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Research Article

The Characteristics of Elementary School Teachers' Lifelong-Learning Competencies: A Convergent Mixed-Methods Study

Ibrahim H. Acar¹
Istanbul Medipol University

Sukran Ucus²
Ahi Evran University

Abstract

This study aims to address the characteristics of elementary school teachers' lifelong-learning competencies using a convergent parallel mixed methods design. The participants are 203 elementary school teachers (71.9% female, 28.1% male) for the quantitative strand of the study and 25 randomly selected elementary school teachers for the qualitative strand. Teachers report their lifelong-learning competencies in the quantitative strand, and semi-structured interviews are conducted with teachers in the qualitative strand. Quantitative data are analyzed using cluster analyses, and qualitative data are analyzed using an open-coding system, after which the quantitative and qualitative results are merged. Cluster analyses show teachers to be categorized into three cluster groups (high, medium, and low) that reflect their lifelong learning self-management, learning-how-to-learn, initiative and entrepreneurship, information acquisition, decision-making, and digital competencies. The results also show teachers to differ in their competencies depending on which cluster group they belong to. Teachers in the high cluster group show higher levels of lifelong learning competencies, whereas teachers in the low group show lower levels. The qualitative analyses from the interviews consistently show teachers to have similar perceptions of lifelong learning that reflect the cluster group they belong to from the quantitative strand. Findings from the current study highlight the importance of lifelong learning competencies in the teaching profession.

Keywords

Lifelong learning • Elementary school teachers • Convergent study • Professional development • Teaching profession

1 **Correspondence to:** Ibrahim H. Acar (PhD), Department of Early Childhood Education, Faculty of Education, Istanbul Medipol University, Room C-307 Kavacık Mah. Ekinciler Cad. No: 19 Kavacık- Beykoz, İstanbul Turkey. Email: ihacar@gmail.com

2 Department of Early Childhood Education, Faculty of Education, Ahi Evran University, Kirsehir, Turkey. Email: sukran.ucus@ahievran.edu.tr

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Teachers and educators should lean toward improving their lifelong learning (LLL) skills when dealing with advancing their pedagogic knowledge; they should practice adapting to the fast-changing globalized world. The future perspective of learning is based on utilizing the qualities of global citizenship and LLL so that learners will be able to keep up with the changes in the world (Zukas, 2006). LLL is an integrated and holistic system of learning that is based on self-motivation in order to develop one's personal and professional skills (Friessen & Anderson, 2004). Thus, LLL involves not just learning but also enhancing active participation in society, providing solutions to community issues, improving necessary skills, and being open to new learning opportunities (Knapper & Cropley, 2000; Koç, 2007). From this perspective, lifelong learners can adapt their learning strategies to the contextual demands and requirements (Friessen & Anderson, 2004); it is an ongoing process that provides flexibility, adaptation, and active participation in innovative experiences and practices in the business world and society.

LLL includes many skills, among them being: desiring to learn, feeling responsible for learning, learning to learn, improving reading comprehension, having basic number skills, having oral and written communication skills, using information technology skills, having a wide repertoire of strategies to provide effective learning, having self-development and self-regulated learning skills, having higher-order thinking skills and using them effectively, thinking critically, solving problems, and having both research and social skills (Demirel, 2009; Demirel, Sadi, & Dagyar , 2016). A priority of LLL should be to provide learners with the skills and knowledge to promote the impact of globalization and a global society (Bourn, 2001).

LLL provides people with the required resources (opportunities and facilities), knowledge (including cultural experiences), and ability to develop themselves without preventing others' learning; it allows society and economic welfare to develop, health and the environment to be protected, and organizational skills to be gained, which covers respecting others' and other communities' rights (Lynch, 1977). According to Knapper and Cropley (2000), lifelong learners plan and measure their learning in formal and informal environments. They also learn from their peers, teachers, and tutors, gathering information from different sources and disciplines when needed. Moreover, they use and implement different learning strategies in different circumstances and cases. In educational fields, the profiles of lifelong learners reflect their positive sense of self, critical thinking, curiosity, self-motivation, inquisitive learning, information literacy, advanced organizational skills, multiple sources for learning skills and styles, and aerial outlook (e.g., broad vision, different perspectives; Acar & Yildiz, 2016; Knapper & Cropley, 2000).

Being a lifelong learner provides individuals with abundant opportunities such as contributing to community development as well as other areas in society. Lifelong

learners are active agents in society who are able to play their part in shaping the future. From an educational perspective, schools are a part of the community with great potential for community development by creating community-school partnerships (Lasser & Fite, 2011). Furthermore, teachers as active lifelong learners can provide essential contributions to society by guiding community members in addition to students (Matheson & Matheson, 1996) the notions of lifelong learning and lifelong education have taken on dimensions far removed from the almost Utopian ideals of their supporters in the years following the publication of the report *Learning to Be*. Given the current economic gloom, the popularity of the terms with politicians and the fact of being in the European Year of Lifelong Learning, it is perhaps appropriate to take stock of the whole notion of lifelong learning and lifelong education and to see just what meaning (if any). From this perspective, having teachers self-evaluate their teaching beliefs, apply their self-identified strengths, and engage students in the learning process so students perceive learning as an enjoyable activity is important (Yeung, Craven, & Kaur, 2014). This evaluation can include self-evaluations and reflective elements that enable teachers to participate in teacher-training programs for self-improvement. By doing so, teachers enhance their concept of self at the same time as their teaching skills and values; it also facilitates advocating student learning (Yeung et al., 2014).

