Teachers Professional Development through Online Learning Environment: A Phenomenological Study

Farhad Seraji*, PhD; Sara Khodaveisi, PhD

Department of Education, Faculty of Humanity, Bu- Ali Sina University, Hamedan, Iran

ABSTRACT

Background: Online learning environment (OLE) has provided teachers with excellent opportunities for professional development. The present study attempted to investigate how Iranian teachers used this for their professional development.

Methods: In this study qualitative research approach was used. The participants consist of 25 teachers who actively promote the educational applications of the virtual environment. They were selected from among the teachers of Hamedan Province and were invited to a semi-structured interview. Snowball sampling technique was used, and the number of participants was decided to be 25 according to the principle of theoretical saturation.

Results: The findings suggested that teachers mostly use information retrieval, production and presentation of contents, and interactive tools for their professional development. By using information retrieval tools, they can access their required information in various fields, become informed about conferences and educational workshops, rethink their experience as well as improve their self-confidence in responding to students' questions. By using content production and presentation tools, they can produce high-quality multimedia contents, design various learning activities, encourage students to participate in activities, and adopt active teaching methods.

Conclusion: teachers can use online learning environment (OLE) for their self-directed professional development through searching, interactive and content production tools.

Keywords: Teacher's professional development, Online learning environment, Phenomenology, Curriculum implementation

Corresponding author:
Farhad Seraji, PhD;
Department of Education,
Faculty of Humanity, Bu- Ali
Sina University, Hamedan,
Iran
Tel: +98 81 38290993
Email: fseraji@gmail.com

Introduction

As a key element in the curriculum, the teacher plays a crucial role in the efficiency of education and facilitation of learning. The quality of a teacher's work is the most critical factor which affects learning quality as well as the success of educational systems. In the complicated ecosystem of school, teachers must be able to meet the requirements of authorities and different beneficiaries and gain a deep understanding of future social changes. Therefore, they should continuously update their knowledge and seek professional development. The scope of teachers' professional development includes various fields such as beliefs, educational and epistemological principles, and any other intellectual, behavioral, and practical aspect of teaching and learning (1). some researchers associates professional development with teacher's learning, learning how to learn, and changing knowledge into practice in line with improving students learning (2). Professional development refers to processes and activities designed to improve teachers' professional attitude, skills, and knowledge so that they could facilitate students' learning (3). Sometime professional development defined as a process of constant mental and practical development in teachers both before and during their service (4). Teachers can improve their professional development by participating in scientific symposiums, attending workshops and conferences, reading journals, and pursuing academic studies and professional training (5). In an age of information technology, however, traditional curricula do not sufficiently respond to teachers' professional requirements. This is where information and communication technology (ICT) can intervene and solve many problems of traditional teacher training, thereby paving the way for novel and more efficient methods. In the past, the professional development of teachers before and during their service revolved around the acquisition of knowledge, skills, and attitudes in educational and subject-specific fields whereas spread of ICT and popularity of cyberspace has necessitated knowledge of technology alongside subject matter and educational issues (6).

Importance of technological knowledge and ICT in teachers' professional development is observed in some models (7). They believe that today's teachers need a proper combination of content, pedagogical, and technological knowledge. In their model, they depict the interactions among these three fields of knowledge as content-technological, content-pedagogical, pedagogical-technological, and content-pedagogical-technological. This framework emphasizes the integration of technology into the entire process of teaching and learning (8). According to Holmes, Preston, Shaw& Buchanan, professional development of teachers is influenced by personal, organizational, technological, and socio-psychological factors (9). Some researchers suggest that ICT considerably affects the knowledge framework of teachers and helps them to have a better understanding of technological pedagogical content knowledge (10). Therefore, *Information & Communcation Technology* (ICT) enormously contributes to teachers' professional development.

