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## TEACHER EDUCATION & DEVELOPMENT | RESEARCH ARTICLE

# A latent variable analysis of continuing professional development constructs using PLS-SEM modeling

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**Abstract:** Continuing Professional Development (CPD), in the area of teacher education, refers to the procedures, programs or strategies that help teachers encounter the challenges of their work and accomplish their own and their learning center's goals. To this aim, the purpose of this study is to propose and validate an appropriate model of EFL teachers' CPD programs, and more specifically to examine the latent variables of the model to illustrate how and to what extent constructs of CPD explain and interact with each other. A total of 151 Iranian EFL teachers were asked to participate in this survey. The statistical analyses validated a 20-item CPD questionnaire used for measuring teachers' practices of CPD programs and explicitly specified that the three latent variables "Updating, Collaborating, and Reflecting" moderately explain 67.7% of the variance in "Decision-making" construct of CPD. Moreover, the study's inner model explained that "Updating" construct has a big significant effect on "Reflecting" construct. Accordingly, "Reflecting" and "Updating" variables were shown to have a strong impact on "Collaborating" variable. Our study's outcome highlights the need to take into account different constructs in planning and implementing CPD programs, including not only programs relating to

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### PUBLIC INTEREST STATEMENT

Continuing Professional Development refers to the programs or strategies that help teachers encounter the challenges of their work and accomplish their own and their learning center's goals. This study aimed at proposing and validating a model of EFL teachers' continuing professional development (CPD) programs to illustrate how and to what extent different components of CPD explain and interact with each other. The statistical analyses explicitly specified that the three latent variables "Updating, Collaborating, and Reflecting" moderately explain 67.7% of the variance in "Decision-making" construct of CPD. Moreover, the study's inner model explained that "Updating" construct has a big significant effect on "Reflecting" construct. Our study's outcome highlights the need to take into account different constructs in planning and implementing CPD programs, including not only programs relating to reflecting teaching but also those strategies that assist teachers to cooperate with each other and to be better decision-makers.

reflecting teaching but also those strategies that assist teachers to cooperate with each other, keep themselves up to date and more importantly, help them to be better decision-makers.

**Subjects:** Higher Education; Bilingualism/ESL; Teacher & Teacher Education; Continuing Professional Development; Curriculum Studies; Educational Psychology

**Keywords:** continuing professional development; EFL teachers; CPD model; structural equation modeling (SEM); PLS-SEM

### 1. Introduction

Having an effective and fruitful educational model has always been of much concern among educators, teachers, and trainers. Simultaneously, access to effective teachers have been an essential factor for promoting high levels of student achievement in public schools (Berry, Hoke, & Hirsch, 2004; Lau, 2004). Accordingly, to educate effective teachers, schools need to support ongoing learning, based on teacher professional development. Successful professional development programs have the ability to advance teachers' knowledge and skills in order to positively influence student learning. Moreover, teachers are expected to be well-informed of new knowledge and technology to modify instruction for a diverse population of students, to support all students achieve high standards, to become aware of student growth and development, to help run the school, and to be in touch with parents and the community.

In this regard, many surveys support the idea that teachers' skills and knowledge are the most prominent variables that impact student achievement as well as teacher's success (Marzano, 2001; Odden, Picus, Goetz, & Fermanich, 2006). Moreover, as stated in Duta and Rafaila (2014), the speed of change and the expansion of knowledge require people to learn at many different times throughout their lives. This indicates important implications of school's role, which is no longer providing a package of knowledge and skills to assist a person for life. This is in line with Bottoms and O'Neill (2001, p. 7) who asserted that

"Today's principal must be prepared to focus time, attention, and effort on changing what students are taught, how they are taught, and what they are learning. This formidable challenge demands a new breed of school leaders, with skills and knowledge far greater than those expected of 'school managers' in the past".

According to DeNisi and Kluger (2000), the majority of what teachers do and models that they follow, which is leading to improvement in their job, is affected by the feedback they receive from colleagues, students and their workplace. Thus, it seems that at every stage of teachers' career there are opportunities to develop their skills and knowledge, which is in accordance with the definition of CPD.