Effective improvement of cognitive and metacognitive skills through LLL can only occur when teachers themselves have the content knowledge, skills, and confidence to effectively engage in teaching. This aspect refers to teachers at all levels, from pre-school to higher education. Clearly, the need also exists to consider both pre-service and in-service teacher training programs that cover specific content and strategies (Cornford, 1999; Lasser & Fite, 2011). Furthermore, Lasser and Fite (2011) emphasized universalism in early childhood teacher education programs, where a unique model of teacher preparation, curricular goals, and instructional methods is required to prepare effective educators for the youngest students. Considering the importance of LLL to teachers for better teacher and child outcomes, this study aims to examine the key features of teachers' LLL skills, as well as how to group teachers based on their LLL characteristics. By doing so, we can identify teachers' LLL adequacies and inadequacies so as to be able to develop intervention programs for improving their LLL shortcomings.

Teachers and Their Lifelong Learning Competencies

In today's world, "teachers' roles are becoming ever more important and multi-faceted because they increasingly incorporate social, behavioral, civic, economic, and technological dimensions" (European Commission Study Group, 1997, p. 131, as cited in Coolahan, 2002). Furthermore, teachers play a major role in enhancing the success of educational changes both in class and at school (Van der Heijden,

Geldensa, Beijaardb, & Popeijusa, 2015). Therefore, preparing teachers for the 21st century as lifelong learners in a global context has increased in value (Guo, 2014). Other aspects of being a teacher in today's world require becoming an agent of change and promoting understanding and tolerance (Coolahan, 2002). In addition, educating students for sustainability has become a new paradigm in the LLL process; as such, this process can lead societies to produce informed and involved citizens with creative problem-solving skills and scientific, technological, and social literacy who are actively engaged in responsible social and environmental issues for a better future (Fien & Maclean, 2000).

Given the importance of teachers having LLL skills, examining the characteristics teachers have for these skills is at the center of research. Van der Heijden et al. (2015) conducted an exploratory study to obtain insights into what characteristics teachers can have as lifelong learners. The researchers found that both the personal and professional characteristics of these teachers reflect certain indications regarding LLL. Teachers with better LLL competencies seem to have an eagerness to learn both in daily life and while teaching in school; they learn from their experiences, networks, and colleagues as change agents. They also use their competencies to initiate professional self-development and to improve their teaching skills and applications.

As a competency, LLL has been a central requirement for preservice and in-service teachers in European education policy since the end of the last century. Classrooms and schools are primary places for teaching LLL qualities (Schober, Lüftenegger, Wagner, Finsterwald, & Spiel, 2013; Spiel, Lüftenegger, Wagner, Schober, & Finsterwald, 2011). Considering the regular interactions between teachers and students, teachers are a main source for promoting LLL. This study offers a promising approach to measuring teachers' competencies in promoting aspects theoretically associated with LLL. Teachers' characteristics related to LLL can be grouped under social, cognitive, and digital characteristics. Investigating these characteristics will provide information that can be used by all teachers across different subjects and grade levels and has the potential to be used in schools' self-evaluations. Also, creating teacher profiles that represent LLL competencies can provide helpful information on the multifaceted structure of LLL, which can be used in teacher education and beyond (Sugrue, Thuama, Iacuta, & Ona, 1997). Overall, LLL for teachers requires flexibility, planning, infrastructure, resources, and coherence, though these characteristics haven't attracted much attention from policy-makers or teacher-training programs (Sugrue et al., 1997).

Exploring teachers' LLL has become an important phenomenon for guiding changes that align practices with LLL in the context of education (Nguyen & Walker, 2014). A framework for LLL outcomes encompasses four conceptual features and eight key elements in practice: sustainability, developing informed judgment,

constructing reflexive learners, and forming the future practitioner. [Nguyen and Walker \(2014\)](#) defined the eight key elements as: student engagement, integrative activities, authentic activities, student-designed assessments, learning and judgment, modeling and practice, working with peers, and giving/receiving feedback.

To provide teachers with LLL competencies, educational institutions should promote inquiry-based learning and give teachers the ability to systematically understand the factors that affect in-class learning ([Dickson, 2011](#)). Schools can play a role in training teachers as part of their accrediting education by allowing teachers to choose compulsory and elective courses regarding LLL competencies ([Dickson, 2011](#)). [Brčić and Perin \(2014, p. 23\)](#) revealed that competencies such as “communication in the mother tongue, communication in foreign languages, mathematical competencies, basic competencies in science and technology, and digital competency” are included in teacher training programs in Croatia.

