing EFL Teachers' Motivation to Use CALL through Action Research

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Abstract

EFL (English-as-a-foreign-language) teachers' motivation to use CALL (Computer-Assisted Language Learning) in their classes plays a significant role in enhancing learning opportunities. Therefore, this study attempted to explore the role of action research in developing EFL teachers' motivation to use CALL. Thus, we conducted a qualitative study in which eight EFL teachers participated in four AR workshops. Then, we analyzed the data collected through narratives and interviews using a thematic analysis. The findings showed the constructive role of AR in developing EFL teachers' motivation to use CALL. We found that a) implementation of AR may lead to flourishing of motivation, b) AR may help teachers become reflective teachers who are more motivated, and c) AR may lead to the togetherness and coherence of self-determination theory components, all showing the critical role of AR in developing teachers' motivation to use CALL. It can be concluded that the implementation of AR can develop EFL teachers' basic psychological needs, which in turn develops their motivation to use CALL. The findings of this study have implications for EFL teacher education programs.

1. INTRODUCTION

Action research (AR) has long been recognized as an effective approach to enhance teacher professionalism (Nugent, 2020). Various studies highlight the essential role of AR in developing teachers' knowledge related to classroom dynamics, reflection and critical thinking, pedagogical practices, openness to educational changes, and serving as a viable alternative to traditional teacher training programs (Hensen, 1996; Hine, 2013). Consequently, AR can be viewed as a necessary tool for teachers to engage in meaningful inquiry throughout their professional practices and embrace change (Banegas et al., 2013; Judah & Richardson, 2006; Kondo, 2020; Nugent, 2020; Yang, 2025; Zehetmeier et al., 2015). When new developments emerge within the educational contexts, the principles of educational AR can guide teachers to navigate these changes effectively. In the realm of second language (L2) pedagogy, the introduction of technology has transformed instructional contexts in significant ways, making it crucial for teachers to feel motivated to incorporate various technological tools into their teaching.

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The essence of motivation in teaching and learning has been debated for a long time. [Bandura's Self-Efficacy Theory \(1977\)](#) defines motivation as the cognitive ability required to anticipate future consequences. Moreover, [Dörnyei and Ushioda \(2011\)](#) define motivation as the guiding light one needs to have. Meanwhile, *motivation to teach* refers to the amount of passion and desire individuals have not only for teaching but also for furthering their careers as professional and successful teachers ([Sinclair, 2008](#)). Since teaching has become quite an unappealing career to pursue in some contexts, motivation is drawing more attention to itself among educators and researchers regarding its pedagogical aspects for English-as-a-foreign-language (EFL) teachers ([Lamb, 2017](#)). Subsequently, regarding the importance and the role of motivation in teaching, teachers with a higher degree of motivation are considered better teachers in terms of quality ([Stites et al., 2018](#); [Van Rooij et al., 2019](#)). With the emergence of technology in L2 pedagogy, commonly referred to as Computer-Assisted Language Learning (CALL), the evolving motivation and needs of L2 teachers warrant further investigation.

CALL has become increasingly popular in L2 pedagogy over the past few years. About 20 years of sustainability in using computers or relevant technologies to teach, and specifically to teach EFL, puts considerable emphasis on the importance of further research on the amount of impact and significance that using CALL can have in both teaching and learning ([Tafazoli, 2022](#)). Thus, the use of CALL has been such an inseparable component in EFL classes, and its motivational potential and challenges should be of concern. However, regarding teachers' attitudes towards CALL, [Pinner \(2012\)](#) has referred to it as a multi-faceted field. Due to the provision of authentic materials that foster autonomy, it has been proven that CALL is intrinsically and extrinsically motivating for teachers ([Lam, 2000](#)).

Despite the importance of motivation in making use of CALL-based materials, various reasons hinder the growth of EFL teachers' motivation to use CALL in their classes. Some studies have shown that various challenges and limitations such as time constraints, the necessity for computer-based laboratories, lack of financial support, and inadequate training programs for teachers are significant obstacles hindering the development of motivation among EFL teachers to utilize CALL ([Dashtestani, 2013](#); [Fathi & Ebadi, 2020](#)). Hence, it is also noteworthy that the importance of their motivation to implement CALL in their classrooms has often been neglected ([Ince, 2017](#)). Consequently, their reluctance to use CALL has led to less integration of it and technology into EFL classes. In addition, EFL teachers' competencies to use CALL are highly challenged by the materials they choose for their classes ([Tseng & Yeh, 2019](#)). Various studies have been conducted in order to find solutions and boost EFL teachers' motivation ([Meihami & Husseini, 2022](#)). One ignored approach to boost teachers' intrinsic and extrinsic motivation is AR. As [Escopete and Garcia \(2023\)](#) have pointed out, many educational institutions around the world believe that implementing AR can contribute to the of teachers' competence and improve their performance in their classrooms. AR, as an effective problem-solving tool for both teachers and policymakers ([Mills, 2011](#)), has a dynamic and collaborative nature that can help EFL teachers plan for solutions based on the available infrastructure.

We dealt with motivation through the components of Self-Determination Theory (SDT), including autonomy, relatedness, and competence, called basic psychological needs (BPNs). Understanding these dynamics can inform the development of educational action research-based models aimed at fostering L2 teachers' motivation to integrate technology. This understanding is crucial for effectively modeling AR within teacher education programs, a vital aspect that has yet to be adequately addressed in previously-related research ([Bergroth et al., 2023](#)). Therefore, the purpose of this study was to explore the role of AR in developing teachers' motivation to use CALL. The study attempted to address the following question:

How does action research develop EFL teachers' motivation to use CALL in their classes?