Online learning environment (OLE) provides the convenience of accessing numerous scientific sources, cooperating with other teachers and expert groups, and representing ideas for content production, all of which can help teachers in their professional development. We can recognize four types of Internet tools, namely, discursive, adoptive, interactive, and reflective tools (11). Another classification is made by some other researchers who distinguish between communicative, supportive, design-and-production, and informative tools (12). These tools can be divided into two general types: presentational and participatory. Further divides presentational tools into synchronous and asynchronous, and participatory tools into discursive and knowledge-producing tools (13). Tomei's categorization consists of informative and communicative tools (14) other researchers recognizes tools for

facilitating understanding, communication tools, collaboration tools, and knowledge-construction tools. Whatever classification is made, all tools in a OLE may facilitate information access, representation of ideas in the form of multimedia production, text, audio, image, or animation, communication with teachers, students, and expert groups as well as a rethinking of previous knowledge and experience (15). In a nutshell, the contribution of OLE to teachers' professional development includes access to scientific resources such as journals for obtaining information about educational ideas and teaching methods, involvement in practical experiences like improvement of study skills among students, preparation of lesson plans, involvement in implementation of new teaching methods, preparation of teaching materials and test development, giving feedback to colleagues and receiving feedback from students, sharing experiences and narratives, seeking and offering help, exchange of teaching materials, exchange of innovative ideas on educational issues, seeking and offering consultation, teamwork, and establishment of expert forums and communities (16). As for the contribution of OLE to teachers' professional development, researchers have shown that when teachers share their knowledge through blogging, they can improve their computer-based teaching skills and, thus, enhance their general skills (17). According to some researches findings social networking enhances teaching experience by reinforcing cooperative learning atmosphere (18, 19) and facilitating information access (20, 21). Researchers found out that a web-based professional development program enables teachers to become familiar with more problem-solving strategies (22). Other research results revealed that participation in reading and writing of online journals contributes to the professional development of teachers (23). Wiki-editing provides ample opportunity for cooperative learning among teachers (24). Some research indicated that teachers can use search tools to find adequate information about the topic they are going to teach (25).

More than a million teachers work in Iran's education system that qualifies through pre-service and in-service programs for professional development. Preparing of teachers at pre-service level is the responsibility of Teacher Training Universities throughout the country, and in in-service level, this responsibility is assigned to planning and workforce training office. These training courses are mostly held in traditional form and attendance manner and this process, the ICT facilities are used exclusively for multi-choice tests.

Statistics show that 53 percent of Iranians have access to the Internet and the majority of Iranian families, teachers and students have access to a computer, mobile phone and internet. Also, some schools, not least smart schools, provide computer sites in which both teachers and students can perform ordinary tasks such as web searching, participation in social networks, or learning and research on the Internet. Given that no study has so far addressed Iranian teachers' use of the virtual environment for their professional development, the present research attempts to fill this gap by answering this question: How teachers use OLE for their professional development?

Methods

This research uses a qualitative approach with semi-structured interview. It is an inductive research whose conclusions are derived from a thorough study of events.

Research method: This research tries to recognize teachers' lives experiences of professional development in OLE using qualitative approach with the interpretive phenomenology method. Phenomenology discovers and reveals meanings same as they are lived in daily life. In this research, teachers' experience of using OLE in line of professional development was understood, interpreted and created. Indeed, interpretive phenomenology creates and organizes the meanings of phenomena within a particular time and place (26).

Participants: The participants consist of 25 teachers from Hamedan province who were interested in the application of ICT in teaching and learning. All participants were active at least three years on the social networks of teachers. They were selected by adopting non-probability, purposive and snowball techniques. To choose participants for interview, the main condition was being introduced by colleagues, and then their online activities on social networks were reviewed, and finally it was decided to choose the teachers for interview. Participants consisted of primary teachers (*n*=11, seven females and four male) and secondary school teachers (*n*=14, six females and eight male) that their age ranged from 23 to 51.