Sparks and Bransford (as cited in Jackson & Davis, 2000, p. 110), described professional development as a "results-driven, standards-based" package that is "embedded in the teachers' daily work" and "grows out of understanding the principles of adult learning". Accordingly, CPD is a process that helps teachers come across the challenges of their work and achieve their own and their learning center's goals. It offers information to help teachers improve, whether they are starting out as teachers, or whether they are already highly experienced teachers. In addition, it integrates the idea of "reflective practice" which focuses on the significance of reflecting on what you are doing, as a crucial part of your development process (Diaz-Maggioli, 2004). According to Schwartz and Bryan (1998), professional development means something different to individuals. A simple definition of professional development is a plan to provide opportunities to progress professionally or individually. A more formal meaning of professional development is contribution and participation in courses, programs, workshops and other activities by the aim of developing and bring up-to-date professional skills (Schwartz & Bryan, 1998). CPD can also be defined by the learning activities and

strategies through which teachers improve their abilities and ensure they remain competent. It is an on-going process, includes teaching, practicing and providing feedback, and adequate time and follow-up support (Speck & Knipe, 2005).

However, while defining professional development and its constituents seems fairly simple, implementing the ideas in different settings is challenging. As teachers seek instructional strategies to support student growth, professional development opportunities must be intensive and directed for teachers to achieve optimum results. Moreover, it is worth noting that professional development can be offered in different formats, such as individual, mentorship, multi-day sessions, and online (Schwartz & Bryan, 1998).

In addition, the different programs of professional development may be unsuccessful for a certain type of professional development activity and objectives. Sometimes CPD is high-quality, concise, purposeful, or detailed, and at other times workshops are mediocre, disorganized, and short-term (Kelley & Peterson, 2000).

Proposing and validating a suitable model of English language teachers' CPD strategies can offer suggestions for CPD program holders to improve the quality of both teaching/learning environments as well as the quality of professional development for teachers. Moreover, gathering data based on professional development activities provides information for schools, institutes, and universities to evaluate their available main professional development programs as well as future needed packages. These data may also aid schools, institutes, universities in redesigning curriculum for principal development. Besides, it is important to know teachers' perceptions of professional development activities to acquire what professional development activities are worth attending and are available to teachers to attend in Iranian context.

In this regard, it is worth noting that no models in EFL contexts using partial least square structural equation modeling (PLS-SEM) has included a mixture of CPD components (reflective, decision-making, collaborative, and updating variables) so as to assess their interrelationships.

Therefore, since the speed of change and the expansion of knowledge require teachers to learn at many different times throughout their lives (Duta & Rafaila, 2014) and education is possibly one of the most significant social activities in the life of human beings, the purpose of this study is to determine any significant interconnection among CPD's components, through examining the proposed model in the EFL context in general, and the Iranian context in particular.

Therefore, the following question and hypothesis were addressed in this study:

- What is an appropriate model to describe the relationship between CPD strategies for EFL teachers?
- The study claims to present an appropriate model to describe the relationship between CPD strategies for EFL teachers.

### **1.1. Hypothesized model and theoretical background**

To study the interrelationships between the designated variables (i.e. four constructs of CPD (updating, reflective, decision-making, and collaborative)), a structural model is suggested.

According to Byrne (2006), model specifications should be done according to the familiarity of the theory and/or empirical research. Therefore, consistent with Gong (2008) and Jiang (2016), the researcher hypothesized that teachers' updating of their knowledge and their experiences, directly influence their decision regarding different teaching conditions that they may encounter during their teaching practices. Moreover, decision-making is closely associated with general teaching

proficiency. Literature in this area has confirmed that knowledgeable teachers make decisions fairly differently from the way novice teachers do (Breen, Hird, Milton, Oliver, & Thwaite, 2001; Nunan, 1992).