2. LITERATURE REVIEW

Action Research

Action research (AR) has received considerable interest, specifically in the field of education. Burns (2009a) addresses AR as a reflective practice for teachers and researchers to find problematic situations, find resolutions for them, and improve the situation using the systematic data gathered in the class. According to Burns (2009b), AR flourished in the 1980s as a popular issue regarding teachers as agents whose educational decisions could cause changes in empirical contributions. AR has been a part of a broad movement that has been going on for decades. It is known as reflective practice for teachers as researchers.

Various models have accompanied the growth of AR, the most well-known of which is Kemmis and McTaggart's (1988) four-dimensional model (Figure 1) of plan, act, observe, and reflect (Burns, 2009a). Burns (2009b) addressed this four-stage model as a comprehensive model that can describe what practitioners implementing AR do in each cycle. Burns (2009a) considered the planning stage as the central part of the action in AR to intervene in a situation deliberately. As Burns (2019) pointed out, the planning stage (stage 1) consists of two sub-stages: locating the problem and allocating an effective solution to the issue. First, problems are located systematically, and these problems are referred to as research terms that will be investigated. Then, in the next step, by investigating the problem, we aim to find the origin of the problem, and systematic resolutions are opted for to avoid recurrence and solve the problem at hand.

As Burns (2009a, 2009b) claimed, the second stage of AR refers to putting the plans into action. In the acting stage, modifications and changes will be made to tackle the emergence of problems, and new methods will be utilized to solve the present problems and issues in the class (Nazari, 2021). Burnaford et al. (2001) addressed the observation stage of the AR concurrent to the acting stage, in which the plan is put into action. This means that as researchers act on the plans, they gather and analyze data about the extent of the effectiveness of the plans they have already devised in stage one. Burns (2009b) called it the stage in which we observe the results of the planning and acting stages. In the final stage, teachers or researchers regard the entire story of the research and decide where it will lead them. As Hanks (2017) asserted, the reflection stage of AR is the one in which we want to bring the process of research to an end, draw conclusions, and make interpretations about the whole research. This stage revolves around the other three stages of planning, acting, and observation, and concerns the future effects of the research and the new method or plan that has been devised, implemented, and observed in the previous stages.



Figure 1: Stages of action research (Kemmis & McTaggart, 1988)

Action Research in L2 Teacher Education

When considering AR in L2 teacher education, it is important to note that the concept aims to bridge the gap between L2 researchers and teachers (Edge, 2001), with the goal of guiding L2 teachers in addressing the challenges they face in their classrooms (Gebhard, 2005). AR is often seen as a transformative approach that helps L2 teachers advance their careers and develop into professionals (Richards & Farrell, 2005). In this context, AR is believed to have significant professional, pedagogical, personal, and educational impacts on L2 teacher education (Burns & Dikilitaş, 2025). According to Burns and Dikilitaş (2025), the professional impacts of AR on language teachers enhance their soft skills and professional knowledge, the pedagogical impacts refer to the strategies that language teachers can employ through their action research to address classroom challenges, the personal impacts pertain to how AR influences social, psychological, and cultural aspects related to language, and the educational impacts concern the effects of AR on language teachers within various educational contexts. To critically examine professional, pedagogical, personal, and educational impacts of action research in L2 teacher education, we reviewed the literature to identify research gaps from the past 20 years.

Some studies highlighted the pedagogical impacts of AR in L2 teacher education. Wyatt (2011) explored the impact of AR on the practices of in-service Teaching-English-to-Speakers-of-Other-Languages (TESOL) teachers, finding that it significantly enhances teachers' awareness of their teaching methods. Similarly, Ahmed and Lenchuck (2020) conducted a study utilizing AR to investigate the teaching of grammatical concepts, which demonstrated the effectiveness of content-based instruction. Furthermore, Çelik (2020) highlighted the positive effects of incorporating L1 in the development of grammatical competence among English for Specific Purposes (ESP) learners. Furthermore, Chen's (2020) AR indicated that the main factor impeding L2 teachers from

using communicative approaches is their limited understanding of those approaches. Additionally, [Dikilitaş \(2025\)](#) reviewed how AR fosters engagement among L2 learners when they actively participate in their teachers' action research processes.

Finally, the educational impacts of AR in EFL teacher education have given a touch to both the contextual challenges and variety in the contexts of implementation. [Rahimi and Askari Bigdeli \(2016\)](#) conducted a study to investigate the barriers to conducting AR by EFL teachers. They found out that there are various reasons, such as negative attitudes about AR and a lack of cooperation, confidence, and knowledge which impede EFL teachers from using AR. Moreover, the study conducted by [Meihami and Werbińska \(2022\)](#) showed the role of AR in the ESP context where teachers are trying to solve contextual challenges. [Barahona and Darwin \(2025\)](#) highlighted the importance of contextual conditions to gain the most benefits of AR, indicating that the relevant factors of contexts should be explored.

Although some studies have explored the professional, pedagogical, personal, and educational impacts of AR in L2 teacher education, our review of these studies has identified two key concerns regarding personal and educational effects. Firstly, with respect to the personal impact of AR, there is a notable gap in research concerning one important psychological attribute of teachers: their motivation. Additionally, regarding the educational impacts, there are a few studies that focus specifically on virtual/online teaching environments. In light of these concerns, the present study aimed to investigate how AR can enhance EFL teachers' motivation (personal impact) to incorporate CALL in their classrooms (educational impact). For this study, CALL is operationally defined as the technological facilities available to and used by EFL teachers during instruction. This definition encompasses a broad continuum, extending from basic presentation software to complex immersive technologies like augmented reality.

