

Applying Galperin model to teacher professional development: A qualitative case study of a peer coaching program

Jaber Kamali¹  | Pourya Javahery² 

¹School of Languages, Ibn Haldun University, Istanbul, Turkey

²Faculty of Foreign Languages, Islamic Azad University Central Tehran Branch, Tehran, Iran

Correspondence

Jaber Kamali, School of Languages, Ibn Haldun University, Istanbul, Turkey
Ordu cad. F-05 Blok No 3, Başakşehir 34480, Turkey.
Email: Jaber.kamali@ihu.edu.tr

Abstract

The present study is an attempt to apply Galperin spiral model to implement and analyze a peer coaching program. To do so, six teachers (three coaches and three protégés), who attended a 3-month peer coaching program in which protégés received help from their more experienced peers (coaches), completed narrative frames about the program and participated in individual semistructured interviews. After the transcription of the interviews, the thematic analysis was conducted on the gathered data. The results of the study revealed that although there are evidential obstacles to doing the program including inter alia, cultural schema, teacher financial well-being and discontinuity of it, the employed model could provide additional aid and critical look for implementing peer coaching programs in educational contexts. Teachers and teacher educators can benefit from the findings by applying the proposed model in peer coaching programs.

INTRODUCTION

Teacher learning and professional development (PD) aim to expedite the development of teachers' grasp of teaching and of their own selves. Richards and Farrell (2005) consider PD a tool to examine several aspects of teachers' practice that involves different strategies and according to Darling-Hammond et al. (2017), PD is vital in helping teachers learn and refine knowledge. However, the traditional models of teacher PD (top-down models of PD) usually

take place in isolation and merely rely on the expert who comes from the outside (Burbank & Kauchak, 2003). These models of PD may not be as effective as alternative PD programs because they are not collaborative, inquiry-based and self-directed enough (Johnson, 2006) and they impose a passive role upon teachers. Consequently, in recent years, alternative models of teacher PD have been used to improve the active role of teachers in their own PD. Research has been conducted to study the effectiveness of alternative teacher PD models (e.g., Byrne et al., 2010; Erklenz-Watts et al., 2006). Among these alternative models for teachers, peer coaching has been considered a modern model of PD which helps teachers collaborate and benefit from the knowledge and experience of one another (Ladyshevsky, 2006). Moreover, studies showed that in comparison to traditional models of PD, peer coaching is more effective in engaging teachers in learning (Joyce & Calhoun, 2010; Soodmand Afshar & Doosti, 2022). Peer coaching also encourages collaboration among teachers and helps them examine all aspects of the complex contexts of classrooms (Hsieh et al., 2021). In addition to that, working in teams can offer many benefits for teachers, such as discussing problems and sharing knowledge, exchanging materials, addressing student needs and creating a shared professional culture (Garet et al., 2001). Peer coaching is an appropriate tool for teacher development considering that distributed leadership within a team, such as the strengthening of peer coaches contributes to enhanced development as well as independence in the teams (Gast et al., 2017). In the same vein, Gast et al. (2017) posited that participating in a team-based PD mediation affects how team members perceive themselves as teachers. Being part of a community of practice may affect both what the teachers do and what kind of teacher they are which assists them in gaining greater confidence and becoming more creative (Gast et al., 2017). Therefore, peer coaching can be an effective way for teachers to learn from and support each other in their PD.

To contribute to this developing body of knowledge, the present study examines peer coaching as a model of PD through Galperin's model of psychological theory (Arievitch & Haenen, 2005; Galperin, 1968). This study helps teacher educators, educational supervisors and managers gain deeper insight into the constructive benefits of peer coaching as a model of teachers' PD. It also examines the applicability of Galperin's model of psychological theory to peer coaching. Additionally, it helps gain a better understanding of the benefits of peer coaching for the language teachers' PD.

LITERATURE REVIEW

Galperin's contribution to psychology and pedagogy

Piotr Galperin (1902–1988) is known as an educational psychologist who modified the sociohistorical approach of Vygotsky and turned it into a technology of instructions (Arievitch & Van Der Veer, 1995) which led to the clarification of the formation of learners' mental actions' stages. However, Galperin's influence on psychology and education is much wider. His research on attention and linguistic awareness provides the researchers with an approach that addresses the typical challenges of the relationship between mind and brain (Podolsky, 2017). Additionally, Galperin's study of *obuchenie* which is defined in English as the relationship between learning and teaching, offers a framework that can help us associate present problems of acquirement of knowledge with a necessity to find the way for learning (Lund et al., 2014). Engeness and Lund (2020) argue that Galperin's contribution plays an important role in the

perception of learning and teaching aimed at learner development. They also mention that by conceptualizing pedagogy as an orienting activity, his approach presents noteworthy implications for the modern era's pedagogical practice. Moreover, Galperin's legacy may be able to address some of the current or future-based issues in educational research (Lund & Engeness, 2020).

Peer coaching

Peer coaching is a way of learning and developing where colleagues collaborate to examine their ongoing practices; develop, and apply innovative skills; exchange ideas; learn from one another; carry on classroom research; or address problems in the workplace. A teacher and a colleague work together to plan a series of activities to investigate their teaching in a collaborative way. One takes the role of coach or 'critical friend' as they examine some aspect of teaching or of classroom life. The coach gives feedback and suggestions to the other teacher during and after the process (Richards & Farrell, 2005).

Peer coaching is a multifaceted procedure that can be examined through various theoretical perspectives. Lofthouse and Leat (2013) and Parker et al. (2015) both stress the significance of the interpersonal dimension of peer coaching. Lofthouse particularly points out the potential conflict between coaching objectives and academic performance targets, while Parker integrates the coordinated management of meaning theory to enrich peer coaching relationships. Similarly, Gingiss (1993) and Parker et al. (2008) emphasize the role of peer coaching in professional growth. Gingiss presents a framework that combines social learning theory and diffusion theory to direct the application of peer coaching in health education, whereas Parker outlines a three-step approach for efficient peer coaching. These viewpoints collectively underscore the necessity for a comprehensive comprehension of peer coaching that encompasses its relational, contextual and developmental elements. Social learning theory, pioneered by Bandura (1977), stands as a common theoretical framework applied to peer coaching which asserts that individuals learn by observing and emulating the actions, attitudes and emotions of others. Within peer coaching, social learning theory proposes that individuals can develop new coaching abilities and insights through the observation of peers, feedback reception and participation in collaborative problem-solving tasks. Environments fostering peer coaching, emphasizing observation, reflection and feedback, closely resonate with social learning theory's principles, facilitating the exchange of knowledge and skills through social engagement and shared encounters.