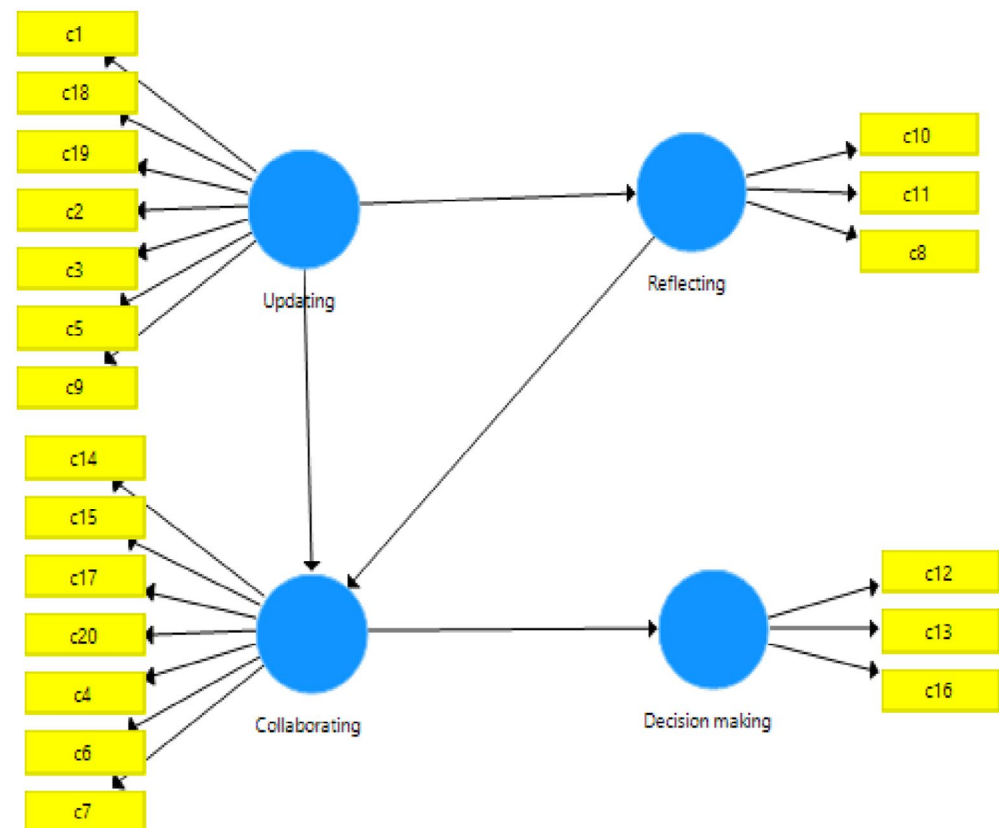
Updating of our knowledge is also influential on how we, as teachers, reflect on different issues and teaching condition. Following Geng, Smith and Black (2016), learning new skills and knowledge can aid teachers make sense of the conditions they encounter, which accordingly lead them on a path to become reflective teachers in their teaching.

Being up-to-date teachers also positively effect on teachers' sense of collaboration, which is in accordance with Tanghe and Park (2016) and Dooly and Sadler (2013) that stated learning occurred as part of socially and culturally situated collaborations.

Teachers' collaboration, in turn, according to Hagen, Loughran and Russell (2006, cited in Yanping & Jie, 2009) is affected by their reflectiveness. They declare that reflective teaching among in-service teachers can be encouraged by working together and collaboratively. Accordingly, being a collaborating teacher, according to Mckay (2005) and Farrell (2008), positively influences how a teacher decides on important matters in educational settings. Based on Mckay (2005), reflectiveness assists teachers cope with issues they encountered in the educational settings and helped them assess their experience and cooperate with each other so as to find solutions that work well in their classroom context.

Therefore, the researchers hypothesized two paths from updating to collaborating, and reflecting. Then reflecting is connected to collaborating. Moreover, a path was nominated from collaborating to decision-making. The postulated model is presented in Figure 1. Blue circles in the model illustrate latent variables of the study, while the rectangles which are named as "Cs" are indicators of the

**Figure 1. The proposed model of latent variable analysis among CPD components.**



proposed model. It means that, for example, latent variable “Reflecting” consists of three indicators which are ordered in the questionnaire as number 8, 10, 11.

## 2. Methodology

### 2.1. Participants and setting

As Table 1 represents a total number of 151 Iranian EFL teachers participated in this study, including 56 males (37.1%) and 95 females (62.9%). Selection was done from all available subjects who were considered as professional experienced teachers having university education (Bachelor 32%, Master 53% or PhD degree 15%). Most of the teachers, 64.2%, were from Mashhad, 12.6% were living in Tehran, and the rest were from other Cities. They were from different age groups ranged 20 to above 40, the mean age was 30 (SD = 0.7). Teachers’ years of experience varied ranged below 5 to above 10, mean 6. 89% of teachers studied English as an academic major, (English language teaching 54%, Translation 20%, and English literature 15%).

### 2.2. Instrumentation

The National Staff Development Council (2008) runs criteria for professional development for those who work with learners. These standards are planned around three general areas: context standards, process standards and content standards. Context standards refer to the association, system, learning communities, leadership, resources, evaluation, and culture in which learning occurred and described (DuFour & Eaker, 1998; Stein, 1998). Process standards address the learning procedures, design, collaboration, and equity and research driven that are in use for the acquisition of new knowledge and skills (DuFour & Eaker, 1998; Eaker & DuFour, 1999; Stein, 1998). Professional development content refers to quality teaching and describes the knowledge and skills that ensure all students are successful and examines what students must know and be able to do (Campbell & Kreinberg, 1998).