Motivation: A Self-Determination Theory

The term motivation is derived from the Latin word *movere*, which means to *move*, since motivation provides enough energy to get something done ([Jansen et al., 2022](#)). Regarding teachers' motivation, [William and Burden \(1997\)](#) defined motivation in two different layers, the first one being initiative motivation and the second one being sustaining motivation. Researchers agree that motivation is the inherent power that drives people towards teaching and helps them remain and improve in their profession (e.g., [Dörnyei & Ushioda, 2011](#); [Sinclair, 2008](#)). [Deci and Ryan \(1985, 2000\)](#) addressed motivation through SDT which is a macro-theory helping us better understand human motivation, personality, and well-being. The theory originated from the early explorations of intrinsic motivation ([Deci, 1971, 1975](#); [Ryan & Deci, 2019](#)). SDT is considered the root of intrinsic motivation to autonomously take an action or, in other words, be autonomous while experiencing an action without any other control or empowerment ([Deci & Ryan, 1985](#)). It is argued that people will be highly motivated provided that their innate BPNs, which are autonomy, relatedness, and competence, are met ([Conesa et al., 2022](#); [Deci & Ryan, 2000](#); [Ryan & Deci, 2000a, 2000b, 2017, 2020](#); [Vansteenkiste et al., 2020](#)).

L2 teachers' motivation is a critical variable that requires exploration due to its multifaceted nature. [Watt and Richardson \(2008\)](#) focused on theories of motivation as an important domain for teaching. The necessity to focus on teacher motivation started with teacher shortages in many Asian and European countries ([Kyriacou & Kunc, 2007](#)). More current interest in the field of teacher motivation has been developed by the attrition of a large number of teachers for different reasons such as low salaries, less job security, and huge workloads ([Watt et al., 2012](#)). As [Han and Yin \(2016\)](#) pointed out, the importance of teacher motivation has become even more evident since many other educational variables depend on teachers' level of motivation and commitment.

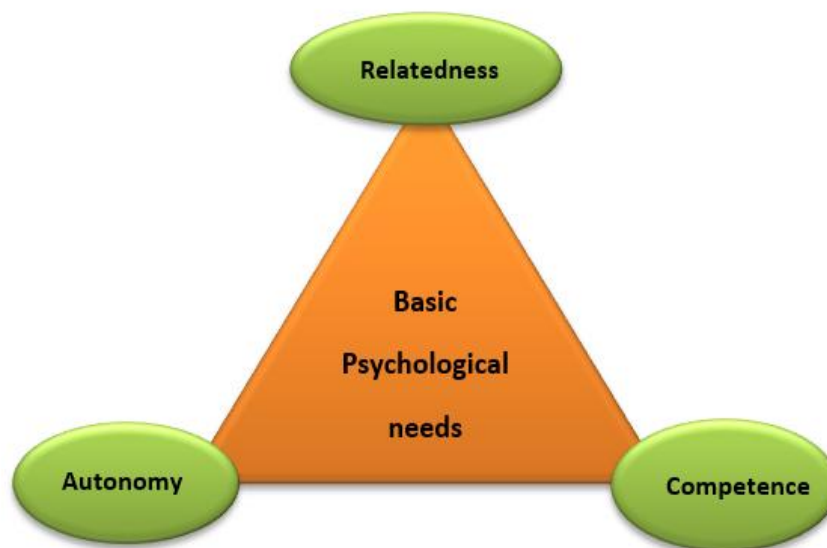


Figure 2: Graphical representation of basic psychological needs

Figure 2 represents three BPNs addressed by SDT. Autonomy refers to the extent of ownership and sense of control that emanates from the self (Reeve, 2006), and competence refers to a person's need to feel prosperous and strive for growth and effectiveness in pursuing their personal goal (Deci & Ryan, 2000). SDT emphasizes the importance of competence since it is crucial for individuals' encouragement in various activities, as well as for their psychological health and well-being (Reeve, 2006). Finally, relatedness refers to the sense of being tied emotionally to another self and having the feeling of belonging (Urhahne & Wijnia, 2023). As seen in Figure 2, there is also a separate relationship among these three components. Meihami and Husseini (2022) classified these relationships into three different two-way combinations and a three-way combination (1. Autonomy-Competence, 2. Autonomy-Relatedness, 3. Competence-Relatedness, 4. Autonomy-Relatedness-Competence). Ryan and Deci (2017) also suggested that the entanglement of autonomy, competence, and relatedness shows that any rise in any of the BPNs will automatically lead to a rise in the other two.

The SDT Taxonomy of Motivation: From Amotivation to Extrinsic and Intrinsic Motivation

According to Deci and Ryan (2000), there is an SDT continuum (Figure 3) of motivation, moving from amotivation to extrinsic motivation and, finally, to intrinsic motivation. Considering the left side of the continuum, Ryan and Deci (2020) addressed amotivation as a lack of competence, value, and relevance. As shown in Figure 3, moving toward the right side of the continuum, there is external motivation with four regulatory styles: external, introjection, identification, and integration. Ryan and Deci (2020) addressed external regulation as the least autonomous behavior, which is known as an illustration of external rewards or punishments. Secondly, introjected regulation refers to the internal rewards that can internalize some behaviors to some extent (Ryan & Deci, 2020). The third regulation style of extrinsic motivation is identification. According to Ryan and Deci (2020), in this phase, one identifies the values of an activity and follows it with more desire. Finally, integrated regulation occurs when the self fully addresses an individual's

identified regulation through intra-personal orientations. Finally, the ending point on the right side of the continuum is the intrinsic motivation. Deci and Ryan (2000) believe that intrinsic motivation is the reason why one does an activity for its sheer enjoyment. According to Ryan and Deci (2020), activities and tasks that arouse an individual's curiosity led to intrinsic motivation since they are not dependent on an external sense of satisfaction.