There has been a surge of interest among researchers in probing the peer coaching efficiency in both preservice and in-service teacher education and PD contexts (Ladyshewsky, 2006; Vacilotto & Cummings, 2007). For example, Ackerman et al. (2023) used peer coaching in a co-taught classroom to evaluate the effect of peer coaching on the teachers' use of high-leverage practice to provide feedback to students. In another study by Johnson et al. (2017), peer coaching programs' efficiency in enhancing classroom quality has been studied. The findings revealed that peer coaching made student–teacher interactions stronger than before. Collectively, the above body of knowledge highlights that peer coaching programs appear to own unique advantages for helping teachers improve their teaching knowledge and skills.

The present study draws on Galperin's spiral model of psychological theory (Arievitch & Haenen, 2005) to explore the effectiveness and applicability of peer coaching in Iranian

language schools. Galperin's teaching strategy assumes that to learn any kind of knowledge, one needs the mastery of diverse types of actions (Galperin, 1968). Thus, to gain mastery of knowledge, learners first need to orient in the learning task. This means that they need to get familiar with the goal of action or in other words, they need to receive an 'advance organizer' (Arievitch & Haenen, 2005). The main content of this phase is to provide comprehensive information about the practice and the execution of an action. Therefore, the objective(s) of the action needs to be explained completely to create an 'advance organizer' (Arievitch & Haenen, 2005) as a type of cognitive connection, that teachers exploit to assist learners with creating a link between what they already know and what is to be learned (Novak, 1980). They are necessary because they create the primary motivation for learning, which is an essential element of long-term learning goals (Shihusa & Keraro, 2009). Receiving advance organizers and familiarization with the goals of the action creates the primary motivation for the learners. The second level of spiral formation of the mental process cycle is 'acting on the material' (Arievitch & Haenen, 2005) in which learners interact with material or materialized objects (models, schemes, simulations, etc.) to learn the action satisfactorily with material support. At this level, learners' actions are only established on operative and figurative thinking.

Learners need to work with material objects that reflect the essential properties of the action which is mostly done by tangible hands-on manipulation with the help of actual entities or their material manifestations. When the learners learn the action with the help of material, they then move it forward to the level of social speech. At this level 'the action is no longer dependent on material objects; these are replaced by words and reflected in speech in a generalized form' (Arievitch & Haenen, 2005, p. 161). Thus, learners act at the verbal level. The major purpose of a materialized action can be accomplished provided that its content is fully revealed. In other words, to unveil the principal purpose of an action, we need to work on the mental form of it. For this, it is first necessary for the action to be converted into the verbal speech form which is a reflection of a materialized action. Moreover, using verbalization, materialized action will be promoted to the level of overt or social speech (Arievitch & Haenen, 2005). In this manner, learners will be able to talk about the action and turn the material action into the verbal form.

Then, the action is converted into a mental phenomenon and it becomes 'pure thought' (Galperin, 1968). The major aim of this stage is to transform an activity into a pure mental act that focuses on the outcome. The mental level does not include any dialogue with other people whereas it is an absolutely individual activity that is accomplished through the use of mental images. Based on previous experience, learners will be able to handle similar and different situations by getting help from their pure mental activity. Moreover, as a result of the transformation of an action into a mental phenomenon, learners can be expected to anticipate the effect of their actions and change the actions to adapt them to the different features of the situation (Engeness et al., 2021).

Finally, learners come to a better grasp of actions at the end of each cycle. Consequently, from this perspective, it is beneficial to analyze the effectiveness of peer coaching programs, whose main aim is to facilitate the process of knowledge and skill development, through the lens of Galperin's spiral formation of mental actions on the ground that the participants become more knowledgeable about the actions and can perform the actions more fluently.

Over the past decades, research adopted Galperin's model in educational studies (e.g., Arievitch, 2020; Arievitch & Haenen, 2005; Engeness, 2020). Despite this research development, there is no study in the literature, to the best of our knowledge, that has employed Galperin's model to explore the effectiveness of peer coaching in educational contexts despite the fact that

peer-coaching can benefit from Galperin's model of education because of several reasons. First, it aids educators in structuring learning activities around defined goals and objectives. Second, protégés can benefit from feedback, questions, examples and models as verbal and visual cues to support and guide each other's learning and performance. Third, this model encourages practicing skills across several contexts, reflecting on outcomes and internalizing knowledge to apply them to new, complicated tasks and challenges.

Therefore, this study analyzes peer coaching programs through Galperin's spiral formation of mental actions by addressing the following question:

How does the Galperin model contribute to Iranian teachers' peer coaching programs?

METHOD

Context and participants

This study was conducted in Iran where the teachers' PD is mostly based on a top-down model in which the language schools usually invite a teacher trainer from the outside to hold workshops or seminars for the teachers (Safari & Rashida, 2015). According to Johnson (2006), a drawback of the top-down PD model is that new ideas are imposed on teachers and little attention is paid to integrating the ideas into classroom practices. Therefore, the educational supervisor of the language school (the second researcher), in which the current study has been conducted, decided to replace the top-down boundaries of the teachers' PD with a collaborative and self-directed program that comes from the inside of the language school. Thereby, he decided to run a peer-coaching program in which the less experienced or the novice teachers (protégés) will be able to benefit from the knowledge and experience of the senior teachers (coaches) to improve their teaching skills. The coaches were selected based on their teaching experience, which was more than 3 years, in various contexts and levels, their international teaching certifications such as CELTA or TESOL, and their excellent performance during lesson observations, which demonstrated their skills and professionalism.

