
Developing Reflectivity in EFL Teachers through a Three-dimensional Reflective Model (3DRM)

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Abstract

Teacher education programs, and more specifically practicum courses, play a vital role in pre-service teachers' lives since these programs are opportunities for them to get perspective on the reality of their future career. With no doubt, the most important objective of any teacher education courses is to help teachers become reflective. That is why there have been numerous studies to investigate the effect of reflectivity on teachers' success and to propose methods and technique to enhance this skill. This study proposes a three-dimensional reflectivity model considering three different aspects of a teaching context. These interwoven factors are pedagogical, psychological, and socio-cultural aspects. These aspects are extracted from a semi-structured interview with 21 experts. Testing this model on group of student-teachers and analyzing their teaching portfolios both qualitatively and quantitatively reveals that applying the model in designing the tasks and projects of teacher education programs can increase teachers' reflectivity and give them insight into how to deal with any shortcomings in their future classes. This model can reshape the teacher education programs and provide the student-teachers with an opportunity to practice something more than pedagogical concerns in these courses.

Keywords: pedagogical, psychological, reflection, social, teacher education

INTRODUCTION

Teacher education, which is defined by Krishnaveni (2015) as "a program that is related to the development of teacher proficiency and competence that would enable and empower the teacher to meet the requirements of the profession and face the challenges therein"(p.21), is continuously changing because of two changes 1) change in our understanding about the nature

of teaching and learning, 2) change in "the role of teacher's knowledge in teaching" (Janani & Mohseni, 2015). However, with no doubt, the ultimate goal of any teacher education programs is preparing teachers for teaching and educating the next generations. Littky (2004) emphasize that any types of education should train its learners to get some characteristics, most importantly becoming "life-long learners" and being "problem solvers and critical thinkers" (p.1). If it

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is believed that the student-teachers are the learners of teacher education programs, then all these mentioned goals can be considered as the aims of teacher education programs as well. This is why reflectivity is a goal in any teacher preparation programs (Hatton & Smith, 1995, p. 33).

Reflectivity is a tool to fine-tune our teaching to the needs, wants, and desires of the learners and to balance our teaching with the learning context. Reflective teaching, which is rooted in Dewey's work has become dominant paradigm in the field of second language teacher education since 1980s (Sze, 1999). According to Wallace as cited in (Freeman, 2016, pp. 216-217), reflection is referred to the action of asking question about what happened in the classroom with the aim to find out "what to avoid in future" and "why something went well" (pp. 216-217). Freeman believes that one of the goals in pre-service courses is to develop "orientation and interest" for that kind of thinking among student-teachers. Developing reflectivity is an essential element and "established mission" of teacher education programs (Grossman, 2009; Ostorga, 2006). Gurol (2011) states that this popular term in teacher education field, is a mode of thinking which is parallel with modes of thinking like metacognition, critical thinking, analytical thinking. Three purposes of reflective teaching are explained by Murphy (2001), cited in Celce-Murcia (2001, p. 499), as (1) to expand one's understanding of the teaching-learning process, (2) to expand one's repertoire of strategic options as a language teacher; and (3) to enhance the quality of learning opportunities one is able to provide in language classroom. Brookfield (2017) has introduced the concept of "critical reflection". In his view, critical reflection is "the sustained and intentional process of identifying and checking the accuracy and validity of our teaching assumption" (p.3). He believes that for our teaching assumptions to work, certain conditions are necessary and therefore, we need to renovate them for the new situation.

Various methodologies were suggested to promote reflection (Etscheidt, Curran, & Sawyer, 2012, p. 9): Van Manen (1977); Van Manen (1991); Schon (1987); Grimmett and MacKinnon (1992); Valli (1990); Gore and Zeichner (1991); Sparks-Langer and Colton (1991); Pultorak (1996); Wellington (1996); Stanley (1998); Jay and Johnson (2002); Ward and McCotter (2004); and Taggart and Wilson (2005). All of which try to show characteristics of reflective thinking and modes of reflectivity. Some of these models just focus on technical and pedagogical aspects of the classroom and reflection on those aspects while some others go further and see the aspects beyond technical ones such as, ethical, cultural, social, moral, political, etc.