Considering the above-reviewed studies, it can be said that AR, CALL, and motivation have been three critical concepts of study in applied linguistics during the past twenty years. Although there has been some research done on the associations between CALL and motivation, little, if any, attention has been paid to the intersection among these three concepts. Exploring the role of AR in developing the motivation of EFL teachers to use CALL in their classes has not received the deserved attention. Hence, this study tried to locate the point at which these three concepts intersect. The reason for utilizing SDT was that it could help us work on the process through which BPNs developed while EFL teachers tried to implement CALL in their classes.

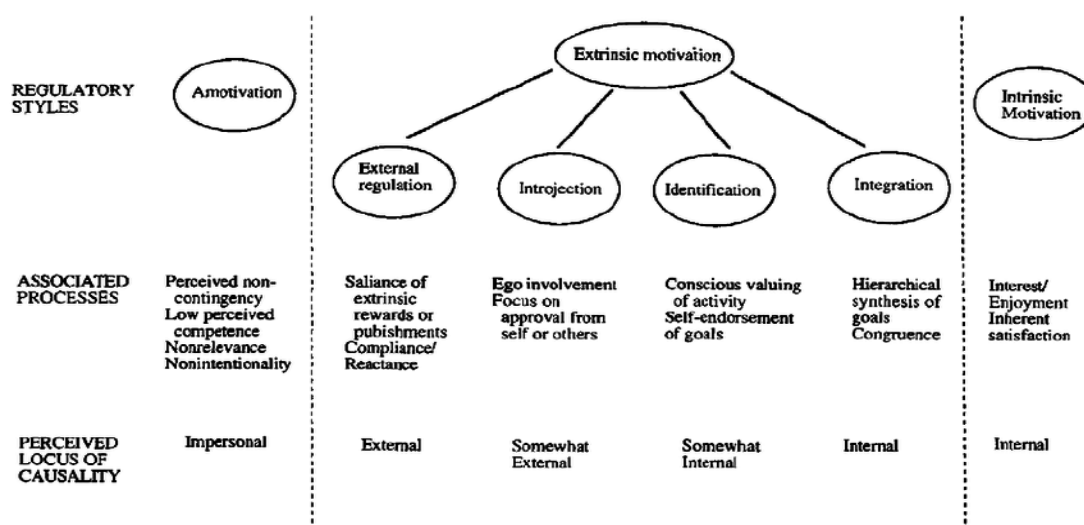


Figure 3: Self-determination theory's taxonomy of motivation (Adopted from Ryan & Deci, 2020)

3. METHODOLOGY

Research Design

Since in this study we tried to explore the role of AR in developing the motivation of EFL teachers to use CALL, the exploratory nature of the present study required a qualitative type of research. In order to explore this phenomenon, descriptive narrative inquiry was implemented as the design of the study to conduct the study. Narrative inquiry refers to gathering information and involves participants in the form of storytelling (Edmonds & Kennedy, 2017). The descriptive design of a narrative inquiry is used to explore a certain phenomenon with respect to an individual's or group's narratives of their life events (Creswell & Poth, 2016), conditions, or contextual factors of the events, and how certain life events impact the participants' storyline.

Participants and Setting

This study was conducted in the Iranian EFL context, where English is taught as a foreign language. The participants were EFL teachers working at private English language institutes.

These teachers held academic backgrounds in Teaching English as a Foreign Language (TEFL) and enjoyed full autonomy in their classrooms, as there was no institutional obligation from institute managers to use or avoid technology in their teaching. The participants of the present study (see Table 1) consisted of eight EFL teachers (four males and four females). The teaching experience of the participants ranged from one year to 11 years. All the selected participants had minor use of CALL in their EFL classes, with two of them having conflicts with the use of CALL. They were recruited through purposive sampling, in which only EFL teachers who had minor use of CALL were asked to participate in this study. We understood they had minor use of CALL through two criteria: (a) using CALL no more than once every three months on average in their EFL classes, and (b) self-reporting during a pre-selection interview that their use of CALL was primarily minor due to the lack of motivation. Moreover, minor use of CALL here is related to insufficient use of CALL in their EFL classes, both as supplementary or as homework for students, or mandatory use of CALL following private institutions’ curricula. Insufficient use of CALL refers to only using CALL when they are forced to do so, or not knowing how to pick the right CALL-related materials for their EFL classes. It is important to note that the principle of data saturation guided the determination of the sample size. Data were collected from eight EFL teachers. During the analysis, we observed that the data obtained from the sixth participant largely replicated the themes identified in the preceding narratives and interviews. To ensure that no new insights would emerge, we collected data from more participants, the seventh and eighth participants. As these narratives and interviews yielded no substantially new information, we concluded that data saturation had been achieved and that no further data collection was necessary.

Table 1: Participants’ Characteristics

Pseudonym	Gender	Experience in the EFL context		Experience using CALL
B	Female	10 years	Minor	
D	Male	8 years	Minor	
H	Female	5 years	Minor	
F	Female	1 year	Minor	
M	female	2 years	Minor use with conflict	
MO	male	3 years	Minor	
N	male	4 years	Minor	
P	male	11 years	Minor use with conflict	

Action Research Workshops

In four online sessions conducted on Skype, the first author introduced and taught AR to the participants, given that none of the participants were familiar with the concept of AR. Session one was a two-hour online class in which the concept of AR, its definition, and its four stages were

taught to the teachers. Additionally, in the first session of the AR workshops, the first stage of action research (i.e., planning) was explained to the participants, and then, some instances of the implementation of AR were illustrated to them. Once the planning stage had been taught, the first author asked the participants about the problematic areas and shortcomings in their EFL classes. After the problems were located, the second session of the AR workshops was held. Subsequently, in the second session of the AR workshop, a three-hour online class was held with the participants, each one proposing a problem in their class. Using the explanations and definitions of the planning stage, the participants proposed their solutions to the problems, and the first author and other participants attempted to refine the solutions and reach a final agreement on how to deal with each problem. This process took up half of the class, and the second half of the class was devoted to the introduction and explanation of the second stage of AR, which was the acting stage. The participants were taught how to implement the solution they had found in stage one of AR.