Each participant participated in a semi-structured interview of approximately 60 minutes. Each interview consisted of a set of questions about critical aspects of the OlE in teachers' professional development. First of all, teachers were asked to reflect on the role of OlE in their professional development and the changes OlE can bring to teachers professional development practices. Then they were asked to discuss specific aspects of OlE implication on professional development and its uses (27). The next questions aimed to investigate the referential aspect and distinguish the external horizon in the structural aspect, while the latter set of questions aimed to gain insights into the internal horizon of teacher's experiences in using an OlE for professional development. To ensure research rigor, quality, and trustworthiness of data, the participants were also asked some follow-up probing questions such as, "What do you mean by that?" or "Can you explain more?" Based on the principle of theoretical saturation, the 25th interview was decided to be the last one because no new data were produced in this interview. Each interview was then transcribed for analysis.

Data analysis: Thematic analysis was used as our method of analysis. In doing so, the data were first coded and, in the next step, their themes were extracted for analysis. Thematic analysis refers to the process of coding and analyzing the data with the aim of understanding what the data mean. In this process, scattered and various data are reformulated in the form of rich and detailed data. NVivo software package conducted data analysis. Using Braun and Clarke's (2006) six-step thematic analysis method, we first encountered with the data and studied the interviews several times. Then we transcribed them and their main ideas were recorded. Next, for the creation of initial codes and coding, we applied a deductive-inductive approach. In this stage, the most important parts of the data are specified, the coding framework is determined, and a suitable form for the themes is worked out. In the third stage of data analysis, we searched for and identified the themes. Themes are extracted from the specified codes and matched while also being continually revised. In the next stage, the identified themes are sorted, and then an analytical nexus of the themes is devised, and the final report of the data analysis is prepared. For enhancing the validity and reliability of data, the two researchers worked collaboratively through all steps of the qualitative data analysis and developing themes. Further, the researchers conducted a secondary coding round by reviewing the whole coding process one month after the first coding phase (28).

Results

The data from the interviews with teachers were analyzed and indicated that all interviewee teachers using interactive, informational and continent production tools for professional development. They are using informational tools such as search engines, directories, Persian and English scientific databases and conference finder; interactive tools such as weblogs, wikis, Skype, Telegram, Line, Whatsapp; and content production tools such as Power Point, Adobe Captivate, Adobe Flash, Adobe Photoshop, Swish Max, Snagit, Storyline, AutoPlay and Microsoft Word for identifying teachers' motivations for using OLE for their professional development. Finally, three overarching themes, 15

organizing themes and 100 initial themes were discovered that are presented as follows.

Overarching Themes 1: Access to Information for Professional Development

Using some tools such as search engines, directories, Meta search engines and scientific databases teachers can retrieve information which they need. Familiarity with these tools facilitates information access. Interview with teachers indicate that, using these tools can help them acquire new knowledge and information in various fields. This overarching theme are consisted from 7 organizing themes and 41 initial codes.

Access to information about teaching and evaluation issues. This theme consists of 12 initial theme. Information retrieval tools help teachers to obtain information in various fields. In this regard, Teacher 5 states:

"With these tools I have been able to solve a lot of problems and find answers to my questions. This searching ability helps to find information in the shortest time possible. I have come across many problems in my class which I could solve with a few simple searches on the net."

However humanitarian a teacher may behave in the class, he will not be accepted by the students unless he constantly updates his knowledge. The interviewed teachers unanimously say that they use information retrieval tools to update their knowledge of the theoretical foundations of their major and to become aware of the latest findings related to their specialization. As Teacher 14 puts it:

"I'm always searching on the net for up-to-date information in my field and try to order the latest specialized book from online bookstores. This way I can provide students with useful and flawless information. I used to read printed books and journals in the past, but now that the Internet can be easily accessed I prefer to use digital sources".

By adopting appropriate educational methods, teachers should provide students with a multi-faceted development. As Teacher 5 comments:

"I frequently use the Internet to solve the educational issues of my students. Search tools have enabled me to answer plenty of questions about my communication with students, techniques for increasing their self-confidence, correction of their undesirable behaviors, reinforcing their sense of responsibility, and boosting their questioning habits."