The English school in which the study was conducted had about 30 teachers. It recruited both novice and in-service teachers. Teachers were consulted to seek their approval for participating in this study. The primary peer coaching program was structured around a team of five dedicated coaches, each coaching six teachers, referred to as protégés. Within this framework, coaches assumed multifaceted responsibilities, including providing constructive feedback on lesson plans, conducting thorough observations of teaching sessions, and facilitating postobservation conferences. Six teachers (three coaches and three protégés) agreed to participate in the study out of which three were female and three were male with teaching experience ranging from 5 months to 4 years (Table 1). The researchers collected a large enough sample to achieve data saturation, meaning that they could construct a model based on the data obtained from the participants (Saunders et al., 2018). Data saturation was obtained when further data collection did not reveal any fresh insights or themes (Guest et al., 2006). Through analysis of the data, we consistently encountered repeating information and recurring codes and patterns across interviews such as the idea that 'the meeting showed the peer-coaching path' or 'sharing lesson plans encouraged collaborative analysis of teachers' performance', to name a few. Thus, additional data collection failed to uncover any novel findings relevant to our research questions, affirming our saturation point. Consequently, we believe that the data we have gathered offer a comprehensive understanding of the phenomenon at hand, that is, Galperin-informed peer coaching, rendering further data collection unnecessary.

TABLE 1 Teachers' demographic information.

Teacher	Gender and age	Education	Teaching experience	Role in the peer-coaching program	Int. Certification and qualification
1	Male 27	BA TEFL	4 years	Coach	Cambridge CELTA
2	Male 23	Ba TEFL	3 years	Coach	Cambridge CELTA
3	Male 25	BA Student TEFL	Less than a 1 year (5 months)	Protégé	—
4	Female 23	BA student in French Literature	2 years	Protégé	—
5	Female 23	BA student in French Literature	1 year	Protégé	—
6	Female 24	BA in TEFL	3 years	Coach	TESOL Australia

To adhere to ethical guidelines, all six participants consented to participate in this study, and to ensure confidentiality, the participants were assured about the anonymity of the narrative inquiry forms as well as the semistructured interviews. In addition to the participants, the language school's principal was informed of the study's objectives and granted permission for the research to be conducted.

Data collection

To study the effect of the peer-coaching program on the teachers' PD, a qualitative case study design has been adopted because 'The case study approach allows in-depth, multifaceted explorations of complex issues in their real-life settings' (Crowe et al., 2011, p. 1). In this manner, this study was conducted based on a thematic analysis in which the participants were asked to discuss their recent experience in the peer-coaching program through narrative frames and in semistructured interviews. Seven open-ended questions informed by the narrative frames and the theoretical framework of the study, that is Galperin's model of learning, (Appendix A) were asked in individual online semistructured interviews. The following exemplify the questions posed during the interview sessions:

1. What did you expect to learn from this program?
2. How did this program help to create intimacy between you and other colleagues?
3. How did this program make you help each other to improve and develop your teaching skills?

The participating teachers were selected—in line with purposeful sampling which is appropriate for qualitative studies in which we need rich data (Creswell, 2019)—based on their teaching expertise—less expert as protégés and more expert as coaches. We opted to conduct the data collection 1 week

after the completion of the peer coaching program, as we believed that this timing would allow us to gather data while the experiences and insights from the program were still fresh in the participants' minds. By waiting for this brief interval, we aimed to capture the immediate impact and reflections on the peer coaching experience, thereby ensuring that our data would be rich and reflective of the participants' recent experiences. Additionally, conducting the data collection shortly after the program's end helped to minimize the potential for recall bias (Coughlin, 1990) and ensure the accuracy and depth of the information obtained during the interviews. Overall, this decision was made to maximize the validity and relevance of our findings to the peer coaching program's outcomes and participants' perceptions. Each interview session lasted for about 30–45 min.

Data analysis

The data were collected and analyzed according to the guidelines of qualitative thematic analysis (Braun & Clarke, 2006). The data gathered from the interviews were transcribed and translated into English. The data (transcribed interviews and narrative frames) were analyzed based on manual deductive thematic analysis in which the codes were generated based on exploring the components of Galperin's spiral formation of the mental process cycle (Arievitch & Haenen, 2005). It is noteworthy that the data was partially analyzed inductively since the codes which were not related to any level of Galperin model were not deleted but were collated for future analysis (see the part on *cultural schema* in the discussion section). Based on the theoretical stance and in line with stages of thematic analysis (Braun & Clarke, 2006), the data were coded in terms of emerging themes by both researchers to ensure the trustworthiness of the results (Lincoln & Guba, 1985). For example, when a code from the interview data was related to sharing the lesson plans, it was colored yellow and coded as 'material level'. Or, when a participant wrote about the postobservation feedback in the narrative inquiry form, it was colored pink and coded as 'verbal level'. After this stage, the codes were collated into potential themes, with a specific Microsoft Word file for each theme. Then, a meeting was held with both researchers to name and define the codes and merge them into subthemes and themes according to Galperin's spiral formation of the mental process cycle (Figure 1). To ensure inter-rater reliability, consensus building, which refers to the evaluation of the consistency or agreement among coders who independently analyze the same set of data (as described above), was employed 'to provide an important check on selective perception and blind interpretive bias' (Cole, 2023, p. 2). To increase the trustworthiness of the findings, interviewee transcript review (ITR) (Rowlands, 2021) was employed which is a procedure by which the analyzed data are discussed and agreed upon by the participants.

FINDINGS

In this section, the major themes that emerged from the interviews and the narrative inquiries with an eye on the Galperin model will be discussed.

Orienting in the learning task

According to Galperin (1968), orientation plays a significant role in learning since it provides necessary information about the activity in which learners are involved and how they are involved in the learning activity.