The third session of the AR workshops was devoted to explaining and defining the observation stage of AR in a two-hour session, and the participants were taught how to observe their action plan and gather systematic data about it. Certain criteria were set for their classes, and they were instructed to observe their students' development based on those criteria. Finally, the last session of the AR workshops elaborated on the reflection stage, and the first author taught the participants how to reflect on their own experience and the effectiveness of their already devised action plan. Moreover, this session provided a comprehensive review of all four stages of AR and the refined use of them in their EFL classes. Table 2 thoroughly illustrated the points discussed in the AR workshops, dividing each session's points.

Table 2: Content Discussed During AR Workshops

Sessions	Discussed content
An introduction to AR and stage one (Session 1, Planning)	Introduction of AR Definition of AR Locating the problem Proposing a solution Some examples of the planning stage
Putting the plan into action (Session 2, Acting)	Reforming the proposed solution via discussion Putting the solution into action Gathering data
Observing the plan (Session 3, Observation)	Observing based on certain criteria Gathering data Classifying the data
Reflection on the experience (Session 4, Reflect)	Analyzing the data Reflecting on their experience with their action plan Planning for future changes based on their experience with the current action plan

Data Sources

The main data sources for the present study were autobiographical narratives produced in both Persian and English, along with semi-structured interviews.

Autobiographical Narratives

Autobiographical narratives are used to gather the life stories and experiences of the participants in qualitative studies. As Coates (2015) pointed out, autobiographical narratives are a construction and interpretation of one's life and experiences. Since the present study aimed to track the motivational changes of the participants, autobiographical narratives accounted for the main data source. The participants in the present study were required to narrate (whether orally or in writing) their experiences with the implementation of AR and CALL in their EFL classes, and they were asked to compare the present state of their EFL classes with that of their previous classic non-CALL mediated EFL classes. Through Riessman's models of producing narratives (2008), we tried to get a deeper understanding of the narratives gathered from the participants. According to this model, an abstract overall point of the story was addressed, and the situations that the participants went through were specified. Subsequently, the emotional aspects of their experiences were taken into account and evaluated. Finally, the results were stated, and comments were added if necessary. Riessman's model emphasizes the importance of context and interpretations in understanding the participants' narratives. Hence, it would facilitate a deeper understanding of the narratives. In total, 112 narratives were collected across three categories: (a) AR workshop narratives (N = 24), (b) session-by-session implementation narratives documenting the participants' classroom application of what they learned in the workshops (N = 80), and (c) final reflective narratives (N = 8), which captured participants' overall perspectives on the entire process. During each AR workshop session, the participants produced narratives describing their workshop experiences, resulting in 24 workshop narratives. They also applied what they had learned across ten classroom sessions, producing 80 implementation narratives, and concluded the process with a final narrative summarizing their learning journey, handing out eight narratives.

Semi-Structured Interviews

In the present study, a set of 10 pre-determined questions was regarded as the starting point of the focused conversational interview with the participants, and if necessary. Eight interviews were conducted both in-person and online using Skype. The minimum number of words for the interviews was approximately 1000 words, and the maximum number of words was approximately 3000 words. Each interview took between 10 and 30 minutes. Some of the interviews were conducted in Persian, and then they were translated into English. To decrease translation-related issues, all Persian interviews were transcribed verbatim in Persian, then translated into English by a professional translator fluent in both Persian and English. The first author, who was a Persian speaker with advanced English proficiency, then reviewed each English translation against the original Persian transcript to check for accuracy, clarify ambiguous phrases, and ensure that the original meaning and cultural context were preserved.

Data Analysis

The present study sought to find the extent of the relationship between the four stages of AR and BPNs for motivation to see the role of AR in developing EFL teachers' motivation to use CALL. Thematic analysis (Braun & Clarke, 2006, 2021) was conducted in order to find the relationship between those two concepts. We followed a deductive orientation to do the thematic analysis since we had predetermined codes. Narratives and interviews gathered from participants were entered into MAXQDA 24 for coding, and the software illustrated the relationship between AR stages and BPNs. Since we analyzed the narratives deductively in the present study, the predetermined codes

including stages of AR and the components of SDT were used to locate the interesting points in the participants' narratives and interviews.

Rigor of the Study

As with any qualitative research, the credibility, transferability, and dependability of the present research were taken into account as critical aspects of qualitative studies (Ary et al., 2014). The credibility of the present study was addressed through precision in picking only the participants who had motivational conflicts in using CALL in their EFL classes. As with the transferability, the participants were chosen from both genders, with different teaching experiences ranging from one to 11 years. Finally, the dependability of the present study was addressed through inter-coder agreement, and we expected to reach around 80% agreement. To do so, we asked another coder to go through the design and data analysis procedure using MAXQDA 24. Moreover, we discussed the purpose of the study and explained SDT and AR to the second coder.

4. FINDINGS

Checking the Existence of Pre-Defined Codes in the Data

Utilizing the Code Matrix Browser (CMB) in MAXQDA 24, both the AR and SDT codes were examined to determine their presence within the collected data. It is worth mentioning that when the participants used the synonymous terms for the codes we defined, we included them. The results presented in Figure 4.