When looking over teachers' LLL in the Turkish literature, [Atik-Kara and Kurum \(2007\)](#) are seen to have conducted research on elementary school preservice teachers' views and perceptions of LLL. They found the preservice teachers to not have enough knowledge or awareness of LLL. In parallel with this, another study found some teachers to associate the term LLL with the educational period and others to identify it with self-improvement and adjustment ([Demirel & Yağcı, 2012](#)). Moreover, previous research has also found gender differences to occur in some LLL characteristics. For example, significant differences between male and female candidate teachers' perceptions regarding LLL competencies have emerged, with this significant difference favoring prospective female teachers ([Demirel et al., 2016](#)).

From the theoretical perspective, LLL is a dynamic construct that requires its utilizers to respond to changes in society and technological advancements ([Jarvis, 2004](#)). LLL's dynamism is thought to be influenced by learners' individual characteristics (e.g., personality) and environmental factors (e.g., learning context). Previous research has examined how different factors can play a role in developing teachers' and adults' LLL in general (e.g., [Brčić & Perin, 2014](#); [Demirel et al., 2016](#)). However, most research has utilized variable-centered approaches for investigating teachers' LLL, which may be helpful for quantifying factors related to LLL. The person-centered approach, on the other hand, has been lacking in LLL research pertaining to teachers. Although the variable-centered approach is important in understanding how personal and environmental factors relate to teachers' LLL, a person-centered approach can provide invaluable insight into how a teacher's full spectrum of LLL competences interacts to structure their LLL ([Lanza, Lemmon, Schafer, & Collins, 2008](#)). To address the gap in the literature on the lack of person-centered approaches to teachers' LLL, we have utilized a person-centered approach (i.e., cluster analyses) to examine teachers' competences regarding their LLL.

Method

This mixed methods study addresses the characteristics of elementary school teachers' lifelong learning competencies using a convergent parallel mixed methods design in which quantitative and qualitative data are collected in parallel, analyzed separately, and then merged. This study's quantitative strand uses cluster analysis to categorize these characteristics. The semi-structured parallel interviews that were performed with a subgroup of the participant teachers explore specific teacher features at each cluster defined in the quantitative strand of the study. The reason for collecting both quantitative and qualitative data is to merge their results to explain the characteristics of teachers' lifelong learning. See Figure 1 for a depiction of the convergent mixed methods design used.

Research Questions

- 1- Quantitative research question: What groups of elementary school teachers exist as based upon their lifelong learning competencies?
- 2- Qualitative research question: What kind of experiences do elementary school teachers perceive regarding their lifelong learning?
- 3- Mixed-methods research question: To what extent do the quantitative (clusters) and qualitative (interviews) results converge?

Rationale for Using Convergent Design

Mixed methods design help researchers integrate both quantitative and qualitative data in their analyses and interpretations to provide a broader picture for a researched phenomenon (Creswell, 2014). Convergent mixed methods design merge the results from the quantitative and qualitative data analyses to provide a broader picture of a phenomenon from both quantitative and qualitative perspectives (Creswell, 2014). In consideration of this, we have employed the convergent mixed methods design in this study to provide a broader picture of the characteristics of elementary school teachers' lifelong learning competencies.

The Quantitative Sample

The participants in the current study include 203 elementary school teachers (71.9% female; 28.1% male). Their age ranges cluster into four categories: 22-33 (48.3%), 33-43 (27.1%), 44-55 (19.2%), and 55+ (5.4%). A total of 86.7% of teachers work at public schools, 5.4 % works at private schools, and 7.9% work at different levels; 93.4% have bachelor's degrees, 2% have associate degrees, 3.4% have master's degrees, and 1% have doctorates. Of these teachers, 46.3% have 1-8 years; 22.2%, 9-16 years; 8.9%, 17-24 years; 15.3%, 25-32 years; and 7.4%, 32

years or more teaching experience. Participants, located in schools at both urban and rural areas of central Turkey, were chosen randomly to represent a variety of school contexts, such as rural (i.e., working with multi-grade classrooms) and urban schools. Schools in rural areas serve students from low socioeconomic backgrounds, and schools in urban areas serve students with varying socioeconomic statuses. We received all ethical permissions from the Ministry of Education Research Ethics Board, and participation in the research is on a voluntary basis.

The Qualitative Sample

The sample in a qualitative strand of mixed methods research is based on criterion sampling (Creswell, 2014). Our criterion is being an elementary school teacher who has already enrolled in the quantitative strand of this study. Therefore, we randomly selected 25 elementary school teachers who had also enrolled in the quantitative strand of the study. As we randomly selected these teachers, we were unaware of which cluster they might fall into in the quantitative strand of the study. By doing so, we had the opportunity to represent each cluster with different perspectives of teachers when converging the quantitative and qualitative results.

Assessing Teachers' Lifelong Learning Competencies in the Quantitative Study

The Lifelong Learning Competence Scale (LLCS; Uzunboylu & Hursen, 2011) is used to assess teachers' lifelong learning skills. The LLCS is a 51-item scale consisting of six subscales: Self-management competencies (e.g., knowing how to self-motivate in career development), competencies of learning how to learn (e.g., ability to form concept maps when acquiring knowledge on a subject one is interested in), competencies of initiative and entrepreneurship (e.g., ability to turn created opinions into action at work), competencies on acquiring information (e.g., accessing information on the Internet through search engines such as Google), digital competencies (e.g., facilitating the sharing of information on the Internet with colleagues), and competencies of decision making (e.g., the ability to pre-plan each stage to reach career-development goals). Teachers respond using a 5-point Likert-type scale where 1 = "never" and 5 = "almost always". Uzunboylu and Hursen (2011) provided the reliability and validity of the measure with Turkish teachers.