**Table 1. Demographic profile of respondents (Teachers)**

		Category	Frequency	Percentage
1	Gender	Male	56	37.1
		Female	95	62.9
2	Age	-20	0	0
		21-30	58	38.4
		31-40	76	50.3
		+40	17	11.3
3	Educational status	Diploma	0	0
		AA	3	2
		BA	47	31.1
		MA	79	52.3
		PhD	22	14.5
4	Language teaching experience	-5 years	64	42.4
		6-10	61	40.4
		+10	26	17.2
5	City	Mashhad	97	64.2
		Tehran	19	12.6
		Others	35	23.2
6	Field of study	TEFL	82	54.3
		English translation	30	19.9
		English literature	23	15.2
		Others	16	10.6

Accordingly, since this study was conducted in Iran, where English language is taught as a foreign language, the researchers propose a CPD model concerning four main constructs, which significantly explained CPD in Iranian context, namely updating, reflecting, collaborating, and decision-making. Consequently, a researcher-made CPD questionnaire was designed in the present study to ask for information regarding teachers' experience and knowledge about teachers' professional development strategies.<sup>1</sup>

The questionnaire was designed and validated under the supervision of several experts in the field of ELT. The questionnaire consisted of two parts. The first part emphasized on the demographic profile of the participants and the second section provided participants with the content areas under the study on a five-point Likert scale.

CPD questionnaire was a measure to evaluate EFL teachers' ideas on different strategies/programs and the degree to which these strategies impact their teaching practices. It consisted of the total number of 20 items on the scale assess reflecting strategies (including three items such as "Engaging in informal dialog with my colleagues on how to improve my teaching"), collaborating strategies (including seven items such as "Participation in a network of teachers (forums, groups, and clubs)"), updating strategies (including three items such as "Reading professional materials such as journals, books, and thesis."), and decision-making strategies (including three items such as "Discuss and decide on the selection of instructional materials such as textbooks, exercise books, lesson study"). Each item was rated on a five-point Likert scale from (No Impact) to (A Large Impact). Reliability coefficients of the questionnaire were estimated using Cronbach  $\alpha$  Analysis and a value of 0.9 was revealed which is highly acceptable.

Gathering data was summarized and calculated using Statistical Package for Social Sciences (SPSS 16) and SmartPLs to test the proposed models of the study.

### **2.3. Study Design**

The purpose of this study was to examine any significant correlation among CPD's components, through studying the suggested model in the EFL context in general, and the Iranian context in particular, by the analysis of data based on an *ex post facto* design. Participants were selected based on some specific features such as being EFL teachers. Therefore, the purposive sampling was applied through a paper-based survey.

### **2.4. Procedure**

To empirically examine the proposed research model (Figure 1), quantitative research methods were arranged and the questionnaire was designed. Then 151 of Iranian EFL teachers teaching English in different language institutes from different cities of Iran were selected. Teachers' participation was completely voluntarily. They are from both genders and from different ages with different years of experiences. These teachers were from different subfields of the study within English Language field. They received a questionnaire of CPD to fill out in order to provide researchers with sufficient information on the teachers' practices of the CPD programs and how much impact they think practicing of these strategies have on their teaching practice. At the time the administration of the survey, teachers were told that their participation was voluntary, and they were reminded not to put their name or any identifying information on the survey, and that all data would remain anonymous and confidential.

### **2.5. Data analysis**

To analyze data, first, the Statistical Package for Social Sciences (SPSS 16) was used. Then, in order to confirm the proposed structural model, the researchers used partial least squares variance-based structural equation modeling (PLS-SEM) which is an exploratory technique that used the data to tests the relationship among latent variables and to analyze the path relationships in models.



PLS-SEM is widely recognized for its remarkable advantages in behavioral studies (Hair, Ringle, & Sarstedt, 2011), as it helps researchers to understand the relationship among sets of observed variables (Hair, Hult, Ringle, & Sarstedt, 2013). It also works efficiently with complex models and small sample sizes (Esposito Vinzi, Trinchera, & Amato, 2010; Hair, Hult, Ringle, & Sarstedt, 2014; Rezaei & Ghodsi, 2014; Rezaei, 2015; Shahijan, Rezaei, Preece, & Ismail, 2014). PLS-SEM is also more appropriate where theory is less developed. It is mainly used to proposed theories in exploratory research (Ravand & Baghaei, 2016; Rönkkö & Evermann, 2013).

Formative or reflective are two kinds of measurement scale in structural equation modeling.