If the adopted teaching methods are suitable for the intended content or the teacher does not have a good command of the teaching method, realization of educational goals will face serious problems. Teachers can search for more suitable teaching methods on the Internet. Teacher 18 states:

"Whenever I intend to teach a new lesson, I search for the best teaching methods before beginning the lesson. So, I try to revise and improve my teaching methods by searching on the Internet and going through different essays and weblogs."

Evaluation is a fundamental aspect of instruction. The interviewed teachers stated that, by using information retrieval tools, they can get to know various assessment methods and implement the methods in their classes. For example, teacher 2 says:

"I try to make use of various learning assessment methods. I search for different assessment methods such as self-assessment, peer assessment, and portfolio as well as for how to apply them in the class."

Also, Knowledge of other educational systems may prove to be useful for both macro-level policymakers, teachers and school administrators. ICT has facilitated the exchange of experiences more than ever before. Teachers can explore various sources to find information about the educational systems of other countries. For example, Teacher 21 says:

"I really like to know about other educational systems and the experience of their teachers. There are many papers about this which can be usually found in scientific databases. For example, I have found out that the educational system in Japan emphasizes working, endeavor, and responsibility; they also aim at concrete and practical kinds

of teaching. So, we can make use of this experience."

Access to learning theories and research methods. This theme consists of 9 initial theme.as teachers are central to any educational system; they should be equipped with appropriate knowledge if they intend to make efficient decisions. Part of this knowledge can be obtained from the research findings of scholars. In order to solve their class problems, they sometimes need to use methods such as action research, lesson research, and narrative research. Teachers cannot stop their decision-making process in the class to receive external knowledge from researchers; rather they should act as their own intellectual agent and move toward research and production of their required knowledge. Given the opportunities provided by ICT, teachers can easily access rich sources of research methods. Teacher 12 put it this way:

"I face numerous issues like students' behavioral or learning problems and use the Internet to search for possible solutions or discuss with my colleagues."

Teachers always try to gain a thorough understanding of learning theories and their implications for teaching, assessment, and class management. Relevant information in this regard can be obtained by means of information retrieval tools. Teacher 4 confirms this point when he says:

"I can learn about different learning theories on the Internet and find out what practical strategies these theories may offer. This way, I can influence the learning quality of my students."

Increasing technological knowledge. This theme consists of 6 initial themes. Teachers are the main agents to introduce successful use of IT in the educational system. Today's teachers should be ready to provide students with technology-oriented learning opportunities. Technological knowledge and integration of ICT into the curriculum can help teachers and policymakers to include various learning activities in the curriculum which may, in turn, result in a variety of

learning results on the part of students. By using information retrieval tools, teachers can get to know the latest software applications and educational video games. Teacher 2 expresses the following opinion concerning this point:

"Now there are a lot of utilities for teachers. Whenever I feel the need, I refer to the Internet and find applications that help me to achieve my goal. Many of these apps have so far enabled me and my students to learn better. Since children learn their lessons better by means of computer games, I sometimes download games for using in the classroom."

Help to enhance teachers Self-confidence. This theme consists of 5 initial themes. Teacher's level of knowledge has an impact on their self-confidence. By using information retrieval tools, teachers can update their cultural, economic, social and educational knowledge and enhance their self-confidence.

By using information retrieval tools, teachers can address both students' education and nurturing. A teacher who can easily deal with students' education and nurturing at the same time will gain higher self-confidence. The comments of Teacher 11 are relevant here:

"Whenever my information about the topic I'm teaching is sufficient, I can feel good and see myself as an able teacher. Easy information access in cyberspace can help teachers keep their knowledge up-to-date. It has frequently happened that student's needed consultation about their educational, familial, or behavioral problems and I could find solutions by searching on the Internet. This way I can attend my classes with more self-confidence."