We ran principal component analyses with six sub-scales to examine how much variance is explained in the LLCS. Principal component analyses shows that 70.37% of the total variance (eigenvalue = 3.52) is explained by the six sub-scales of the LLCS. In the current study, the internal consistency for competencies on self-management (13 items) is $\alpha = .94$; on learning how to learn (12 items), $\alpha = .93$; on initiative and entrepreneurship (10 items), $\alpha = .94$; on information acquisition (6 items), $\alpha = .82$; on decision making (4 items), $\alpha = .89$; and on digital competencies (6

items), $\alpha = .86$. In the original validation and reliability study (Uzunboylu & Hursen, 2011), researchers also found similar Cronbach's alphas (.93, .91, .89, .83, .85, & .75, respectively). Items in each sub-scale are averaged to create a composite score for further analysis of each subscale.

Qualitative data collection. We conducted semi-structured interviews with 25 randomly selected teachers simultaneously with the quantitative data collection. Interview questions include describing lifelong learning, lifelong learning for teachers, how teachers can improve their lifelong learning competencies, what kind of extra-curricular activities can help lifelong learning, and what kind of characteristics affect a teachers' lifelong learning. Teachers are visited in their school, with all interviews performed in person in any available, quiet room in the school to avoid distraction. All interviews have been audio recorded then transcribed for the analyses.

Each qualitative interview includes six main questions; however, these questions have been supported by probing teachers' answers during the interviews. Interview questions are based on an extensive literature review and occur in the quantitative strand of the study as the convergent design requires parallel conceptualizations of a researched phenomenon (Creswell, 2014). We interviewed three teachers for the interview questions' pilot study and finalized the questions after getting feedback from these three teachers. The number of interviews was identified by using the clusters created in the quantitative strand of the study to examine whether the study's qualitative strand converges with its quantitative strand. From this perspective, we have put eight teachers in the high cluster group, eleven teachers in the medium cluster group, and six teachers in the low cluster group.

Quantitative data analysis. First, the normality of variables has been examined. All variables are within the accepted range of skewness and kurtosis (-1.5 skewness/kurtosis +1.5; Tabachnick & Fidell, 2013). Internal consistency of the subscales has also been examined as seen in the methods section. Descriptive statistics and bivariate correlations between variables are presented in Table 1.

Next, we ran cluster analyses to identify the groups of teachers depending on their levels of lifelong-learning competencies. Two-step cluster analysis is an exploratory statistical tool for bringing out natural groups within the data (Everitt, Landau, & Leese, 2001). We used the Bayesian information criterion (*BIC*; the smaller the better) to define how many clusters are meaningful (Norusis, 2010). In addition, small cluster sizes (< 20%) are not taken under consideration as they may have no meaning to interpret (Norusis, 2010). Relative distribution and centroids of final clusters are presented.

Qualitative data analyses. In consideration of the aim of this mixed methods research to broadly understand the characteristics of teachers LLL competencies in