If the indicators cause the latent variable and are not interchangeable among themselves, they are formative (Haenlein & Kaplan, 2004; Petter, Straub, & Rai, 2007). However, if the indicators are highly correlated and interchangeable, they are reflective and their reliability and validity have to be carefully inspected (Haenlein & Kaplan, 2004; Hair et al., 2013; Petter et al., 2007). In a reflective measurement scale, the causality direction is going from the blue-color latent variable to the yellow-color indicators. Since all of the indicators in this study are reflective, the reflective analysis was applied.

Chin (2010) and Henseler and Chin (2010) stated that the first phase in assessing SEM is the measurement model's and then the structural model's outcomes. Checking the measurement models is in fact validating the model (Baghaei & Tabatabaee Yazdi, 2016). According to Ringle, Sarstedt, and Schlittgen (2010), suitability of measurement models was measured according to the loadings of the items on the latent variables, the Composite Reliability Score, the Average Variance Extracted (AVE) and the Discriminant Validity. Loadings above 0.70 are considered to be high, whereas loadings between 0.40 and 0.70 are satisfactory if elimination of the indicators does not result in an increase in the reliability of the model (Hair et al., 2011). The Composite Reliability Score and the AVE would be considered best above 0.70 and 0.50, respectively (Hair et al., 2011). Discriminant validity is considered well when the loadings of the indicator variables on their latent variable is higher than the loadings of that indicator on any other latent variable (Hair et al., 2011).

In view of that all variables of the present research were included in the PLS-SEM analysis as explanatory variables (Figure 1). Only indicators, latent variables, and paths that reached the significance level of 0.05 were engaged in the model after Bootstrapping analysis. Moreover, indicators were only taken into account if (a) the indicator loading were higher than 0.7, (b) the internal consistency reliability was higher than 0.7, and (c) the average variance extracted (convergent validity) was higher than 0.5. The discriminant validity (cross-loadings) was also checked.

Our model examined the interrelationships among CPD strategies (within four constructs of “updating activities,” “reflective activities,” “decision-making activities,” and “collaborative activities”) by deploying the PLS structural equation modeling approach to perform the assessment of the measurement and structural model using SmartPLS software. Furthermore, the structural model's assessment includes the level and significance of the path coefficients by performing bootstrapping procedure with 5,000 resamples (Hair et al., 2011). Bootstrapping refers to any test or measure that is based on random sampling with replacement. This technique allows to assess the distribution of sample by using random sampling methods (Varian, 2005). It is a direct way to extract estimates of standard errors and confidence intervals of complex parameters of the distribution. It is also a suitable way for controlling and checking the reliability of the results (DiCiccio & Efron, 1996).

### 3. Results

#### 3.1. Measurement model

Before analyzing the structural model, reliability and validity of the model were evaluated and established. Then, to estimate reflective measurement models outer loadings, composite reliability,

average variance extracted, and discriminant validity are evaluated. Tables 2, 3, and Figure 2 illustrated the evaluation criteria for the model.

**Table 2. Total Effects**

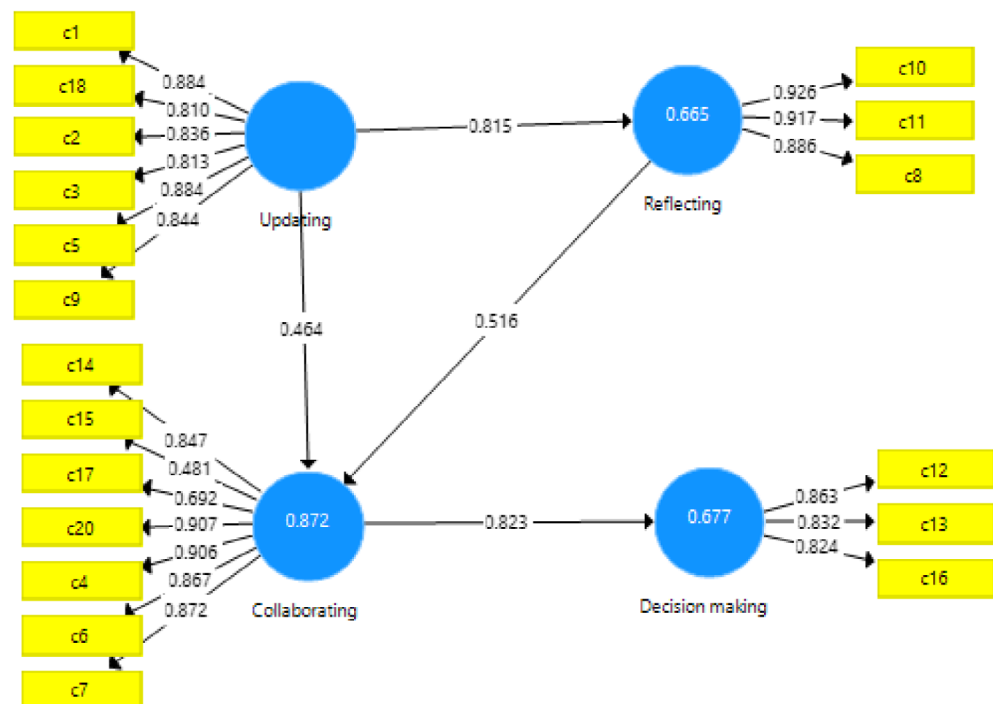
	Collaborating	Decision-making	Reflecting	Updating
Collaborating		0.823		
Decision-making				
Reflecting	0.52	0.425		
Updating	0.885	0.73	0.815	