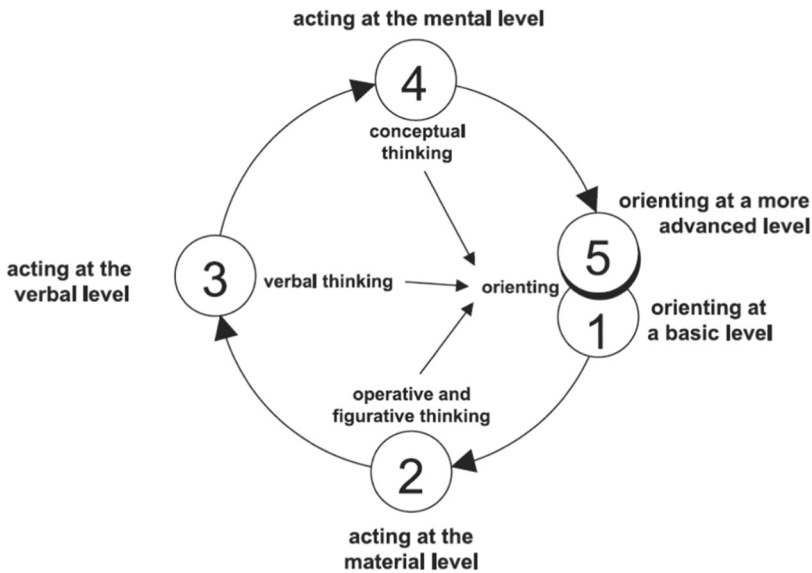


FIGURE 1 The spiral formation of mental actions. From Arievidt and Haenen (2005, p. 160).

In our peer-coaching program, the supervisor of the school (the second researcher) held a 90-min meeting with the teachers to provide them with complete information about the execution of the peer-coaching program and to explain to them the proven benefits of it. This meeting was held to help teachers create an advance organizer in their minds about the upcoming peer-coaching program. Then he presented the coaches and their team members (protégés). Helping their team members improve their classroom management techniques was one of the main objectives of the coaches. They did this by observing their team members and giving them feedback and comments after the observation. Another challenge that most of the novice teachers (protégés) of the language school faced was teaching writing skills to young learners and teenagers. The coaches also helped them with this by assisting them in preparing writing lesson plans, observing them while they implemented the plans, and providing them with constructive feedback afterward. Finally, the expectations from coaches and their team members were fully explained:

1. Coaches were supposed to create a group on the Telegram application and add their team members to it (orienting in the learning task).
2. Coaches were expected to build up a positive rapport and create a friendly atmosphere among the team members (orienting in the learning task).
3. Protégés were expected to share their lesson plans with their coaches on the Telegram groups and the coaches were expected to leave beneficial comments on the plans (acting at the material level/level 2).
4. Coaches were expected to observe their team members' lessons and provide them with constructive feedback afterward (acting at the verbal level/level 3).
5. Protégés were expected to observe their coach's lessons as much as possible and talk about the lessons with their coach in a postobservation conference (acting at the verbal level/level 3).

The principles of the program as well as the expectations were explained and presented completely from the very beginning to help the protégés and coaches understand and accept the motivational value of the program before the actual appropriation to perform it. At the end of the meeting, a Q&A section was held for the coaches and protégés to ask their questions to remove any confusion that arose within the session.

The sessions between the coaches and the protégés lasted for about half an hour to 40 min. The coaches started by establishing rapport with the protégés and then reviewed their lesson plans. The protégés then raised their concerns or challenges that they faced in teaching and the coaches assisted them by suggesting relevant resources or solutions. At the end, the coaches gave feedback on the session and highlighted the main takeaways (Table 2).

During the semistructured interviews, participants were asked about the effectiveness of the meeting. All six participants unanimously reported that the meeting was highly beneficial and effective in clarifying objectives and fostering a fresh perspective on peer coaching. T1 said that she understood the objectives and expectations very well. Moreover, this meeting helped her create a positive attitude toward peer coaching:

Researcher: Did you find the preprogram meeting useful? I mean, could it help you identify the expectations and the objectives of the peer-coaching program very well?

T1: Yes, I did. The meeting showed us the path of peer coaching very well. This meeting made me look at peer-coaching positively especially when you told us about the benefits of it.

In addition to T1, T2 also believed that the meeting was a success in creating the initial motivation and instructing the protégés and coaches to execute the program's actions.

Researcher: Did you find the preprogram meeting useful? I mean, could it help you recognize the expectations and the objectives of the peer-coaching program very well?

T2: Ummmm ... But when I heard about the amazing benefits of peer coaching, I couldn't wait to begin my role as a coach and help the newcomers achieve success. Also, my responsibilities were clear to me at the end of the meeting and I knew what I was supposed to do.

TABLE 2 Peer-coaching sessions' content and timing.

Procedures	Time (min)
Greetings and general Q&A	3–5
Reflecting on the lesson plans	8–10
Discussing teaching issues	8–10
Recommending books or articles to address the discussed issues	3–5
Follow-up and evaluation	3–5

Consequently, according to the data gathered from the interviews, the preprogram meeting was able to motivate the protégés and coaches, provide them with comprehensive information about the program, and help them realize their responsibilities. Thus, the first level of the spiral formation of mental process has been completed and protégés and coaches were expected to come to a better understanding of the peer-coaching program.

All three protégés also stated that the coaches were able to create a positive and friendly atmosphere in their teams. According to notes written by the participants in the narrative inquiry forms, T1, T3 and T4 stated that one of the advantages of this program was the creation of friendly relationships among colleagues:

T4: I believe the advantage of this program was building a good relationship and a friendly atmosphere between teachers and helping each other to improve our teaching skills together.

T1: Doing this as a 'peer' can build a great relationship between colleagues which may result in a great atmosphere in the language school.

T3: I strongly believe that this approach encourages teachers and makes the relationships between them friendlier.

In addition to the narrative inquiry notes, five of the participants stated in the semistructured interview that they became friendlier and more intimate after the peer-coaching program and this positive atmosphere motivated them toward moving through the next stages of the program. Therefore, the first phase of the peer-coaching program based on Galperin's model achieved its objective successfully.