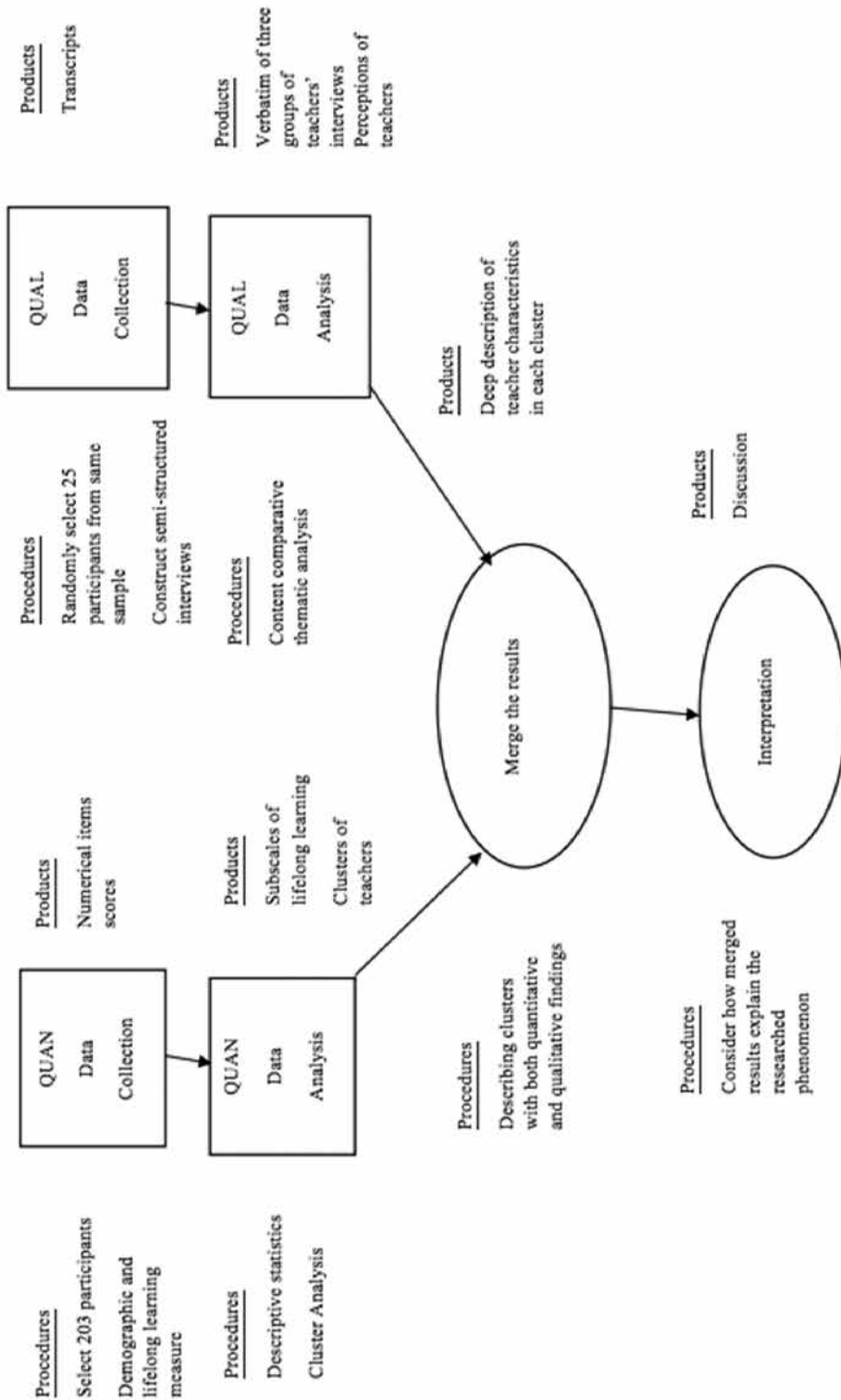


Figure 1. A depiction of the convergent design of elementary school teachers' lifelong learning competencies. QUAN = Quantitative; QUAL = Qualitative

clusters, we grouped teachers according to their clusters from the quantitative results. First, we transcribed all the interviews then organized the data by replacing participants' names with pseudonyms to protect confidentiality. We employed phenomenological reduction, setting aside our personal perceptions and ideas while describing the phenomenon and analyzing the data (Creswell, 2013). Then, we read through all transcripts line by line and added margin notes to consider initial codes. In the next step, we listed significant statements relevant to the researched phenomenon. This process, called horizontalization, can be conceptualized as highlighting significant statements and words that reflected participants' experiences and meanings regarding researched constructs. Next, we clustered the significant statements into meaning units that also reflected teachers' perceptions of lifelong learning competencies (Creswell, 2013). Each meaning unit was then converged with the quantitative results to provide a deeper understating of the teacher clusters that had emerged.

Table 1
Descriptive Statistics and Bivariate Correlations for the Research Variables

Variable	1	2	3	4	5	6	7
1. Self-management	-						
2. Learning to Learn	.79**	-					
3. Initiative & Entrepreneurship	.71**	.78**	-				
4. Acquiring Information	.57**	.62**	.66*	-			
5. Digital Competency	.57**	.58**	.58**	.78**	-		
6. Decision Making	.57**	.54**	.59**	.55**	.60**	-	
7. Gender	.08	.03	.14	.04	.08	.20**	-
<i>M</i>	3.73	3.80	3.78	3.67	3.61	3.68	
<i>SD</i>	.74	.70	.74	.75	.82	.79	
<i>Skewness</i>	-.54	-.45	-.33	-.16	-.27	.03	
<i>Kurtosis</i>	-.22	-.38	-.44	-.49	-.28	-.98	

** $p < .01$.

Reliability of the qualitative data was established using prolonged engagement (i.e., spending enough time in the context of the setting and participants to understand the phenomena of interest), which is a strategy for establishing credibility/confidence in qualitative data (Krefting, 1991; Lincoln & Guba, 1985). Because the secondary investigator worked with the participants in their environment, she engaged with them longer in their setting. This prolonged engagement permits the researcher to establish rapport with the research participants, increasing the likelihood of observing natural behaviors and participants' ideas regarding the researched phenomenon. Afterwards, the results were reported, which included rich dense descriptions and direct quotes from the participants (Merriam, 2009). This helps readers understand and sense participants' perspectives.

Converged Results from Quantitative and Qualitative Analyses

Descriptive statistics and bivariate correlations between variables are presented in Table 1. The two-step cluster analysis shows $BIC = 875.475$ for Cluster 1; $BIC = 626.253$ for Cluster 2; $BIC = 577.622$ for Cluster 3; and $BIC = 604.974$ for Cluster 4. As seen, the BIC starts increasing after Cluster 3, which implies Cluster 3 is the best solution in the two-step cluster analyses. Regarding the sizes of these three clusters, Cluster 1 includes 43.4% of the teachers, Cluster 2 contains 29.1%, and Cluster 3 contains 27.6% (see Figure 2).