Code System	final narratives	interviews	class narratives
▼ Action research			
reflect	■	■	■
observe	■	■	■
act	■	■	■
plan	■	■	■
▼ SDT			
autonomy-competence-relatedness	■	■	■
competence-relatedness	■	■	■
autonomy-relatedness	■	■	■
autonomy-competence	■	■	■
relatedness	■	■	■
competence	■	■	■
autonomy	■	■	■

Figure 4: Code matrix browser for the existence of the codes for AR and SDT

Nonetheless, as shown in Figure 4, the majority of the codes related to the parental code of AR were found in almost all of the data sources. Moreover, according to Figure 4, the sub-code of autonomy-relatedness-competence, related to the parental code of SDT, had the most occurrences

in class narratives. The other codes of SDT taken into account separately (autonomy, relatedness, competence) had the most occurrences in the interviews.

Checking the Proximity of the Codes within the Zones: How AR and SDT Codes Happen Together

We used the Code Map system to address the deductive-inductive thematic analysis proposed by Braun and Clarke (2006, 2021). In the Code Map, selected codes (in the current research, AR and SDT sub-codes) are displayed on a map. The closeness of the codes on the map suggests higher co-occurrence among them. The results of the Code Map generated by MAXQDA 24 helped us to see how codes occurred together. The Code Map helped us get a comprehensive understanding of the role of AR in motivating EFL teachers to use CALL and helped us induce the themes. Codes that have happened together in a zone show the strength of their relationship with each other. Also, codes that are closer to each other imply that they have a stronger relationship and are more related. According to the Code Map shown in Figure 5, we realized that the codes related to AR and SDT can be located in three zones. After that, we investigated the zones thoroughly and created three themes, as shown in Figure 5.

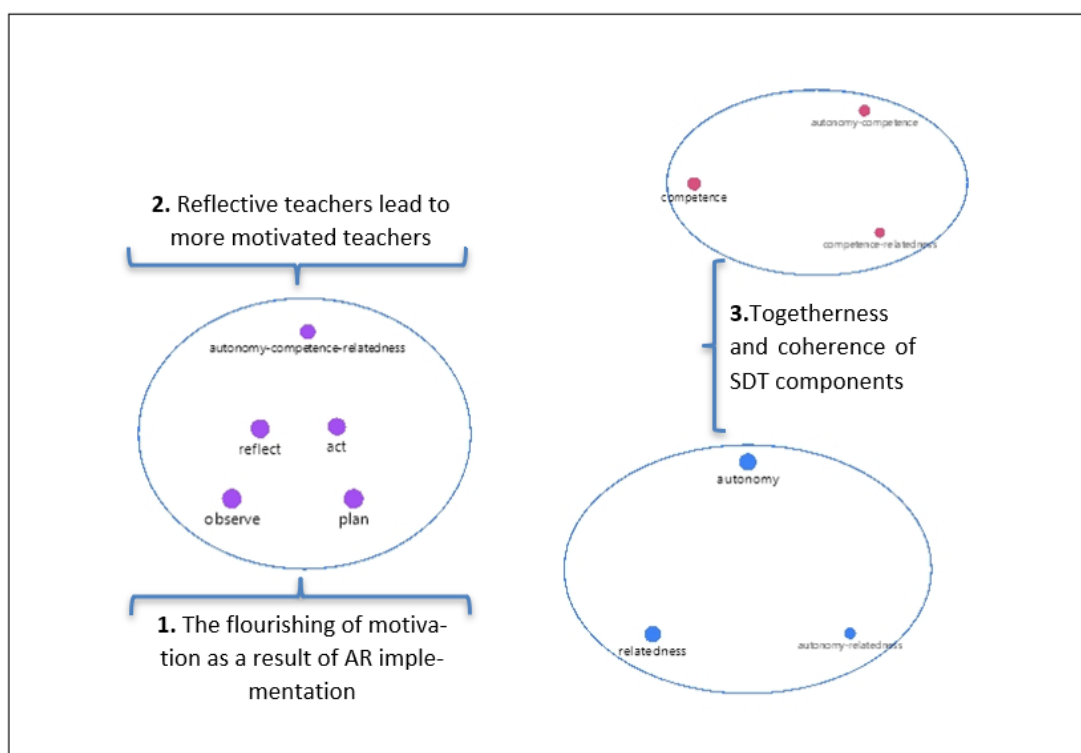


Figure 5: Code Map: Extracting the Themes

According to Figure 5, codes related to the parental codes of AR and SDT are clustered in three zones. Therefore, these zones make it possible to extract themes. We found three themes: a) The flourishing of motivation as a result of AR implementation, b) Reflective teachers lead to more motivated teachers, and c) Togetherness and coherence of SDT components. The co-occurrence and closeness of the sub-codes related to the parental code of AR with the sub-code of autonomy-competence-relatedness in zone 1 help us reach the theme: the flourishing of motivation as a result

of AR implementation. As an example, in one of the narratives gathered from the participants and the interviews that were conducted after the AR workshops and implementation of AR in their EFL classes, it was evident that the implementation of AR had led to a strong feeling of autonomy, relatedness, and competence in our participant (Teacher MO), as he had successfully located and solved his problem.

- **Extract 1**

At first, I was reluctant to participate since I had had some unsuccessful experiments with technology in my classes, but in the end, I left with a completely different way of thinking. The fact that we can find our problems and plan solutions enables teachers not to run away from problems, but to look for solutions to solve them. Especially if the solution they choose is based on the integration of multimedia with their classroom, they will most probably get better results if implemented correctly ...

As for the second theme of zone 1 in Figure 5, i.e., reflective teachers lead to more motivated teachers, extract 2 can be a good example.