Teacher Education: Beyond Pedagogy

Most of the teacher education programs both the ones promote reflectivity and the ones do not, are limited mainly to the technical aspects of teaching. However, beside these pedagogical issues which are necessary to be addressed, teachers also need to know and understand about ways in which their behaviors, rapport, mood, etc. influence the students' learning. Here some aspects beyond pedagogy that can help teachers become more effective in their practice, mainly categorized into social and psychological, are discussed.

Socio-Cultural Aspects of Learning

According to Coffield (1999), as cited in Trowler (2005, p. 18), "learning is located in social participation and dialogue as well as in the heads of individuals". There are three sets of socio-cultural aspects that can be considered in teacher education courses: teachers' group social configuration, ecology of the classroom, and cultural factors.

Teachers' group social configuration talks about the development of the relationships both in and outside of the schools, the way teachers

help each other to learn, solve problems, and find innovative methods for their teaching (De Laat, 2012). According to Doppenberg, Bakx, and Brok (2012, p. 548) “learning activities by teachers in collaboration with colleagues, resulting in a change in cognition and/or behavior at the individual and/or group level”. Van den Beemt and Vrieling (2016) believe that, this social learning can thus be seen as social action, and learning networks can be seen as social configurations that makes both collaborative and individual learning possible. Social learning in teaching groups can lead to innovative teaching.

Another socio-cultural aspect that can be considered in teacher education courses is classroom ecology. Hendrickx, Mainhard, Boor-Klip, Cillessen, and Brekelmans (2016) discuss “classroom ecology” or the “social environment of the classroom” as one of the most important factors that can be highly influential in learning. According to Gest and Rodkin (2011), as cited in Hendrickx et al. (2016, p. 30), “Affecting the peer ecological deliberately may even be a strategy for teachers to foster students’ development”. However, as they state, there are not lots of research to investigate the relationship between teacher’s behavior and peer relation; a deliberate behavior that can be learnt in teacher education courses and enhanced during the years of practice. Hendrickx et al. (2016) describe three aspects of the classroom peer ecology as followings (pp. 31-32): Richness of interpersonal ties, Status hierarchy, and Social Behavior. Another discussion about classroom ecology is done by Hastie (2016), in which it is believed that the focus of all researches in classroom ecology paradigm is on works that learners need to do during the lesson in the classroom that are representative of class life as “a set of three interrelated system (managerial, instructional, and student social)” (p.31).

Cultural factors are also very important to be considered in teacher education courses. De Laat (2012) emphasizes this aspect. He states that

“We need to pay more attention to the cultural aspects that contextualize learning, rather than keeping our focus mainly on learning outcomes and products” (De Laat (2012), cited in Carvalho, Goodyear, and De Laat (2017, p. 105)).

Psychological Aspects of Teaching

“Education and Psychology are interdependent” (Nezhad & Vahedi, 2011, p. 327) and it seems that one of the main pillars of teaching skill is being aware of psychological issues. There are various psychological issues that affect education directly or indirectly. The Coalition for Psychology in Schools and Education (CPSE), a group of psychologists and psychology teachers within APA, elaborate on twenty principles as the key psychological principles that must be considered by the teachers in the educational settings. This list, which contains twenty items divided into five categories, was published in 2015 is as following: Category1: cognition and learning including growth mindset, prior knowledge, limits of stage theories, facilitating context, practice, feedback, self-regulation, creativity; category2: motivation including intrinsic motivation, mastery goals, teacher expectations, goal setting; category 3: social and emotional dimensions including social contexts, interpersonal relationships, well-being; category4: context and learning including classroom conduct, expectations and support; and finally category5: assessment including formative and summative assessment, assessment development, and Assessment evaluation.

Considering the teacher education and teacher training programs held in the universities and institutions in Iran, one can recognize that instead of helping the pre-service teachers to become autonomous and reflective teachers in future who are able to build and reshape their own theories and techniques of teaching, most of these programs are trying to provide the teachers-to-be with a ready prescription on how to

teach a specific course book or how to teach each component of language. And if there is a program that addresses reflectivity and encourages reflective thinking, like the teacher education program held in Farhangian University or a few institutions, still it is limited to reflecting on

pedagogical and technical aspects of teaching and not the aspects beyond it.