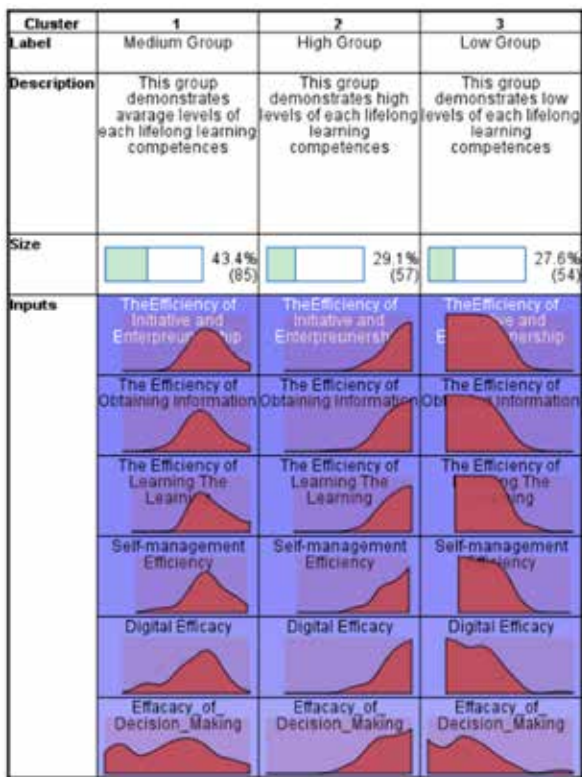


Figure 2. Relative distributions of lifelong learning competencies for the final clusters.

Characteristics of the Teacher Clusters

As the relevant distribution (see Figure 2) and centroids (see Table 2) show, teachers in Cluster 1 (43.4%) report average levels for their lifelong learning competencies on self-management, learning how to learn, initiative and entrepreneurship, acquiring information, decision making, and digital competencies. Teachers in this cluster tend to report their levels of lifelong learning competencies to be around 3.50 (on a 5-point scale), which indicates the teachers in this group to have average levels of competencies.

Qualitative analyses of the transcripts reveal the teachers in this group to define lifelong learning as personal improvement by refreshing existing knowledge and being

open to new situations and opportunities. Although not at a deeper level, teachers also mentioned that they should develop their skills by following current events in either their daily or professional life. For instance, one teacher in this group said:

A teacher should be open to following current improvements and learning. A teacher needs to be a good learner before being able to be a good teacher to students. This way, the teacher can lead students to become lifelong learners.

In addition, teachers in this group mentioned some activities that perceivably lead them to be lifelong learners. The main activities that were mentioned are mental arithmetic puzzles, attending yoga, attending in-service training, and following some academic reading materials related to their teaching. As the quantitative findings demonstrate, almost half the teachers fall into this category. This group can be seen as the comparison group for the low and high cluster groups we have created. The teachers interviewed in this group reflect mixed levels of perceptions regarding their LLL characteristics. For example, some teachers in this group did not provide the deeper explanations of LLL as an important tool in their development. They did, however, talk about ways to improve LLL. Teachers in this group appear as if they could easily be moved up to higher cluster group, as they perceive similar conceptions as teachers in the higher group; however, this might be an over interpretation of what was transcribed from them. Overall, this perception provides insights into ways to improve these teachers' LLL so they can move up to the higher cluster group. Considering this group of teachers provided mixed perceptions on LLL, the other groups in the next sections will be compared against this group.

The study's quantitative results show Cluster 2 to contain 29.1% of teachers. Teachers in this cluster are found to report higher levels across all their LLL competencies. This group appears to have greater self-management, learning-how-to-learn, initiative and entrepreneurship, information acquisition, decision-making, and digital competencies. Scores for teachers in this cluster are around 4.5 (on a 5-point scale). The results from the quantitative strand not only provide the levels of teachers' LLL competencies but also how these teachers perceive their LLL competencies while they respond to the scale.

In the qualitative strand of the current study, the final codes from the transcripts indicate the teachers in this group to be prominent in terms of their familiarity and use of technology in the LLL process. Each teacher in this group mentioned having used technology or electronic media (e.g., social media, blogs) to improve their professional skills. That teachers in this cluster reported the highest scores on digital efficacy (which also refers to the use of technology in LLL) shows this qualitative result to highly converge with the quantitative results. For example, one teacher mentioned, "I set up a Google Group for parents to exchange communication.

I share some materials with them.” In addition and parallel with the medium cluster, teachers in Cluster 3 also mention participating in similar in-school and out-of-school activities, such as seminars, therapy trainings, and sports. This similarity reflects that teachers overall may be aware of the need to improve their LLL competencies and of which activities serve this purpose. However, the high cluster group of teachers is prominent when it comes to applying this awareness to their practice. We grasped the idea from the transcription analyses that teachers in this group can be an example to the other cluster groups of teachers. In particular, teachers in this group demonstrate self-confidence in their LLL perceptions when responding to the questions. This approach shows the teachers in the high cluster group themselves to be highly aware of LLL’s vitality in their development and to be ready to transfer this conceptual knowledge into the practical world through their teaching and learning. Taken together, the administration in these teachers’ schools can create co-mentoring among teachers so that teachers in the high cluster group can provide practical and conceptual knowledge to their colleagues who are willing to improve their LLL skills.