- **Extract 2**

I tried to make a change in the third session so that the students didn't get bored. What I did was that instead of them finding a movie, this time I already found a movie for each word and played it, and asked the students to continue the movie and find four new words from it and make sentences with them... Questions and reviews of previous lessons showed that this new method was very effective in memorizing words... The effectiveness of doing this completely online had the same effect... even more.

Figure 5 illustrates that zones 2 and 3 encompass sub-codes associated with the parental code of SDT, which includes BPNs and their interrelations. The predominant theme derived from the co-occurrence of these two zones highlights the unity and coherence of the components of SDT. This theme is clearly reflected in the class narratives and the final narratives collected from the participants, as shown in Extract 3.

- **Extract 3**

practically no more complaints are made from his side that he does not see his progress, and in addition, our relationship in the class has become a close relationship because we are more in touch on Telegram. I have decided to apply the same procedure to my other private students and solve the problems of my other classes... This has made him realize that we have improved compared to the beginning of the course we had, and after directly stating how satisfied he is, I noticed that he had gained more confidence in me.

To answer the research question “how does action research develop EFL teachers' motivation to use CALL in their classes?”, the findings demonstrated that action research plays a multifaceted and transformative role in developing EFL teachers' motivation to use CALL. First, the theme of the flourishing of motivation as a result of AR implementation shows that the cyclical process of planning, acting, observing, and reflecting directly ignites and sustains teachers' motivation, proving that AR is not merely a task to complete, but an influential source of motivational energy to use CALL. Second, the theme of *AR may help teachers become reflective teachers who are more motivated* reveals that this motivation is not incidental; rather, it is the reflective stance cultivated by AR that deepens teachers' awareness of their own practices and challenges, which in turn builds their confidence and willingness to persist with CALL integration in their EFL classes. Finally, the theme of *togetherness and coherence of SDT components* ties these elements together by showing that AR does not address autonomy, competence, and relatedness in isolation, but instead connects them into a unified and reinforcing structure, creating

the optimal psychological conditions for motivation to thrive. Taken together, these themes position AR as a powerful developmental tool that does not simply encourage the use of CALL, but fundamentally reshapes teachers' motivational dispositions from the inside out.

5. DISCUSSION

This study aimed to explore how AR might develop EFL teachers' motivation to use CALL in their classes. Based on the findings of the three main themes, we can answer the research question accordingly. The first theme, *the flourishing of motivation as a result of AR implementation* demonstrated that undergoing the process of AR (planning, acting, observing, and reflecting) had a constructive role on motivating EFL teachers to use CALL in their classes, which can be a form of professionalism for them, what has been declared in the previous studies (Cárdenas, 2025; Hanks, 2025; Kondo, 2020; Nugent, 2020; Sato & Chen, 2021). The second theme, *AR may help teachers become reflective teachers who are more motivated*, showed us that the underlying point of AR pushing EFL teachers to become more motivated to use CALL in their classes was the potential of AR in developing reflectivity among teachers. This personal ability (Burns & Dikilitaş, 2025) we mean by teacher reflection roots in AR and thus, develops EFL teachers' motivation to use CALL. Finally, the third theme, *togetherness and coherence of SDT components*, was perhaps the most telling because it showed that AR did not address autonomy, competence, and relatedness separately, but wove them into one integrated experience, giving EFL teachers the clarity to follow a structured framework for navigating classroom challenges (Atay, 2006), which in its own place develop their motivation to use CALL since it helps them to reduce the challenges. This theme suggests that AR can join all three BPNs, which are the requirements of steady and self-sustaining motivation to do something in EFL classes, in the case of the current study using CALL.

The Flourishing of Motivation as a Result of AR Implementation

The flourishing of motivation as a result of AR implementation, which is the first theme of the study, implies that the implementation of AR brings about motivated EFL teachers to use CALL in their classes. As the planning stage of AR needs a great deal of autonomy (Burns, 2019) in order to locate the problem and propose a CALL-based solution for it, it can be concluded that the amount of autonomy required will raise the motivation of teachers (Dörnyei & Ushioda, 2009). Acting as the second stage of AR required the EFL teachers to experiment with the proposed CALL-based solution, and the fact that they had to implement it all by themselves helped them promote a sense of autonomy as well as competence since they felt confident as they were acting on their own devised plan. Teachers' decisions (planning) and the possibility of making changes (planning and acting) in their teaching are the biggest aids for teachers in gaining autonomy (Burnaford & Hobson, 2001).

As for the third and fourth stages of action research i.e., observe and reflect, which encompass each other in different ways and are identical in a sense, the participants, that is, the EFL teachers, were autonomously gathering data on the effectiveness of their technology-based plan, regarding the progress and the satisfaction of their students, and they were trying to modify the procedure if needed. According to the data gathered, nearly all the participants felt confident about their decisions for their classes since, as they were observing, they were recording positive changes in their classes, and this made them feel competent in autonomous decision-making. As Han and Yin (2016) mentioned, autonomous users of CALL, i.e., the EFL teachers in the current study, will eventually bring about competent teachers regarding the use of CALL in their classes. Research done by Pinner (2012) showed that teachers consider CALL as a useful tool that can

easily fit into their lesson plans since it enables them to provide accessible and authentic materials for their classes. Moreover, according to [Villalobos \(2015\)](#), the use of AR to find a resolution for their students' problems will highly promote the autonomy and relatedness of teachers as they see the progress of their students; consequently, our participants, as users of CALL in their EFL classes, felt competent, considering that the solution to their problems and the modifications they were bringing about in their classes were CALL-based.