Therefore, the researchers of the current study attempt to design and develop a model for enhancing reflectivity in teachers' mind: The model is called 3 Dimensional Reflective Model (3DRM). Which is shown in figure1:

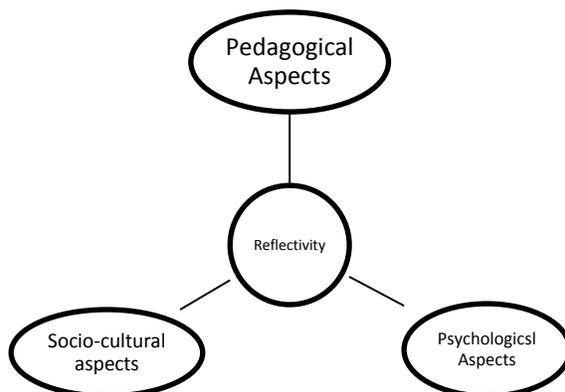


Fig.1. 3DRM designed by the researcher to increase teachers' reflection in pre-service programs

In this model the researcher claims that to be reflective, a teacher not only should revisit and investigate the teaching techniques and didactic issues of the classroom and related lesson, but also she/he should reflect on many other aspects and answer many questions, such as who the students are, how old they are, what knowledge do they bring with themselves into the class, in what type of society they have grown up, what their family background is, whether they have any learning problems, who learn better in groups and who individually, what type of personality each individual has, if there is a warm and friendly, competitive, or cooperative

atmosphere in the class, etc. And while reflecting on the success or failure of a lesson they should think about these aspects as well. The researcher believes that although some of the teachers by intuition are aware of some of these, it is essential to focus on each of them in teacher education courses. Therefore, a comprehensive model can be the one that sees these three aspects together. The findings of this phase are also in accordance with what Castle and Buckler (2018) propose as teacher's standards. The following table shows the summary of these standards with their equivalence in 3DRM:

Table 1.
Teacher's Standards by Buckler & Castle (2018)

Buckler & Castle Standards	3DRM equivalence
A teacher must plan and teach structured lessons (p.26)	Pedagogical aspects
A teacher must reflect on the effectiveness of lessons and approaches to teaching (p. 26)	Pedagogical aspects
A teacher must respond to the strengths and needs of students and have a secure understanding of how a range of factors can inhabit their ability to learn, and how best to overcome those (p.26)	Psychological aspects
A teacher must demonstrate an awareness of physical, social, and intellectual development of students, and know how to support them at different stages of development (p.26)	Psychological and socio-cultural aspects
A teacher must contribute to the design and provision of an ongoing curriculum within the relevant subject area(s) (p.47)	Pedagogical aspects
A teacher must fulfil wider professional responsibility; for example take the responsibility for improving teaching through appropriate professional development, responding to advice and feedback from colleagues. (p. 47)	Pedagogical and socio-cultural aspects
A teacher must make a positive contribution to the wider life and ethos of the school (p. 72)	Socio-cultural aspects
A teacher must be aware of students' capabilities and their prior knowledge and plan teaching to build on these (p.90).	Psychological and pedagogical aspects
A teacher must demonstrate knowledge and understanding of how students learn and how this impacts on teaching (p.90).	Psychological and pedagogical aspects

Therefore, it seems that the content of this model is confirmed with the findings of recent psychologists. These aspects are more important when we talk about language teachers since, teaching language one needs to tap students' prior knowledge, knowledge of world, environment, culture, social relationship; also needs to communicate with them and make them communicate with each other. Thus these teachers must be expert in these areas as well. Actually, an ELT teacher must be a psychologist and sociologist at the same time. This is also to some extent in accordance to what Freeman (2016, p. 19) calls the three central challenges of educating second language teacher. He believes that there are three main challenges in any second language teacher education course: 1) defining the content: how language in the world relates to language as content in the classroom; 2) how the classroom with its social structures and expectations defines language teaching as a particular form of pedagogical activity; and 3) how people who are users of language and have been students in the classroom learn to teach.

The main purpose of this study is to investigate the effect of 3DRM on teachers' reflective level because it is believed that if teachers are able to have a comprehensive pictures of all the aspects influencing the outcome of their teaching, then they can find a more effective solution. In this way teacher become more autonomous, they are their own theoreticians and are prepared to teach in any unexpected context. Actually this will be a life-long skill that is important to the whole educational system.

To achieve the purpose of this study, the following research questions were formulated:

- (1) What are the three Dimensional Reflective Model (3DRM) (designed by the researcher) on teachers' reflectivity?
- (2) Does it have any significant influence on Iranian pre-service teachers' reflectivity level?