All in all, the preprogram meeting proved highly beneficial, providing clarity on objectives and fostering a positive attitude towards peer coaching among participants. Interviews unanimously highlighted the meeting's success in motivating protégés and coaches, equipping them with comprehensive program information, and clarifying their responsibilities.

Acting at the material level

According to Vygotsky (1986), tools, either material or conceptual, are means of mediation that link individuals with society. He also mentions that the material tools used in an action are regulated outside and connect individuals with the surrounding environment.

Since lesson plans can be considered symbolic representations of a lesson or a class, teachers are able to interact with this material to learn the act of teaching before they perform it in real teaching contexts. Thus, in the peer-coaching program, sharing lesson plans with the coaches and the other members of the team gives the language teachers the chance to have collaborative interactions on the improvement of their teaching acts. At this stage, protégés were asked to prepare lesson plans with the help of their coaches. Being aware of their class contexts, they were expected to prepare lesson plans that suited their class context, anticipate potential problems, plan the timing of each activity, differentiate instruction for fast and slow learners, and design engaging writing tasks for young learners and teenagers.

According to the data gathered by the researchers, two of the coaches stated that the protégés were eager to share their lesson plans with their coaches and receive feedback. T4 also pointed it out by stating the creativity and practicality of the ideas she received.

Researcher: How did this program help you improve your teaching skills?

T4: I remember that I had problems teaching a part of Family and Friends course book because I found teaching this book very difficult. But when I sent my lesson plan to my coach, she corrected my teaching stages on my lesson plan ... she told me that I may confuse my students by doing this and I need to change the stages of teaching ... her feedback helped me teach better than before.

Researcher: I see. So, you mean that your coach's feedback helped you perform better in your lessons. Right?

T4: Yes, exactly. She gave me some creative ideas ... and ... and these ideas were so useful.

Interacting with the materialized object of teaching (lesson plan) helped the teachers develop their teaching performance and even revise their knowledge of teaching. In addition to T4, T3 also found the process of sharing lesson plans helpful in improving his teaching skills. He stated that since he was not able to be observed by his coach, due to the same class schedule, he only had the option of receiving feedback on his lesson plans. However, he mentioned that he could solve some of his teaching problems with the help of his coach.

Researcher: How did this program help you improve your teaching skills?

T3: You know, at first, I got a bit disappointed when I realized that I couldn't be observed by my coach. But she suggested that we can still learn from one another by talking about my lesson plans. I wrote my problems in the 'anticipated problems for teacher' box on my lesson plan and I asked my coach to suggest me some solutions. As an experienced teacher, she guided me very well.

According to the interview extracts with T3 and T4 (and three other participants), collaborative interactions between the protégés and the coaches could contribute to the development of teachers' teaching skills or solve their teaching problems. Sharing lesson plans creates an opportunity for the teachers to engage in collaborative analysis of their performance and plan further actions to enhance their teaching techniques.

Moreover, all three coaches also claimed that providing their team members with constructive feedback on their lesson plans helped them improve their teaching techniques. They also indicated that because of the similar class schedules, they were not able to observe their team members' lessons adequately. Therefore, sharing lesson plans was used as an alternative method of teaching technique improvement:

Researcher: How did you help your team members improve their teaching skills?

T6: There were some limitations in this program and I think the major one was the same class schedule. Because of this, I only observed my team members twice. So I had to focus more on giving feedback on their lesson plans.

Researcher: Did you find it effective?

T6: Definitely. I believe it was helpful because my team members said that most of their teaching problems were solved just with my feedback on their lesson plans.

On balance, According to Galperin (1968), when an action is being materialized, only a few of its properties are materially reproduced. However, those certain properties are essential for the implementation of certain actions (in our case of the peer-coaching program).

Therefore, in the peer-coaching program, sharing lesson plans served as a collaborative tool for improving teaching skills. Participants eagerly exchanged plans and received constructive feedback from coaches. This interaction helped teachers anticipate and solve teaching problems that fostered skill development. Coaches, despite limited observation opportunities, effectively supported their team members through feedback on lesson plans that demonstrated the program's practicality and effectiveness.

Acting at the verbal level

In conformity with Galperin (1968), being replaced by words, the action is no longer in the power of materialized objects and is reflected in speech. In this way, the action must be executed verbally by the learners to be understandable to learners and even to others. In the case of the peer-coaching program, when the teachers learn well enough to perform the act of teaching through their lesson plans, it is required to elevate this act to the level of covert speech. This can be done with the help of the coaches by observing the protégés' lessons and providing them with verbal feedback afterward. In our peer-coaching program, coaches began to observe their team members after giving feedback on their lesson plans. It was time for the protégés to implement and practice ideas written in their lesson plans and be observed and evaluated on their performance by the coaches. A meeting was held after the observation in which the coaches and the protégés discussed the observed lesson together. The coaches were responsible for providing the protégés with both positive and constructive feedback along with feedback for improvement and they were also expected to encourage the protégés to reflect on their teaching performance. Thus, this dialogue led the protégés to execute the act of teaching verbally. Another method of observation employed in this stage was for the protégés to observe their coaches' lessons as less experienced teachers could learn from their experienced colleagues.

According to the data gathered from the interviews, T6 and T2 declared that their team members were observed several times during the peer-coaching program.

Researcher: How many times did you observe your team members?

T6: I observed their lessons three times. We met each other before the lesson and I asked them a couple of questions about their lesson plans and their material. Then I observed them and finally, we met each other in a post-observation conference

where I provided them feedback. Most of the teachers were open to receiving feedback and ... you know, they enjoyed reflecting on their lessons.

As it is evident, T3 encouraged the protégés to verbalize their act of teaching in the postobservation conferences. In so doing, protégés were transited from the second level of the spiral formation of the mental process cycle to the third level.

Likewise, T2 also stated that he specified a part of a course book, the course books that were taught in the language school in which the current study was conducted, that his team members found challenging. Next, he guided them on how to plan their lessons and then he observed their lessons. Then, the coach and the observed protégés met each other and talked about the teacher's performance.

Researcher: How many times did you observe your team members' lessons?

T2: All of them were observed once except for one of them that was observed twice.