Reflective Teachers Lead to More Motivated Teachers

The second theme of the current research pointed out that reflective teachers lead to more motivated teachers. According to [Hanks \(2017\)](#), this stage orbits around the other three stages of AR and encompasses all of them. The participants in the current study showed that a significant amount of their autonomy, relatedness, and competence promotion was because they were automatically gathering data on the progress of their students (autonomy, relatedness), and the obtained results after reflecting on the CALL-based solution made them feel competent and sure to use the same procedure for their other EFL classes with the same or different problems. According to [Ryan and Deci \(2020\)](#), the intrinsic motivation of individuals is developed when they end up achieving the desired results. Moreover, according to [Banegas and Villacañas de Castro \(2019\)](#), individuals' (i.e., the participants of the current study) involvement in the curriculum transformation and future course changes needs a great deal of autonomy, thereby resulting in a rise in their motivation.

Firstly, by making adjustments and changes in the reflection stage of AR, teachers strived to find the fallacious part of their lesson plan and modified it for future improvements, which added to their feeling of autonomy and competence. According to [Ryan and Deci \(2017\)](#), any rise in any of the components of BPNs will result in motivation. Secondly, as they recorded positive changes, they felt confident in their decisions, and they autonomously sought to make more changes in order to vary the activities related to CALL and create more interaction among themselves and students. As [Ryan and Deci \(2019\)](#) mentioned, interaction among individuals is one of the two main factors that promote autonomy and relatedness. [Meihami and Hussein \(2022\)](#) mentioned that cooperation and interaction in classes will lead to more competence development in classes. Moreover, [Vansteenkiste and Ryan \(2013\)](#) pointed out that both competence and relatedness are two inseparable components that play a key role in developing one's psychological well-being. All in all, as the participants showed a great deal of autonomy, relatedness, and competence in the reflection stage of AR, it can be inferred that reflective teachers lead to more motivated teachers.

Togetherness and Coherence of SDT Components

What was induced in the earlier themes showed that the implementation of AR leads to teachers' motivation to use CALL. To raise one's motivation, i.e., the EFL teachers in the current study, all three psychological needs including autonomy, relatedness, and competence should be raised ([Vansteenkiste et al., 2020](#)). Based on the results of the study, especially the Code Map in [Figure 5](#), the interesting point was that the three components of SDT were co-occurred together through AR process. To relate it more to the research question, which was how AR could develop the motivation of EFL teachers to use CALL, it can be said that AR makes BPNs a package that can develop teachers' motivation to use CALL. When EFL teachers made choices about how to use CALL in their classes on their own, they felt more invested in their students' success, and that investment made them want to keep using CALL even when things got tricky. Also, the participants in the current study showed a significant amount of autonomy and competence, considering that they regarded themselves as autonomous decision-makers with effective solutions

for their problems. According to [Meihami and Hussein \(2022\)](#), the combination of autonomy-competence suggests that the accomplishment of an activity autonomously leads to one's competence development. Consequently, it can be another answer to the research question in that when EFL teachers can choose the required CALL materials on their own (autonomy) and can deal with the challenges related to using CALL in their classes (competence) based on AR, then they will become motivated to use CALL in their classes.

6. CONCLUSION AND IMPLICATIONS

Based on the induced themes of the present study, the implementation of AR and its different stages could help EFL teachers gain autonomy and relatedness in locating the problems related to their students. Then, the autonomy, relatedness, and competence of participants were developed in the acting and observation stages since they strived to solve the problem by putting the plan into action and gathering data on its effectiveness in the observation stage. The analysis of the data gathered suggested that all the BPNs of the participants were fostered by the time they had reached the reflection stage of AR, thereby leading to the development of their motivation ([Ryan & Deci, 2017](#)). It was also concluded that almost all the participants felt satisfied with the result that they had obtained while reflecting on the whole process, and they suggested that they felt autonomous, related, and competent enough to face the challenges in their other EFL classes. Furthermore, it was found that all stages of action research inevitably worked together in order to locate the problem, propose a solution for it, put it into action, and reflect on the results ([Burns, 2019](#)).

The findings of the present study have implications for both pre-service and in-service EFL teachers. Regarding the usefulness of AR in diagnosing and solving in-class problems and the authenticity that CALL provides for both EFL teachers and learners, teacher training courses can introduce AR as a problem-solving tool, and help novice and pre-service EFL teachers to make use of AR and integrate CALL with their solutions regarding the problems that they may face in their classes. The same can be applied to experienced EFL teachers who are still using traditional no-technology classes. Policy makers and teacher trainers can hold workshops for in-service EFL teachers to make them aware of the merits that the integration of CALL and AR as a problem-solving tool can have for their EFL classes, so that AR and CALL can help them enhance the present quality of teaching and learning in their EFL classes. Moreover, the tight coherence we observed among the SDT components suggests that teacher education programs need to address these three psychological needs conjointly rather than in isolation. Curriculum developers, for their part, should recognize AR not as an optional add-on but as a core developmental approach for fostering EFL teachers' motivation. This means that AR cycles need to be embedded systematically into every EFL teacher education program, giving teachers ongoing opportunities to plan, act, observe, and reflect. Through this cyclical process, teachers can experience sustained motivational growth that extends across multiple domains of their practice, including, and perhaps most importantly, their willingness and confidence to integrate CALL into their daily teaching.

No research can be conducted without any limitations, and the current research was no exception. One limitation of the present study was the time constraints. Due to the bus schedule of the participants, we had to hold the AR workshops intensively in four online classes, each lasting for two hours on Skype. Another limitation was that it was not practical for us to specify the CALL applications and EFL teachers' motivation profiles. It means that it would be better if we could explore how AR could have a role in using different CALL applications by the teachers. One more limitation was that we could not observe the EFL teachers' classes when we were recruiting the participants, and based on their reports, we drew the conclusion that they had conflicts with using CALL.

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