Information about conferences and workshops. This theme consists of 5 initial themes. The most obvious benefit of attending conferences and workshops for teachers is to become familiar with the latest achievements and get to know the prominent figures of their field. Teachers can find information about these conferences on different websites.

Given the recent advancement in ICT, educational workshops and conferences are held in both real and virtual forms. There are a number of websites such as www.conferencealerts.com, www.isc.org, and www.tav.ir that offer information on various conferences which are held both within and outside Iran. In this regard, Teacher 3 says:

"Until recently, it was really difficult to find information about conferences and workshops; what's more, you had to attend them in person. This put some restrictions on teachers in terms of time and place. Now technology has helped us and we can easily take part in virtual conferences and workshops all over the world."

Improving of thinking ability. This theme consists of 4 initial themes. Information retrieval tools help teachers to develop logical and critical thinking skills. The tremendous offer of information in OLE requires teachers to analyze the information from a logical, critical, and creative vantage point.

Faced with large amounts of information in OLE, teachers have to deal with and verify them by means of their critical thinking power. Critical thinking is defined as the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by observation, experience, reflection, reasoning, or communication, as a guide to belief and action. As teacher 4 puts it: "When I search for a topic on the Internet, I face a large number of results. Sometimes there are even totally contradictory viewpoints. So, I study further to be able to assess and judge those viewpoints."

Creative thinking is kind of thinking that results in new insights, new approaches, new perspectives, as well as new integrated ways of understanding and perception. Internet search tools have enabled both teachers and students to nurture and use their divergent thinking ability. Teacher 20 says: "When facing a large amount of information, we try to combine different ideas and create a novel idea. Given the variety of tools provided by

ICT, today's teachers easily make innovations in different fields."

Overarching Themes 2: Interaction for Professional Development

Interactive and communicative tools can facilitate the establishment of virtual communities in an OLE, which enable teachers to express and share their ideas in forums and group discussions. Analysis of the interviews showed that teachers mostly apply interactive applications such as Telegram, Whats APP, line, Facebook and other social networks with the aim of sharing experiences and ideas, team working, improving communication skills and providing feedback**.** This theme consists of 4 organizing and 33 themes, including:

Sharing experiences and ideas. Teachers can exchange ideas with their colleagues on the web and receive feedbacks on these ideas. This theme consists of 9 initial themes. As Teacher 23 puts it:

"In my weblog, I report all I do in my class so that my colleagues could know about my experience. What's more, I learn a lot by doing this. I receive the feedback of my colleagues and make use of their experience, too."

Experience is the result of interactions between individuals and their environment. Participants share their understanding of the topic, collaborate, support each other, and get involved in related, purposeful activities at high levels of cognitive skills. The interactive and cooperative tools of OLE make cooperative learning possible. Teacher may use these tools to collaborate with others by means of dialog and discussion. Learners' activities in such environments encourage them to adopt a critical approach to their learning and, by concentrating on their development, gain an understanding of the relationship between concepts and ideas from a critical point of view. Interactive tools support individual activities that contribute to group processes. As Teacher 18 says:

"My colleagues make comments on the experiences I report in weblog. I response to the comments; so we can learn a lot by

this exchange of ideas and critically assess our works, which boosts our critical thinking faculty. Also, I read wikis to get information about a topic, and sometimes I criticize and edit the information in a wiki."

Teachers can communicate either synchronous or asynchronous with their desired individuals or groups and exchange their thoughts, feelings, viewpoints, or any other information. As Teacher 18 puts it:

"In today's world, teachers can use interactive tools such as Skype or Telegram to communicate with scholars around the world and use their comments and feedbacks for improving their own work."

Improving discursive skills. OLE not only result in personal conceptualization in learners but also reinforce discussion skills. This theme consists of 8 initial themes. Interviews indicated that Teachers can form small virtual groups to hold discussions on a certain topic. Teacher 1 refers to this point:

"I'm member of an online group in which many teachers from all over the country are also members. Teachers can put forward their issues for other members to discuss and propose solutions."