The final cluster of teachers, Cluster 3, contains 27.6 % of the teachers in the current study. Teachers in this cluster report lower levels of self-management, learning-how-to-learn, initiative and entrepreneurship, information acquisition, decision-making, and digital competencies. Their scores are around 2.70 (on a 5-point scale; see Table 2 and Figure 2 for complete results).

Table 2
Cluster Centroids

Cluster	Initiative and Entrepreneurship		Obtaining Information		Learning to Learn		Self-Management		Digital Efficacy		Decision Making	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1. Medium	3.85	.41	3.70	.42	3.91	.41	3.68	.43	3.60	.48	3.54	.67
2. High	4.52	.39	4.45	.44	4.45	.34	4.38	.39	4.42	.51	4.50	.42
3. Low	2.90	.48	2.82	.46	2.95	.50	2.85	.53	2.76	.61	3.03	.46
Combined	3.78	.74	3.67	.75	3.80	.70	3.73	.74	3.61	.82	3.68	.79

In the qualitative analyses, we found the teachers in Cluster 3 to appear shallow in their LLL descriptions and concepts compared to the teachers in the other clusters, such that some teachers even mentioned not being interested in self-development, not taking advantage of the Internet when teaching or learning, nor even reading a book that man provide some guidelines for self-improvement. This converges with the quantitative results that reflect this group of teachers to have reported the lowest levels of LLL competencies. The qualitative findings also speculate teachers in this group to maybe have difficulty adapting current technology use to their teaching and learning. In the qualitative analyses, teachers’ perceptions from Cluster 3 reveal them to be potentially unaware of their LLL weaknesses and, as such, are unwilling to improve them. This may be a shortcoming for teachers in this group as the nature of teaching requires

self-improvement throughout the development of one's career. In addition, teachers in Cluster 3 will have insufficient access to LLL resources in this context. For example, a teacher mentioned these two related ideas: "I don't do anything special to improve my LLL skills" and "My motivation goes down easily when there's no support from the environment, and my environment has a big impact on my access to resources." These two related ideas show teachers' environments to matter for their LLL development and their motivation for connecting with ways to improve. Nevertheless, despite being less willing than teachers in the medium and high cluster groups, the fact that these teachers seem willing to continue improving their LLL competencies is important to note. The overall take-home message from the converged results can be that the characteristics of teachers' LLL competencies are distinct across the three clusters in terms of their use of technology and how they perceive lifelong learning.

Discussion and Conclusion

This study aims to explore the characteristics of elementary school teachers' LLL competencies as well as their experiences related to LLL. It employs the convergent mixed methods design to investigate this aim and has several important points worth discussing.

First, we have been able to come up with three cluster groups (high, medium, and low) of elementary school teachers that reflect the different levels of their LLL competencies. Teachers in the high group (Cluster 2) demonstrate higher levels of LLL competencies such as self-management, learning how to learn, initiative and entrepreneurship, information acquisition, decision making, and digital. This finding also converges with the qualitative findings on this group's perceptions of the substantial importance of these competencies as implemented in their personal and professional life. This converged finding is commensurate with previous research (Knapper & Cropley, 2000), which shows teachers with high LLL skills to actively utilize formal and informal environments in order to maximize development in terms of their critical thinking, self-motivation, creation of multiple sources of learning, and advanced organization skills. This finding also implies that teachers with higher LLL competencies can better guide classroom environments for students to be able to effectively and positively learn (Brčić & Perin, 2014; Dickson, 2011). Furthermore, Lopes and Pereira (2012) highlighted the strong relationship between learning centered on personal involvement and interpersonal relationships between peers and between students and trainers that foster the development of identity and LLL attitudes. Findings from the current study and previous research speculate that when teachers understand the importance of LLL in their personal and professional lives, they may try to improve these competencies to utilize them in their teaching and professional development.

Teachers in the low cluster group showed lower levels of LLL competencies compared to those in the high cluster group. In the study's qualitative strand, teachers in this group reflected only some LLL competencies (e.g., they did not reflect self-development or an interest in taking advantage of the Internet when teaching). These converged findings conclude that teachers with low levels of LLL competencies may hold themselves back from improving their personal and professional skills as they go through their careers. This can create somewhat of a problem for students' learning as students expect highly qualified teachers in their class for effective learning. This is congruent with previous conceptualizations of the professional development of teachers wherein professional development that includes the use of technology, collegial dialogue among teachers, and being up to date on teaching skills can benefit both students and teachers (Mizell, 2010). Furthermore, Tableman (2004) outlined effective teachers' in-class characteristics as: being aware of the given goals; being task-oriented; having high expectations from students; being enthusiastic; having a clear, direct, and positive classroom climate; having strong classroom management skills; consistently having well-prepared lessons; having materials ready and close at hand; having predictable routines, patterns of activities, and expectations; using praise effectively; tasking students; and using systematic, curriculum-based assessment to monitor students' schedule. In addition, teachers who lack such competencies may be far from being able to understand how students learn, how to teach subject-matter knowledge, and how to organize and present it to students to best promote their learning within the specific context in which it takes place. Moreover, teachers should also be able to constantly reflect on and improve the practices they implement (Eilam & Poyas, 2009). From these points of views, teachers with low levels of LLL competencies may not feel self-motivated to improve their teaching or classroom organization skills. As such, students in these kinds of classrooms may fall behind in their learning and academic development due to the lack of a supportive learning environment.