Researcher: I see. Tell me about the process of observation, please.

T2: Sure. First, I asked them about the parts of the course books that they found more challenging. Next, I asked them to plan a lesson about that challenging part and I gave them some feedback. Then, I observed their lessons and after that, we met each other and talked about the lesson.

T2 also said that his team members had a better grasp of the teaching stages at the postobservation conferences. The protégés successfully transformed the materialized action (lesson plans) into overt speech. This means that the protégés could verbalize their reflections on their teaching performance and their coaches' feedback. They could talk about the stages and the procedures they followed in their lessons; in other words, the teachers moved from the second phase to the third phase of Galperin's diagram. This transformation is necessary to transit the teachers to the fourth level of the spiral formation of the mental process cycle in which they will be able to perform the action 'in the mind' (Galperin, 1968).

In line with Galperin's theory, the peer-coaching program facilitates the transition from materialized action to verbalization. Coaches observe protégés' lessons, providing verbal feedback in postobservation conferences. Through these discussions, protégés articulated their teaching experiences, reflected on their performance, and integrated feedback. This verbalization signified advancement to the third phase of Galperin's model which enabled teachers to internalize teaching strategies and prepare for the next level of mental processing.

Acting at the mental level

To study the effect of the peer coaching program on the mental level of the teachers, the participants were asked if the peer-coaching program made any changes in their teaching. All six participants believed that sharing lesson plans and observations helped them become better teachers.

Researcher: How did this program help you improve your teaching skills?

T4: I've always had trouble teaching the writing sections of the Solutions course books. But when I got help from my coach and she asked me to observe her lesson, I learned how to teach those sections very well. At first, she told me that she was teaching the writing part, so she asked me to observe her. Then, she gave me her lesson plan and we talked about the stages of teaching writing. That was awesome.

Researcher: Do you still have trouble teaching the writing sections of the Solutions course book?

T4: Not anymore. I solved my problems with the help of my coach. I know how to teach the writing sections very well. Actually, I teach writing like a pro now.

T4 has become able to execute some aspects of teaching quickly and smoothly with the help of her coach. Her skills in teaching writing skills have been improved as a result of acting at the material and verbal levels. Therefore, the act of teaching writing has been transformed into a mental phenomenon or a pure thought.

The newly constituted mental actions are crucial in helping an individual regulate his/her activity. When the researchers asked T3 if the program made any changes in his teaching skills, he stated that the program helped him understand the sequences of the text-based approach to present language very well. Before the program, he did not follow the stages of the approach properly but with the help of his coach, he became capable of planning and performing the text-based approach in good order.

Researcher: How did this program help you improve your teaching skills?

T3: The first time that I shared my lesson plan with my coach I got surprised by her comments. She said that I hadn't followed the stages of the text-based approach properly. She sent me a voice message and explained the right order to me. Then, she asked me to revise my lesson plan based on the right order of the approach. Finally, she observed my lesson and again gave me some constructive comments on the use of the text-based approach.

Researcher: Interesting. Can you follow the right order of the text-based approach now?

T3: Yes. Thanks to the peer-coaching program I'm following the right order of the stages, now ...

On balance, after the peer-coaching program, all three protégés stated that their teaching practice and awareness improved because of writing lesson plans, being observed, receiving feedback from their coaches, and reflecting on their teaching performance. As a result, they could overcome the obstacles in their lessons.

This means that all the participants progressed to the fourth level of the spiral formation of mental actions. Having passed the first three levels, all three protégés are now able to act at the mental level. They are able to execute many aspects of the act of teaching smoothly and independently. Besides, they are now able to regulate their activities properly. The quote from

the narrative inquiry data shows that T5 is now able to reflect on her teaching practice and has increased her teaching awareness with the help of her coach and her teammates:

T5: This program helped me manage my lessons better. I had learned lots of classroom management techniques and teaching procedures in teacher training courses but it was too difficult to put them into practice. I didn't know how to follow the stages of teaching approaches because they were vague to me. My coach and my teammates helped me apply what I had learned before in my lessons.

The peer-coaching program significantly improved participants' teaching skills and awareness. Through sharing lesson plans, receiving feedback and reflecting on their teaching, teachers experienced growth in executing teaching tasks smoothly and regulating their activities effectively. The program's emphasis on observation, feedback and reflection led to tangible improvements in teaching practice, enabling teachers to overcome obstacles and manage lessons more effectively.

Orienting at a more advanced level

All six participants become more insightful about the actions that they have learned at the end of each cycle. As a result of the previous activities, they also become more well-informed about the learned actions. Consequently, becoming more well-informed and more insightful about the learned actions, give them the ability to look ahead. 'This ability is considered part of students' self-regulation because looking ahead leads to cognitive planning and monitoring' (Arievitch & Haenen, 2005, p. 162).

Accordingly, the supervisor of the language school is planning to run a new cycle of the peer-coaching program to help the teachers orient at a more advanced level. He is going to hold a preprogram meeting to present the objectives of the new program. To come up with new objectives, the supervisor of the language school interviewed the participants again and asked them about the areas of teaching that they found more challenging and needed more observation and feedback. Five of them declared that they needed to learn more strategies in the area of classroom management. The following transcription has been extracted from the interview with T5 in which she mentioned that she needed to improve her classroom management techniques with the help of her coach and her teammates:

Researcher: I'm planning to start the new phase of the peer-coaching program and because of that I decided to interview some of the teachers to come up with new objectives. Are there any particular areas of teaching that you find more challenging? I mean, you may need more feedback on?

T5: Great. I'm looking forward to working again with my teammates. Umm ... there are some areas of teaching that I need to work more on. Like ... these days I'm so exhausted from teaching teenagers. You know, sometimes it's impossible to control them. I think I need to get help from my coach and my experienced coworkers.

Therefore, the new phase of the peer-coaching program is focusing on improving classroom management techniques. The objective of the new phase is to be presented to the coaches and

the protégés. Next, the protégés will be expected to mention the issues related to classroom management in their lesson plans and share them with their coaches. Then, the coaches will be expected to observe the protégés' lessons and provide feedback on their classroom management skills afterward. Finally, the protégés will be interviewed and asked if the program could help them solve their classroom management-related issues.