**Table 3. Criteria for the evaluation of the models (reliability and validity)**

	Items	Loadings min-max	Cronbach's $\alpha$	Composite reliability score	AVE	R <sup>2</sup>	R <sup>2</sup> Adjusted
Collaborating	4-6-7-14-15-17-20	0.48-0.91	0.90	0.93	0.75	0.872	0.871
Decision-making	12-13-16	0.82-0.86	0.88	0.88	0.70	0.677	0.675
Reflecting	8-10-11	0.89-0.93	0.89	0.93	0.83	0.665	0.662
Updating	1-2-3-5-9-18-19	0.81-0.88	0.83	0.94	0.71		

Notes: Loadings between 0.4 and 0.7 are acceptable. >0.7 is high. Cronbach's  $\alpha$  > 0.7 is acceptable and high. Composite reliability should be 0.7 or higher. AVE should be 0.5 or higher. R<sup>2</sup> of 0.75 is substantial, 0.50 is moderate, and 0.25 is weak.

**Figure 2. Items loading, path coefficient and R<sup>2</sup>.**





**Table 4. Discriminant validity according to Fornell–Larcker criterion**

	<b>Collaborating</b>	<b>Decision-making</b>	<b>Reflecting</b>	<b>Updating</b>
Collaborating	0.866			
Decision-making	0.823	0.836		
Reflecting	0.851	0.686	0.911	
Updating	0.811	0.689	0.815	0.842

Notes: Bold values are loadings for each item that are above the recommended value of 0.5; and an item's loadings on its own variable are higher than all of its cross-loadings with other variable.

Examining the outer loadings of the latent variables indicate that loadings are between 0.48 and 0.93. However, as removing indicators below 0.7 does not change overall reliability, these indicators remain in the model. Composite reliability scores and the AVE indicate good reliability and validity.

Finally, Table 4 showed the discriminant validity which was determined according to the Fornell and Larcker (1981) criterion. The off-diagonal values in the matrix in this table signify the correlations between the latent constructs. Thus, the outcomes specify that there is discriminant validity between all the constructs based on the cross loadings criterion.

### 3.2. Structural model

Once the construct measurements were confirmed as reliable and valid, the researcher judged the structural model to examine the model's predictive abilities and the relationships between the model components. The results asserted that the structural model and all beta paths are statistically significant ( $p < 0.05$ ).

### 3.3. Target endogenous variance

Numbers within the circles illustrated how much the variance of the latent variable is being explained by the latent variables. In this survey, as Figure 2 showed, the coefficient of determination,  $R^2$ , is 0.677 for the "Decision-making" endogenous latent variable which indicated that the three latent variables "Updating, Collaborating, and Reflecting" moderately explain 67.7% of the variance in "Decision-making". Besides, the results indicate an adequate predictive validity of the study's model.

### 3.4. Inner model path coefficient sizes and significance

Numbers on the arrow, which are called the path coefficients, displayed how strong the effect of one variable is on the other variable. Moreover, the weight of each path coefficients allows the researcher to rank variables' statistical importance.

In view of that, the study's inner model explained that "Collaborating" has a very strong effect on "Decision-making" (0.823). In addition, "Reflecting" and "Updating" variables have strong impact (0.513 and 0.469, respectively) on Collaborating variable, which indirectly impact on "Decision-making". The inner model also suggested that "Updating" has a big significant effect on "Reflecting" component.

Moreover, the hypothesized path relationship among the variables are considered statistically significant, because all the standard path coefficients are shown to be higher than 0.1. Thus, we can conclude that "Collaborating" directly, and "Reflecting" and "Updating" indirectly are moderately strong predictors of "Decision-making" variable.