The main requirement of using interactive tools for discussion, is to know how to use some software programs such as word-processing. A teacher who discusses or makes comments in wikis and websites or maintains a weblog should of course have a command on word-processing tools. In this regard, Teacher 19 states: *"For writing better in my blog, I try to improve my skills of using word-processing tools. When I come across a problem, I either ask others or search for it on the Internet."*

Improving team or group working competencies. Teachers can design and implement team projects by establishing social networks. This way, they can make use of the comments of the network members. This theme consists of 8 initial themes. As Teacher 22 says:

"Together with a number of colleagues from different cities, I select topics for research and do the research in a collaborative

manner. Actually we proceed through social networks."

Also, teachers can make use of newsgroups or forums as a group based learning activity. They can encourage learners to participate in class discussions or require learners to study the topic of the next session and pose a couple of questions in the forum. In most learning management systems, e.g. Blackboard, Web TC, and First-Class, participation in forums is referred to as a group learning activity.

Providing feedback. Teachers can exchange writing and oral ideas with their colleagues on the web and receive various feedbacks. This theme consists of 8 initial themes. Writing for presenting feedback, can enhance intellectual, interactive, and research skills of students. In OLE, teachers can communicate through writing, especially in the form of asynchronous communication with other colleagues or experts. They can enhance their writing skills while posting comments. These opportunities help teachers pay attention not only to grammatical features but also to the depth of expression and presentation. Teacher 9 says:

"Whenever I want to make a new post on my blog or present something to my students or colleagues, I think about my manner of writing and try to find the best wording possible. In the beginning, it was difficult but it gradually became easier for me."

Overarching Themes 3: Content Production for Professional Development

Content refers to the combination of organized knowledge, facts, concepts, principles, instructions, generalizations, attitudes, and research methods in relation to a certain subject matter. Teachers can produce high-quality learning contents by means of free Internet tools. These tools can be used to produce, manage, and present contents. Analyzing interviews indicated 4 organizing themes through 26 initial themes, including production of high-quality multimedia, developing various learning activities, developing content for learner motivation and developing content about

teaching and evaluation.

Production of high-quality multimedia. This theme consists of 8 initial themes. Tools for producing, managing, and presenting electronic contents enable teachers to represent their understanding of each lesson in multimedia forms composed of text, audio, image, and animation. If produced on the basis of multimedia development, these pieces of content can facilitate learning process. Teachers are provided with the ability to change fonts, colors, and other textual features and, when necessary, to add hypertexts for presenting more in-depth information. Teacher 13 confirms this by saying: *"Textual multimedia contents can improve and deepen students' understanding. Software packages for production of this type of content such as PowerPoint, Storyline, and MMB help me to create high-quality multimedia contents."*

Lectures, background sounds, and sound effects enrich learning contents. Audio can create a friendly atmosphere in the learning environment, attract learners' attention, and provide extra information. New technology has enabled us to add audio to our learning contents. For example, Teacher 10 says: *"Due to shortage of time, sometimes I record my voice and provide students with extra explanations through an audio file. They have told me over and over that these files would help them to learn better."*

The old saying that "an image is more valuable than a thousand words" emphasizes the role of images in learning. Images can be used to show a process, interactions among people, the effect of a situation on different events, and more detailed information about a topic as well as to motivate the learners. As put by Teacher 1:

"The explanations of textbooks about some topics are inadequate. So we can use images to elaborate more on the topic. Some topics are of such a nature that they can't be understood without images or videos."

If sizes, colors, and motions resemble those in the real world, an animation can appear to the learner as a real and believable phenomenon, which can facilitate the process

of learning. Animation contributes to in-depth learning by displaying the relationships among the components of an object or an event. It is particularly suitable for displaying abstract or complicated phenomena and concepts. Concerning animations and games, Teacher 15 says:

"Students learn better through games and animations, because they are attractive. To teach topics that are difficult to grasp, I try to use relevant computer games or animations."