Methods

Participants

To test the 3DRM, thirty-five student-teachers were selected. These students-teachers were studying at Farhangian University in Tehran, and

all of them were female aged between 19 and 25. And all of them had already passed four semesters at university including some general English courses and a few courses in teaching. These student-teachers, who were later divided into two groups, were trained and followed about two academic years by the researcher. It is worth mentioning that these student-teachers were from different cities of Iran and were supposed to start their career right after this program in one of the state secondary schools in Iran.

Instrumentation

To fulfill the aims of the research, three different instruments were applied: 1) teacher-students' portfolios' including a self-reflective essays written by them at the end of the treatment and five lesson plans along with five teaching reports, 2) an evaluation rubric designed and validated by the researchers which was used to assess the portfolios quantitatively. Since the rubric was researcher made, a content validation process was done in which six experts reviewed and evaluated the 25 items of the rubric. The rubric was applied by two different evaluators and inter-rater reliability of the scores were also calculated; and 3) a self-evaluation reflective questionnaire called "Profile of Reflective Thinking Attributes" designed by Taggart and Wilson (2005) which was used at follow-up stage to check the effectiveness if the model applied in this study. The inter-consistency and construct validity of this instrument were calculated using Cronbach's Alpha and Kaiser-Meyer-Olkin (KMO) and Bartlett's Test respectively.

Procedure

After dividing the participants into control and experimental groups, a 4-semester treatment started. The participants in control group did the normal practicum course of the University including one term pure observation, one term designing and practicing the activities to supplement the classroom lessons, one term designing and teaching five lessons based on the syllabus, and finally the last term a cooperative lesson

planning, teaching, and re-planning (team-teaching). In addition to these tasks and activities, the students in experimental group accomplished two types of assignments: research-based assignment and awareness-raising assignment. Each type is described here:

1. Research-based assignment:

In the third semester, the students in experimental group were asked to find a case in the school with one of the following problems:

- I. A person who seems to have learning disorder or lack of concentration
 - II. A person who is shy or introvert and cannot talk easily with others
 - III. A person with any types of behavioral disorder
 - IV. A person with high level of stress in the class or at the exam session
 - V. A very intelligent student who always finishes tasks soon and starts distracting others or get bored
 - VI. An indifferent student with no motivation
- Of course, the student-teachers need to find the case with the help and guidance of class teacher. Then, they were asked to study at least two texts (article or books) to know more about the nature of the problem, to find a remedy for that case, to test the remedy, and then to share the results with their classmates in one of the university sessions. In other words, the student-teachers in this group were asked to do a mini action research.

2. Awareness-raising assignment:

In all four terms during the reflection processes, reflection on their own performance, on teacher's performance, and on peer's performance and evaluating the effectiveness of a lesson, each time that they mentioned there was a problem, they should also answer this question: Was it pedagogical, psychological, or social? Or a combination of them?

The students in both groups were required to make a portfolio during these terms including the reports of their observations, their lesson plans,

the reflection forms, and a self-expression essay. These portfolios were then used by the researcher as the material for quantitative and qualitative data analysis and comparison of the participants in these two groups.

There was also a follow-up study in which the participants of both groups were sent a reflectivity self-evaluation questionnaire, via email, after working at schools for about one year.

Design

Since the current study deals with two very complicated issues, teachers and education, and both have several overt and covert dimensions to explore, the researchers preferred to apply triangulation to accomplish this research task. Triangulation is defined as “gathering and interpreting data from multiple viewpoints” (Brown, 2014, p. 20). Triangulation also increases the validity of a research (Somekh & Lewin, 2005, p. 50). In this study, the researchers opted to do a method and an investigator triangulation to increase reliability and dependability of the study as much as possible.

Method Triangulation: According to Ary, Jacobs, Sorensen, and Razavieh (2010) the assumption underlying method triangulation “is that the combination of methods results in better evidence. When these different procedures or different data sources are in agreement, there is corroboration” (p. 499). Therefore, both qualitative and quantitative methods were used to gather and analyze data. In fact, a mixed method approach was utilized to complete the study.

Investigator triangulation: Investigator triangulation is defined by Brown (2014) as “using multiple researcher”. As Ary et al. (2010) states, “Several human instruments working together are usually better than one; furthermore, team members act as peer reviewers or peer de-briefers, keeping one another honest” (p. 499). In the current study, at the treatment phase, both in quantitative and qualitative data analysis section, two evaluators were used to increase the inter-rater reliability of the quantitative method and dependability of the qualitative one and consequently, make the findings more generalizable.