DISCUSSION

Although the application of the Galperin model in education is not a neglected area (e.g., Arievitch & Haenen, 2005; Engeness & Lund, 2020; Podolskiy, 2022), it has not received the attention it deserves. Against this background, this study seeks to apply the Galperin model of psychological theory (Arievitch & Haenen, 2005; Galperin, 1968) in one form of teacher education, that is, peer coaching. The findings of the present study revealed that the five stages of the spiral Galperin model can be applied to peer coaching programs and have two clear benefits for the teachers and PD culture of the schools (Figure 2). First, Galperin's framework advocates for more active protégés' involvement in learning via cooperative tasks. Given that, this bottom-up teacher education approach is compatible with peer coaching which is a bottom-up PD tool (Joyce & Calhoun, 2010; Soodmand Afshar & Doosti, 2022). Therefore, by integrating these two bottom-up approaches, the coach, protégé and educational system benefit from a move towards a more critical self-directed teacher PD (Kamali, 2024; Koay, 2023). Second, since the Galperin model underscores the importance of social interaction in the learning process, it is in line with the ultimate purpose of peer coaching programs to provide opportunities for teachers to collaborate, share ideas and learn from each other's experiences (Hargreaves & Fullan, 2012; Orland-Barak & Wang, 2021). Therefore, the Galperin model synthesizes a novel underpinning framework for teacher coaching programs. Besides these

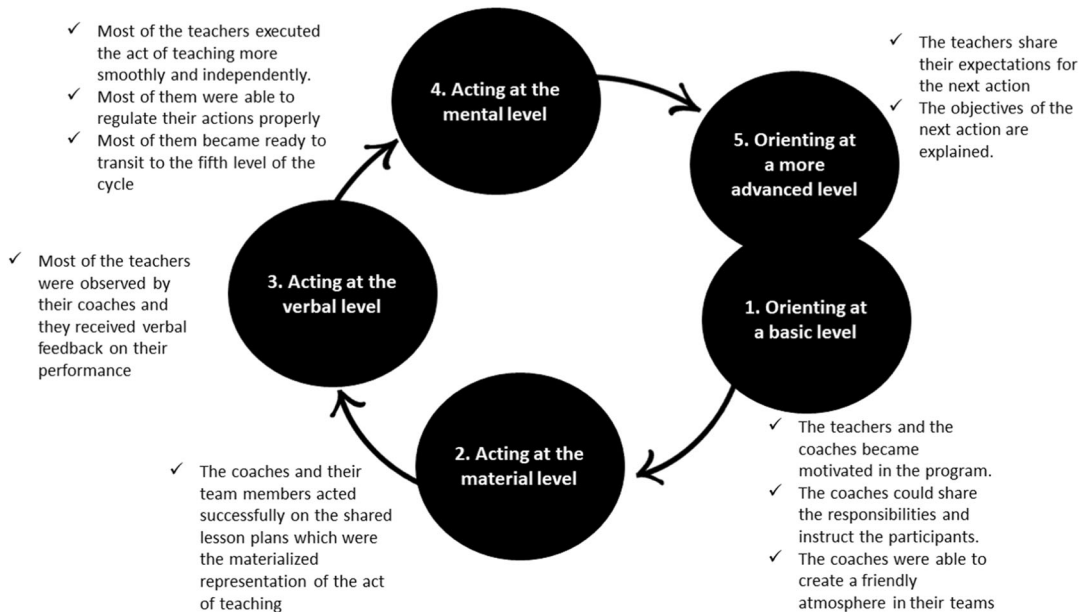


FIGURE 2 The application of the Galperin model in a peer coaching program.

general benefits of the Galperin-informed peer coaching program, different stages of the model also have various implications.

In the first stage of the Galperin spiral model, that is, orienting at the basic level, the initial motivation and friendly atmosphere were created, and the responsibilities were shared. Motivation has always been a pushing factor for improvement and is a key factor in influencing the rate and success of learning (Dörnyei, 1998). The results of this study align with prior research on rapport and motivation, indicating that creating a stress-free environment fosters learning (Joseph, 2000) not only for students but also for teachers. In the second stage, which is acting at the material level, the coaches and their team members engaged in a discussion about lesson plans and collaboratively designed one. This collaborative effort proved beneficial, as it emphasized the effectiveness of scaffolding in optimizing learning (Tajeddin & Kamali, 2020) by adequately preparing teachers to receive support at their zone of proximal development (ZPD) (Vygotsky, 1986). Seeking assistance from an expert has proven to be a pathway toward self-regulation (van Lier, 2004), a process observed in the protégés of the current study through their collaborations with coaches. It was in the acting at the verbal stage that all the protégés were observed by their coaches, and received verbal feedback on their performance. The literature on observation and feedback and their contribution to teachers' PD is rich (e.g., Gray, 2012; Javahery & Kamali, 2023; Tai & Dai, 2023). Nonetheless, this research considered an intermediary role for the observers bridging peer feedback and expert feedback, wherein coaches played a dual role as both a peer and an expert. This dual role enables teachers to benefit from the advantages inherent in both peer and expert perspectives. The fourth stage, acting at the mental level, was the stage in which all the teachers executed the act of teaching more smoothly and independently, were able to regulate their actions properly, and became ready to transit to the next level of the cycle. Self-regulation, as van Lier described in the expanded notion of the ZPD, extends beyond the framework of expert-novice. That is in addition to more capable, less capable and equal peers, the teachers can "become their own virtual teachers ... They manage and focus their attention, they select and act upon the affordances they themselves locate in the study environment, and engage in inner instructional dialogue" (van Lier, 2004, p. 157). Now, teachers may progress toward achieving self-regulation by drawing upon their 'inner resources' (van Lier 2004, p. 158), and engaging in reflective analysis of the observations and feedback sessions. In the fifth stage which aims to orient at a more advanced level, the teachers shared their expectations for the next action, and the objectives of the next action were explained. The fifth stage aligns with chaos/complexity theory (Larsen-Freeman, 2013) positing the nonhierarchical nature for learning whereby the end of one phase signifies the beginning of another. This stage marks the initiation of the subsequent concern addressed within the mentoring sessions, building upon the groundwork laid in the preceding four stages of the Galperin model.