Developing various learning activities. This theme consists of 7 initial themes. Learning activities are opportunities for learners to extend and enrich their learning. By using the tools for content production and presentation, the teacher can design different learning activities. As Teacher 17 puts it:

"By combining images, videos, and audios you can design different learning activities. Variety of activities can address many individual differences among students and engage all of them in one way or another in the learning process."

Learners can help teachers in the process of content production and presentation. This participation can help learners to process and learn the topic more deeply.

Developing content for learner motivation. The first step in the process of learning is to attract attention. Teachers can use these tools to present the intended contents in various forms such as text, audio, image, or animation and attract the attention of students. This theme consists of 6 initial themes. As Teacher 4 states:

"By showing an image or playing an audio or animation, you can easily move students' minds toward the topic."

The appeal of these tools to students attracts them to the topic and increases their motivation. According to Teacher 7:

"When we use these tools, students are more enthusiastic to learn and do the activities; so you can easily prepare various learning activities."

Developing content about teaching and evaluation method. Content production and presentation tools have affected teaching

methods by eliminating some of the restrictions of traditional teaching methods. This theme consists of 5 initial themes.

By using content production and presentation tools, teachers will become facilitators of learning process and managers of class activities. The comment by Teacher 12 illustrates the point:

"Whenever I prepare the contents prior to the class by using computer, students become more active and involved. I act as a guide in the class. Sometimes I collaborate with the students to produce contents; this greatly helps students to learn better."

Discussion

Teachers are a central element of any curriculum implementation. They need constant professional development to do their tasks more efficiently. OLE provides different tools for accessing scientific sources, communication with other teachers and scholars, and representation of ideas. The present study aimed at investigating Iranian teachers' use of an OLE for their professional development.

The findings indicate that Iranian teachers make use of three groups of tools: information retrieval tools, interactive tools and content production and presentation tools for their professional development. They can address professional development regarding content-pedagogical-technological knowledge. According to our findings, teachers can obtain information in the following fields by using information retrieval tools: the study major and the latest changes in field of study, students' issues, teaching methods, learning assessment methods, research or educational inquiry methods, learning theories, the educational systems of other countries, technological knowledge, and the schedule of conferences and workshops. These tools may contribute to creative and critical thinking and increase students' self-confidence in dealing with educational issues. Furthermore, it was found out that teachers use online learning tools to produce and present educational contents. They use these

tools to produce high-quality multimedia contents in the form of text, audio, image, computer games, and animation. They also develop various learning activities and enable learners with different cognitive and metacognitive abilities to produce and present contents, thereby increasing students' motivation for participation in the process of learning. Moreover, teachers can become more familiar with active teaching methods by using these tools.

Another finding is that teachers can use interactive tools to share their experiences and receive feedback on their work, create a collaborative climate, improve their own critical thinking, enhance their skills of writing and working with word-processing tools, communicate with colleagues and scholars, improve their discursive abilities, collaborate with colleagues and researchers in team projects, and design personal and group learning activities. With regard to the role of OLE in teachers' professional development, our findings conform to some other research findings. Some researchers show that web blogging and wiki can improve teachers' professional development. This research have shown that blogging can improve teachers' computer-based teaching skills (17). Other researchers show that wiki provides opportunity for cooperative learning among teachers (24). Some other researchers emphasize that social networking can enhance teacher's teaching competencies by reinforcing cooperative learning atmosphere and facilitating access to information (18-20). Findings of Ronaldo, Salvador & Luz revealed that teachers can use search tools to find adequate information about the topic they are going to teach (25). Van Eekelen, Boshuizen & Vermunt indicated that teachers' participation in online journalism can improve their professional reading (23). Also Hokka & Etela Pelto show that an online professional development program improves problem-solving strategies among teachers (22). Therefore, it can be said that OLE facilitates access to information sources, multimedia representation of ideas,

communication with teachers, students, and expert groups, reflections on previous knowledge, and rethinking of experiences.