To accomplish the method triangulation, both qualitative and quantitative methods were used to test the model proposed by the researchers. In fact, a mixed method approach was utilized to complete the study.

To test the model quantitatively, a pre-test post-test quasi experimental design was applied. The student-teachers’ understanding of reflectivity at the end of the experiment was measured using a questionnaire and a reflective essays. The self-reflective essays were analyzed based on the researcher-made scale and to increase the reliability of the obtained scores more than one judge is required and inter-rater reliability of the scores will be calculated. At the end the results obtained from both questionnaire and reflective essay in two groups were compared.

Table 2.

The Design of the Experiment Phase

Group	Pre-Test	Independent variable	Posttest
E	Y ₁	X	Y ₂
C	Y ₁	---	Y ₂

The self-reflective essays were also analyzed qualitatively by the researchers using coding system including open cods, axial codes, and selective codes.

Results

To check the effectiveness of the model as a part of practicum course in university teacher education courses, the researchers took two steps: first they analyzed the participants’ portfolios both qualitatively and quantitatively; second, they sent all these participants a questionnaire after a year of working.

The quantitative analysis of portfolios was done by the use of researchers-made evaluation rubric. The portfolios were assessed by two raters in order to increase the reliability of the scores. Then the average scores of rater 1 and 2 was calculated and the analysis was done based on these average scores. After checking the assumption of normality, an independent T-test was run to test the research hypothesis and see if there is any

significant difference between the reflectivity level of the students in these two groups. Here is

the result of the independent T-test:

Table 3.
Independent T-Test after the Treatment

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
Reflectivity	Equal variances assumed	2.538	0.120	12.240	34	.000
	Equal variances not assumed			12.508	31.670	.000

As shown in table 2, there is a significant difference between the scores obtained by the participants in both groups ($t(34) = 12.240$, $p = 0.00 < 0.05$). Therefore, it can be concluded that the application of three dimensional model causes this difference. So, the related null hypothesis was rejected.

For qualitative analysis, the researchers chose 5 portfolios from each group randomly. Then applying the coding system including open, axial, and selective codes, they analyzed these five portfolios in which selective codes were pedagogical, psychological, and socio-cultural aspects of teaching. Some of the findings of this analysis are as followings:

1. Less open codes and consequently axial and selective ones were extracted from the portfolios of the participants in control group.
2. The selective codes which were resulted from the categorization of open codes and then axial codes were: pedagogical, psychological, and socio-cultural aspects. This categorization and labeling was done based on the 3DRM.
3. For the first category (pedagogy) there were 4-6 axial codes extracted from the portfolios of the control group and 6-10 from the portfolios of experimental group.

For the second category (psychology), 2-3 axial codes were found in control and 3-4 axial codes in experimental group. Under the third selective code (social) there were 0-2 axial codes in the portfolios of the control group and 5-7 in the portfolios of the experimental group.

These findings are summarized in table 4.

Table 4.
The Summary of the Finding of Qualitative Analysis

Selective codes	Number of axial codes	
	Control Group	Experimental group
Pedagogical aspects	4-6	6-10
Psychological aspects	2-3	3-4
Socio-cultural aspects	0-2	5-7

Figure 2 shows a comparison between the axial codes which were extracted from these two portfolios and their richness. In this diagram the first group of items are related to the pedagogical aspects, the second group to the psychological, and the last group to the socio-cultural aspects.

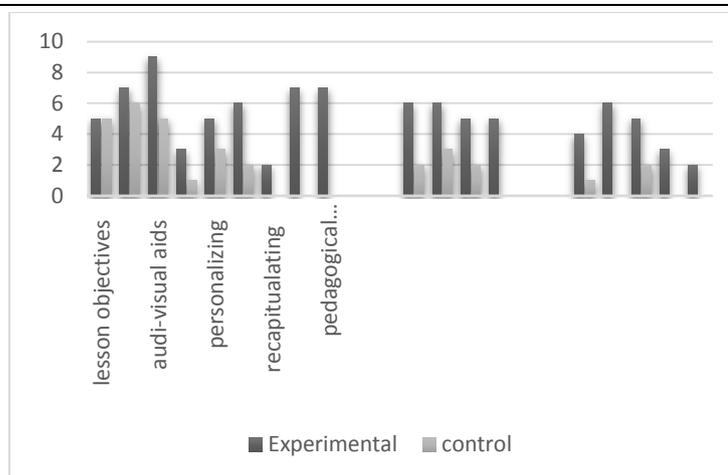


Figure 2. The comparison of two sample participants

For the follow-up phase, the researchers sent a self-evaluation reflectivity questionnaire to the participants of both groups via email after working for a year at schools. The instrument for measuring reflectivity in this phase was different from the one used in the quantitative part of previous phase because of two reasons:

- 1) Although the previous instrument (rubric) went on the process of validation, some may be doubtful about the accuracy and truthfulness of the findings. Thus, using another instrument (designed by Taggart, 1996 cited in Taggart and Wilson (2005, pp. 39-41)), which has been under validation process in many different studies, can eliminate any uncertainties.

- 2) Using two different instruments to collect data is data triangulation which increase the credibility of the findings of the research. Rugg (2010, p. 14) believes that when data triangulation is used, “findings can be corroborated and any weaknesses in the data can be compensated for by the strengths of other data, thereby increasing the validity and reliability of the results”.

The scores were calculated and after checking if the assumption of normality is met, an independent T-test was run to see if there is any significant difference between the reflectivity levels of these one-year-experienced teachers. As shown in table 5, there is a significant difference between reflectivity level of control and experimental groups ($t(34) = 5.654, p = 0.00 < 0.05$).

Table 5.

Comparison between Control and Experimental Groups at Follow-up Stage

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	df	Sig. (2-tailed)
Reflectivity	Equal variances assumed	3.966	0.054	5.654	34	.000
	Equal variances not assumed			5.779	31.614	.000

Discussion and Conclusion

Many studies have been done (Van Manen, 1977) to investigate the effectiveness of reflective teaching, to find a way to enhance reflectivity, to explore the factors influence reflectivity, and to design and test models to develop reflective thinking among teachers (Erginel (2006); Mahmoodi-Shahrehabaki (2015); Mathew, Mathew, and Peechattu (2017)). However, a few of them explored the role of psychological and socio-cultural aspects in increasing teachers' awareness and enhancing their reflection. The present study was done to investigate the effectiveness of designing a teacher education course based on 3DRM (pedagogical, psychological, and socio-cultural). Different statistical and qualitative analysis was performed to answer the research questions. The qualitative analysis both the one done on the portfolios right after the treatment and the one done on the scores obtained from questionnaire, a year after treatment, indicate that applying this model not only could increase student-teachers' reflectivity, but also make them more sensitive about the aspects beyond pedagogy.

Although participants in both groups paid attention to pedagogical aspects, exploring the open codes and axial codes extracted from their portfolios shows that those in experimental group have more awareness about psychological and socio-cultural issues influencing failure and success of a lesson. Therefore, it can be concluded that without giving people awareness about the importance of these aspects, they do not pay attention to them while reflecting on their teaching performance. This is the shortcoming of existing teacher education programs. This affirm Dobber (2011), as cited in Van den Beemt and Vrieling (2016, p. 2), opinion who believes that "the

preparation of student teachers for their social role as colleagues in school is weakly conceptualized in teacher education curricula". Also De Laat (2012), as cited in Carvalho et al. (2017, p. 105), emphasize that "We need to pay more attention to the cultural aspects that contextualize learning, rather than keeping our focus mainly on learning outcomes and products".

Moreover, looking at all steps taken in this study, it can be inferred that not only applying 3DRM could increase the student-teachers' awareness about psychological and socio-cultural aspects of the class and helped them to reflect on those aspects and consider them as the factors of success or failure, but also it enhance their reflectivity level in general and their metacognition ability to self-evaluate themselves. In other words, the 3DRM was designed to help students-teachers and teachers to have a full picture of their classes and their teaching context, to see the problems from different points of view and to have more comprehensive reflection. The data obtained and analyzed in this study confirms the effectiveness of the model. However, it is necessary to mention that this study was done on just a group of 35 student-teachers in one university in Tehran and more importantly, no randomization techniques was applied to select the participants of the study. Therefore, any generalization of the findings should be made cautiously. The findings of this study are also in accordance with what Castle and Buckler (2018) propose as teacher's standards including some items above merely pedagogical skills. Although the effectiveness of the model is confirmed in this study, due to the limited number of participants and not applying any randomization methods to select them, any generalization on the findings should be done cautiously.

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