### 3.5. Outer model loadings

The study's model illustrated that all the correlations between the latent variable and the indicators in their outer model are significant except for three indicators with loading of lower than 0.7 (Figure 2).

**Table 5. Bootstrapping results and t-statistics for path coefficients (inner model)**

Path coefficient	Standard deviation (SD)	t-statistics	p-value
Collaborating → Decision-making	0.027	30.552*	0.000
Reflecting → Collaborating	0.059	8.707*	0.000
Updating → Collaborating	0.058	8.061*	0.000
Updating → Reflecting	0.033	24.393*	0.000

\*The critical t-value is 1.65 for a significance level of 10%, 1.96 for a significance level of 5% and 2.58 for a significance level of 1% (all two-tailed).

**Table 6. Effect sizes of the structural model ( $f^2$ )**

	Collaborating	Decision-making	Reflecting	Updating
Collaborating		2.095		
Decision-making				
Reflecting	0.701			
Updating	0.565		1.982	

Notes: Effect size of 0.02, 0.15, and 0.35 indicates small, medium, and large effect, respectively (Marcoulides & Saunders, 2006).

Therefore, one of these indicators is eliminated from the study (No. 19 in “Updating”), however, the two others (No. 15 and 17 in “Collaborating” construct) are kept in the model, as removing them does not increase overall reliability.

Moreover, to check if the path coefficients of the inner model are significant or not (“T-Statistics”), bootstrapping procedure was run. Using a two-tailed t-test with a significance level of 5%, the path coefficient should be significant if the T-statistics is larger than 1.96. In our study, it can be seen that all the linkage are statistically significant which confirms our former findings when looking at the PLS-SEM results (Table 5).

In addition, the model’s effect size ( $f^2$ ), which showed how much an exogenous latent variable contributes to an endogenous latent variable’s  $R^2$  value, highlights large effect (Table 6).

Effect size is essential because effect size aids researchers to judge the overall contribution of a research study, as Chin, Marcolin, and Newsted (1996) asserted that researchers should not only report whether the relationship between variables is significant or not, but also report the effect size between these variables.

The  $f^2$  evaluates the change in the  $R^2$  value when a certain exogenous construct is eliminated from the model, and shows whether the deleted predictor construct has a practical impact on the  $R^2$  values of the endogenous construct.

#### 4. Discussion

In this study, an attempt was made to investigate the relationships among CPD components. To this end, based on the available literature, a model of CPD was proposed and tested using PLS-SEM. The model adequately fitted the data which gains support for the proposed theoretical model.

Findings revealed that collaboration and updating have the strongest weights. Collaborating strongly affects decision-making and updating affects reflection. This means that teachers’ decision-making mechanism is a function of the degree to which they collaborate with their colleagues. Furthermore, as teachers update their knowledge and learn new things in the field they tend to reflect more on their practices and probably modify and adjust them to the new developments in the field.

Updating and reflection both affect collaboration. Although the weights of these components are smaller compared to the weights of collaboration and updating they are still substantial. This finding indicates that as teachers update their knowledge of teaching they tend to become more collaborative. That is, as teachers learn more there is a tendency to share their new knowledge with their colleagues and create a social professional network. Also, reflecting upon practices perhaps creates the need to get involved in this social network and share their thoughts and ideas with colleagues and seek their opinions and advice.

The study results highlight the importance and the extent to which CPD curricula may impact teachers' reflection and their decision in educational settings. Also, it was revealed that teachers who are constantly trying to expand their language skills and knowledge, can positively impact their own sense of collaboration. It is in line with Tanghe and Park (2016) and Dooly and Sadler (2013) who stated that learning best occurs as part of socially and culturally oriented collaborations. Moreover, Matoba and Sarkar Arani (2005) concluded that lesson study as one of the strategies of CPD focuses on student learning, improvement of teaching and collaborative activities among teachers. This finding reveals that collaborative teachers are most likely those teachers who are eager for learning and practicing new things and good in working as a team, completing a task or creating a product and solving a problem. Moreover, being informative in the field positively correlates with teachers' reflectiveness, according to the results. Therefore, it can be inferred that the more knowledgeable teachers are, the more reflective they are in teaching.