Teachers in the medium group, as the name implies, demonstrated mixed understandings and perceptions of LLL competencies. Thus, teachers in this group partially mention engaging in activities to improve their LLL competencies and the benefits of LLL in the teaching profession. Previous concretizations of LLL posed that adults who know what competencies they need to improve can be self-directed and motivated to learn new skills (Collins, 2004). In addition, teachers may have had negative LLL experiences and so do not see the benefits of LLL in their personal or professional life (Cresson & Dean, 2000). In addition, today's education largely expects teachers to equip themselves with a range of competencies that ensure their students' social and academic success (Hagger, Burn, Mutton, & Brindley, 2008). Teachers in the low group appear to lack experiences where they could improve their LLL competencies or apply them to their professional and personal lives. Therefore, because teachers in this group seem unsure of how LLL competencies can be used in their learning or how to develop these skills,

they may benefit more than teachers in the higher group when engaging in professional development programs such as peer collaborations (Acar & Yildiz, 2016).

LLL is a natural part of teachers' professional development. Thus, LLL needs to be improved as a dynamic system. This improvement can be done either through the school administration's organization of trainings, workshops, and seminars, or their support of peer collaboration among teachers within the school environment. Teachers' LLL growth can be reflected onto their students' learning as students reach their optimal level (Reigeluth, 1999; Zepke & Leach, 2006). Although the concepts of life-long learning and life-long learner within school environments are common, they are overlooked when it comes to their implementation. This oversight may come from administrators' lack of knowledge or allocation of time for LLL. Several educational programs exist for supporting teachers' LLL as they continue their careers. For example, Teachers as Life-Long Learners (T3L) is a multifaceted and integrated program that contains multiple professional- and personal-growth guidelines for teachers (Darling-Hammond & McLaughlin, 1995). In these kinds of LLL programs, teachers are encouraged to create their own personal learning plan, authentic context, reflective and collegial dialogue, ongoing assessment, and system support. As is seen, teachers are mostly in charge of their own professional growth and encouraged to utilize existing resources within their immediate or removed environment. From this point of view, programs targeting Turkish elementary school teachers' LLL can be designed to help their ongoing learning and professional development so they can use optimal competencies when teaching for better student outcomes.

In addition, this study's findings can inform future research in terms of how clustering teachers can facilitate examining their LLL characteristics. By doing so, researchers can use these groups to create intervention programs that target specific groups of teachers, as opposed to lumping them all together or considering them to all have the same level of LLL. These implementations can maximize the use of research resources (e.g., effective facilitation of intervention groups) and allow researchers to use their time more effectively. Furthermore, as professional development and teaching/learning are known to be complex research phenomena, we believe that the current design of convergent mixed-methods can be used in future research to investigate other teacher characteristics, such as their professional development, classroom organization styles, or teaching/learning techniques. Overall, as this study exemplifies, the convergent mixed-methods design allows researchers to investigate a research problem by converging two data sets and analyzing their sources (quantitative and qualitative) in parallel to examine a researched phenomenon more deeply.

One goal of the study has been to address the gap in the literature on the lack of person-centered approaches being utilized to examine teachers' LLL. As

theoretical perspectives (e.g., Jarvis, 2004) posit that LLL is a multidimensional and interconnected construct requiring simultaneous examination, we employed the person-centered approach of cluster analyses to examine teachers' LLL. By doing so, we attempt to close the gap in the literature by utilizing a person-centered approach to investigate teachers' LLL; grouping teachers in clusters has captured several aspects of their LLL competencies.

Limitations and Future Directions

The study uses the convergent mixed-methods design, which has some limitations worth mentioning. First, teachers' answers in the qualitative strand of the study were fairly succinct, not in-depth. This could be due to teachers' lack of LLL understanding or an unwillingness to answer the questions. Future research can use certain techniques to have teachers elaborate upon their answers in interview questions. This can be done by creating focus groups rather than individual interviews so that teachers can feel more comfortable answering questions. Second, we were only able to examine LLL as a whole construct, even though several LLL dimensions were captured. However, we acknowledge that LLL can relate to other environmental factors, such as school climate, the role of the school administration, and availability of resources. Therefore, future research should use different factors regarding teachers' LLL so that researchers can capture a broader contextual picture of LLL. Lastly, the sample diversity can be expanded by recruiting teachers from other regions of Turkey, as each region has its own characteristics that may affect teachers' LLL perceptions.

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