Ultimately, the main goal of teachers' development process is to improve the students' education process, though it can have many forms such as practitioner-development, formal education, training, and informal support (29). Some methods such as conference, seminar, workshop, collaborative learning among members of a team and a course at a college or university are formal professional development models, and discussions among colleagues, independent research, observation of a colleague's work, or learning from a peer are the informal models. Results of the interviews indicate that using OLE among teachers is related to their informal professional development. Therefore, we suggest that in the Iranian teachers' performance evaluation system, must be equipped with the necessary mechanisms to evaluate the informal professional development to motivate teachers to use OLE.

The results of this research also identified that teachers for their self-professional development, Utilize a variety of information retrial, content representation and interactive tools. However, they still do not use some tools. For example, in any of the interviews, teachers did not point to using MOOCs, while MOOCs provide suitable conditions for professional development. Therefore, if teachers become familiar with the functions, features, and capabilities of these tools, they will benefit from them for their continuous learning (30, 31). Teacher training university and planning and workforce training office can introduce these capabilities to teachers, especially with regard to using the OLE.

The other part of this study indicates that teachers are utilizing online tools for access to resources, representation of ideas and content production, extent their interaction with teachers and experts in various fields of teaching, assessment and research; improving communication skills, discussion and interpretation of data. However, the scope of

teachers' activities goes beyond this. Today, based on the TPACK framework, the range of ICT integration with education and learning covers all theoretical and practical activities of teachers (32). Hence the practitioner associated with teachers' professional learning will notice the introduction of the TPACK within teachers' professional development programs. Also, the study found that most of the teachers' professional development programs in Iran are focused on short-term plans and in the form of a workshop. Hence we suggest that educational policymakers and planers provide a long-term plan tailored to the cultural and social attributes of teachers in this regard.

The main limitation of this study was that informal methods of teacher's professional development including self-studying the digital resources, online synchronous and asynchronous interaction with colleagues and experts, blogging, editing in wikis and collaboration in virtual groups are not common among Iranian teachers. However, they use these tools for their personal and daily affairs. In order to find teachers who, use OLE for professional development, researchers were compelled to set up 72 interviews with teachers using snowball sampling method. However, at the beginning of or during the interviews, it became clear that 47 of them did not think about using OLE in line with their professional development, but they use these facilities to teach in class or to perform personal affairs. Therefore, the results of this research may influence the teachers' general views of professional development and Iranian society when using OLE. Accordingly, we propose that future researchers study methods of informal professional development regarding OLE classification, and then introduce different applications of these tools to teachers.

Another limitation of this study was the lack of distinction between primary and secondary school teachers, and this issue may affect the generalization of results. Although primary and secondary teachers in interviews did not show any differences,

caution is advised when generalizing this result to various societies with different cultural attributes. Hence, we suggest that future researchers study perceptions and experiences of primary and secondary school teachers separately when using the OLE for their professional development.

One of the limitations of research was a lack of distinction between male and female teachers' opinions, which may affect the results of research. In this study, 12 male and 13 female teachers participated in the interviews, and there were no differences between their opinions on gender. However, according to the results of previous researches male and female teachers may have different views about using ICT and OLE (33, 34). Therefore, while considering this issue in generalizing the findings, we recommend further research, to study the experiences of female and male teachers in the use of an OLE for professional development.

Using OLE and view to teachers' professional development are as highly context oriented and cultural issue. Therefore, we recommend other researchers to study how TPACK framework is used for the professional development of teachers in various cultural contexts.

Authors' Contribution

The authors devised the research concept, supervised the study, data collection, and analysis, participated in the coordination of the study, and critically revised the manuscript.

Ethical Considerations

In this research, all of interviewees with their tendency and satisfaction participated in research and no private information was exchanged among interviewer and interviewees.

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Conflict of Interests

The authors declare that they have no conflict of interests.

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