Results showed that teachers' desire to work collaboratively significantly is affected by reflective teaching which is in accordance with Hagen, Loughran and Russell (2006, cited in Yanping & Jie, 2009) and Sharifi and Abdolmanafi Rokini (2014) who asserted that teachers' cooperation is affected by their reflectiveness. They declare that reflective teaching among in-service teachers can be encouraged by working together and collaboration. In addition, based on the various literature focusing on CPD, the purpose and the effect of these strategies inspire learning that produces more effective teacher performances (Ball, Sleep, Boerst, & Bass, 2009; Gallimore, Ermeling, Saunders, & Goldenberg, 2009; Hiebert & Morris, 2009; Jansen, Bartell, & Berk, 2009). Therefore, the researchers conclude that one of the factors that may help teachers to be more collaborative in their teaching practice and in their classrooms is the extent they involve themselves in reflective activities.

Accordingly, CPD strategies may play a significant role in teachers' ideology and consequently the methodologies they may select in their teaching practices, because as the results highlight and in line with Cajkler, Wood, Norton, Pedder, and Xu (2014) such programs encourage teachers to mingle with each other and then could share their knowledge and teaching experiences, and carry out joint activities with their colleagues, and therefore lead to greater teacher collaboration. So that they can help one another in terms of teaching/learning and finally create a greater success and as a result job satisfaction. The satisfaction concept, which initiates from the expectancy disconfirmation theory by Oliver (1977, 1980), is a significant factor in the area of higher education for the reasons that, it acts as an encouraging and motivational factor for teachers to keep themselves up to date and when the members are satisfied with the university's services, then they possibly will encourage the university to advance its credibility and reputation, which could increase the number of students as well (1977, 1980).

The result also illustrated that being a collaborative teacher, positively associates with how a teacher decides in educational setting (Mckay, 2005; Farrell, 2008). Based on McKay (2005), reflectiveness support teachers handle concerns they come across in the educational settings and helped them assess their experience in an attempt to catch the best ways that work well in their classroom context.

Moreover, the result of the interviews with some of the participants highlights the fact that for planning such programs and courses, the relative needs of teachers as well as their background knowledge need to be considered. In view of that, it can be claimed that the significance of needs analysis

and need recognition should be taken into account when planning or developing CPD strategies in educational setting, since recognizing the needs of teachers determine the applicability of the program that is delivered. Based on the objectives of these programs, it is expected that CPD programs should offer opportunity for teachers' participation, commitment, and practical achievements.

## 5. Conclusion

Nowadays, in most institutions and language schools, teachers are expected to frequently review and assess their teaching skills and knowledge according to the needs of the school. Besides, serving as mentors and coaches to new teachers, organizing workshops and presenting papers at conferences may also be expected from some teachers. Moreover, language teaching schools are supposed to maintain high professional standards, to provide opportunities and conditions for their educators to improve and achieve high levels of professional development.

In this regard, the current study supports the multidimensional model of CPD programs among EFL teachers in Iran. Designing teacher professional development programs seems generally driven by policy and curriculum reform and monitored by specialists and authorities in the field. However, it is significant that teachers, school administrators, and supervisors be involved in the planning of both the structure and the content of these programs in order to take into account both teachers' needs and their students' needs.

The study highlights several implications. The results reveal that teachers caring about their teaching knowledge and trying to keep themselves up to date in their field, positively and significantly correlates with their sense of collaboration with their colleagues. Moreover, being up-to-date teachers was shown to be correlated with teachers' reflectiveness, which is illustrated to be in close relation with how and to what extent teachers would like to collaborate with their co-workers. In addition, the study's model which hypothesized that CPD programs result in better decision-makers in the field of English teaching was illustrated to be influenced mostly by teachers' collaboration with a strong positive, significant loading.

Policy-makers and authorities in the field of English language teaching should realize that CPD curricula would positively enhance teachers' success and satisfaction as well as their self-confidence. Therefore, such programs should be emphasized and implemented regularly in order to meet teachers' needs and to help teachers develop their classroom skills.

## 6. Limitation and future research directions

The most important limitation of this study, which could raise new questions for future research in the field, is the fact that the notion of CPD is a vast area to focus on and as the context of this study was language schools, the researchers mainly focused on those aspects of CPD which seemed more relevant to the realm of language teaching in language institutes in Iran. Moreover, this study was concerned with institutional EFL teachers, therefore, other studies could work on teachers working at universities. Besides, another line of research could explore the content and resources for proposing such courses. Administrators should also consider the results of this research while designing and modifying the resources for teacher CPD programs. Moreover, the study's sample was limited to Iranian English language teachers. Future studies will be needed to evaluate other factors in CPD programs such as teachers' perspectives towards these programs and how CPD strategies may act as a predictive power on teachers' success which is the researcher's next aim in this regard.

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### Note

1. The questionnaire developed and used in this study is available from the author on email request.

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