The findings are in line with the abundant studies suggesting that peer coaching can have several benefits for the individual and educational milieus such as language schools (Ackerman et al., 2023; Johnson et al., 2017; Ladyshevsky, 2006; Lee et al., 2022; Vacilotto & Cummings, 2007). However, this study found two specific obstacles to peer coaching programs. First, the study's findings suggest that teachers' cultural schema—in our case, the concept of 'face' (Sharifian, 2007)—can act as a source of demotivation for participating in peer coaching programs. Some of the protégés in the present study stated that they are afraid of losing face by making mistakes in front of a more experienced peer (coach) and do not feel comfortable being observed by them. Second, in accordance with recent studies on teachers' financial well-being (e.g., Issac, 2023; King et al., 2016), the findings of this study suggest that teachers' financial

well-being is an incentive for the lack of peer coaching programs. The tight schedule of the teachers who should work long hours to be able to afford a normal life in countries like Iran does not permit them to invest in their PD—for example, peer coaching. It is in line with Akbari (2008), and Kamali, (2014, 2021) who posited that long hours of work due to financial constraints could impede PD.

This study could also add to the growing body of literature on peer coaching by applying it to in-service teachers. Lu (2010) asserted that the majority of participants in peer coaching programs are preservice teachers. This trend can be found in other studies hitherto, as well (Alsaleh et al., 2017; Nguyen & Ngo, 2018). Applying the Galperin spiral model, this study could also establish the culture of coaching in the school, particularly by implementing the fifth stage, that is, orienting at a more advanced level, in which the participants discuss future actions; the one that was a limitation of previous studies (Bowman & McCormick, 2000; Jenkins et al., 2002).

Finally, the implementation of a social psychological approach to education, i.e. the Galperin model, as a framework through which the peer coaching program was implemented and analyzed could add to the rich literature of peer coaching programs that employed various, albeit not Galperin, frameworks to analyze a peer coaching program. Among these frameworks, one can call activity theoretic perspective (Lofthouse & Leat, 2013), community of practice perspective (Kensington-Miller, 2018), sociocultural perspective (Kobayashi, 2003), ecological perspective (Kamali & Nazari, 2023) and poststructuralist perspective (Charteris & Smardon, 2016). The significance of the proposed model is in applying psychological perspectives such as the mental stage of the spiral model along with the social aspect of the model e.g., its verbal stage, to an educational PD tool called peer coaching.

CONCLUSION

In summary, this study utilized the Galperin spiral model (Arievitch & Haenen, 2005; Galperin, 1968) to analyze the implementation of a peer coaching program, with six Iranian teachers participating in the program. The results indicated that the model could provide additional assistance for executing such programs, despite the obstacles encountered during the implementation process. The study's findings suggest that teacher educators and teachers can benefit from applying the proposed model in peer coaching programs, as it could help them navigate some of the challenges they may face at material, mental and verbal levels according to the Galperin model. The challenges at the material level will be resolved by teachers' active involvement in lesson planning and sharing experiences. At the verbal level, the issues are resolved by employing reflective genuine dialogues between the coach and protégé emphasizing empathic understanding which refers to 'seeing [others'] experiences within the framework of their own' (Geertz, 1983, p. 59). Finally, at the mental level, the proposed model resolves the teachers' issues by promoting autonomous teaching and encouraging teachers to accept a more active role in their professional growth.

However, further studies are needed to address the applicability and limitations of this study. First, as it is argued in the discussion section, the Iranian cultural schema of 'face' played a significant role in this peer-coaching program as some of the teachers did not tend to be observed by their peers or coaches. The implication of this cultural schema or face for the teachers in the peer-coaching program is the fear of making mistakes in front of the coaches and thus being judged by them. Therefore, there is a need to apply Galperin-informed peer

coaching in other educational contexts to validate the results regarding this face-saving schema and find out whether it is the case in other contexts. Second, maintaining a regular and consistent schedule was rather difficult for the coaches and their team members as they had to run their own lessons. Other studies might consider the tight schedules of teachers and plan to reduce the teachers' workload beforehand. Finally, further studies can replicate the study with a diverse range of teacher participants considering factors such as age, cultural heritage, social standing and political orientation to investigate the generalizability of the results.

The implications of this study for teachers and teacher educators are significant. First, this model can enable teacher educators to design and implement Galperin-informed peer coaching programs as a part of teachers' continuous PD to enhance teachers' active role in their professional growth, encourage peer involvement, and inform future practice. It can also help teachers to engage in a meaningful learning environment by sharing plans, feedback and evaluation that can improve their practice while they provide support for their peers. Furthermore, higher education institutions can benefit from this model of PD on the grounds that this unthreatening PD tool requires peers to assist each other without involving the higher rank individuals whose presence is not mostly welcome in higher education. The study, on the other hand, warns faculty development coordinators against debilitating factors in peer coaching, such as cultural schema, financial well-being and workload, which should be eliminated or at least lowered.

ORCID

Jaber Kamali  <http://orcid.org/0000-0003-4018-7597>

Pourya Javahery  <http://orcid.org/0000-0001-6355-7461>

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APPENDIX A

Interview core questions.

1. What did you expect to learn from this program? Did it meet your expectations? Are your expectations changed after the program?
2. Creating an intimate and friendly atmosphere of interaction and cooperation is another important factor. How did this program help to create intimacy between you and other colleagues?
3. How did this program make you help each other to improve and develop your teaching skills?
4. Was having the same class program between the cohorts a debilitating or facilitative factor? Why?
5. Were the postobservation feedback sessions helpful? If yes, in what respect?
6. How did you find reflecting on your teaching helpful? How did this program help it?
7. Was your attitude about peer coaching the same before and after starting the program? If the answer is no, what changes have occurred in your attitude?