

## Organisational learning: A scale development study

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### Abstract

This study aims to develop a scale in order to determine the organisational learning levels of educational organisations. The scale took its final form after the items were written, experts' opinions were received and pilot applications were implemented. A survey was administered to 267 teachers using a simple random sampling method. An 18-item organisational learning scale (OLS) was obtained as a result of the exploratory factor analysis. OLS was prepared on the basis of frequency (never-always) to render a possible 5-point Likert type measurement. This 18-item scale was validated by confirmatory factor analyses (CFAs). The factor analyses carried out revealed an 18-item scale with a total of four subscales. These subscales are continuous learning, cognitive processes, transparency and issue orientation. The goodness of fit index values revealed by the results of the CFA carried out indicated that OLS is valid and acceptable. Cronbach's alpha reliability coefficients of the factors ranged between 0.65 and 0.81. The overall Cronbach's alpha reliability coefficient of the OLS was determined as 0.85 and its Kaiser–Meyer–Olkin (KMO) value was determined as 0.87. In conclusion, OLS is proposed as a scale based on which the organisational learning levels of schools can be measured in four different subscales.

**Keywords:** Organisational learning, organisational learning in school, scale development, continuous learning.

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## 1. Introduction

The organisational learning concept has been investigated based on different approaches. Information processing theory, one of the approaches, bases organisational learning upon the basis of generating and using information. Although there are a wide range of organisational learning measurement tools available in the field of education management, the need for an up-to-date Organisational Learning Scale (OLS) that can be implemented in educational institutions, that can solve the incomprehensibility between the concepts of organisational learning and learning organisation, that can serve a holistic purpose and that is prepared in shorter form necessitated the elaboration of this scale. This study aims to develop a scale in order to determine the organisational learning levels of educational organisations. For this purpose, the organisational learning levels of the schools were tried to be determined according to the opinions of teachers.

## 2. Organisational learning

Organisational learning is a concept that emerged in the 1950s with the statements of neoclassics and microeconomists (Schulz, 2001, p. 5). It can be said that as much as an individual feels the need for learning in life, an organisation also feels the need for learning, and other similar reasons. An organisation that has started to neglect learning means that this organisation has also accepted its oncoming death (Montes et al., 2005, p. 1159). According to Dodgson, organisational learning is 'a way that the employees of the organisations develop using their talents and knowledge to create, use and share information in order to increase the effectiveness of their organisation' (Rait, 1995). Edmondson (2002) has emphasised on cognitive and behavioural processes by stating that cognition and action are closely related to the organisational learning process (as cited in Berends and Lammers, 2010, p. 1046). Organisational learning can be emphasised with two questions (Cook, Scott & Yanow, 1993, p. 431):

1. How can organisations learn?
2. What is the nature of learning carried out by organisations?

These questions emphasise the place attributed to learning in the organisation and how learning takes shape within the organisation. Organisational learning has been defined (Bontis, Crossan & Hullan, 2002, p. 4392) differently from different perspectives. It was defined in the literature as: a process that represents complex internal relationships between individuals, their actions, symbols and intra-organisational processes (Schwandt and Marquat, 2000); as a process of change in cognitive structure and behaviour (Crossan et al., 1995); as the rate of change of potential behaviours in the information process (Huber, 1991); as the learning by transforming the comments obtained from the past into routines that direct behaviours (Levitt & March, 1988); as the development of actions through superior knowledge and understanding (Fiol & Lyles, 1985); and as the process of identifying and correcting errors (Argyris & Schon, 1978).

It can be seen that organisational learning is defined with concepts such as errors, cognitive processes, environmental interaction, innovation and experience. Accordingly, organisational learning, which was first defined as the process of identification and correction of errors, has been increasingly associated with complex internal relationships in time. The definition of organisational learning provided by Crossan et al. (1995) refers to the *cognitive process* subscale of organisational learning examined in this study, whereas the definition of organisational learning provided by Argyris & Schon (1978) refers to the *issue orientation* subscale of organisational learning examined in this study.

### 2.1. Continuous learning

Continuous learning is an important dimension that keeps the organisation dynamic and up to date. Continuous learning can be described as a process that is at the heart of an institution's ability to adapt to a rapidly changing environment (Ellis, Caridi, Lipshitz & Popper, 1999).

## 2.2. Cognitive processes

Cognitive processes include the processes of receiving, storing, dissemination and sharing information. Information processes are emphasised in the definition of organisational learning (Huber, 1991). In this context, organisational learning plays a role in learning, innovative culture and in receiving, storing, disseminating and sharing organisational information, contributing to the innovation and by enhancing and improving the organisational knowledge management. In this framework, cognitive processes have a dynamic role such as continuous learning in organisational learning. A good organisational information system enhances organisational learning and innovative culture development through organisational information management strategies, and then shapes the information atmosphere by increasing the learning ability of the school and by promoting the formation of a learning organisation (Zhao & Ordonez de Pablos, 2009). Possession of valid information and hanging onto the same can be a value that increases the likelihood to withstand the pressures to distort the information (Argyris & Schon, 1978: as cited in Ellis et al., 1999, p. 167).

## 2.3. Transparency and accountability

Transparency is one's willingness to be open to auditing so that valid feedback can be received on his/her/its actions. Transparency also serves valid information, by allowing the addition of information and by provision of different interpretations of appropriate information (Ellis et al., 1999, p. 167). Accountability is based on one's actions, the results of his/her/its actions and assuming the responsibility for learning derived from these results. Accountability facilitates creative learning by accounting for the limits of actions that prevent the implementation of lessons learned or taken (March & Olsen, 1976, as cited in Ellis et al., 1999, p. 167). Accountability has been highlighted as a need in non-profit organisations and has been frequently discussed recently (Brody, 2002; Cutt & Murray; Ebrahim, 2003a; Ebrahim, 2005; Independent Sector Panel, 2005; Kearns, 1996; Najam, 1996; U.S. Senate Finance Committee, 2004; U.S. Senate Finance Committee, 2005; Smith, 2002: as cited in Halpern, 2005). The importance of accountability for organisations has been described within the *scope of accountability myopia as the loss of sight of organisational learning* (Ebrahim, 2005). In this context, Adams (2007) stated that accountability and learning are two processes that can be combined and evaluated together. Along these lines, Guijt (2010) refuted the difference–incompatibility between accountability and learning by stating that, 'if you cannot learn, you cannot be accountable'.

## 2.4. Issue orientation

Issue orientation is a management task, which reveals the failure in learning organisations and supports falling into dispute in a constructive way (McGill & Slocum, 1993). Issue orientation is about democratisation, power equality and participation; it opens up communication channels and improves innovation and learning (Kanter, 1991; McGill et al., 1993: as cited in Ellis et al., 1999).

## 3. Method

This study was conducted with a quantitative research approach utilising structural equation modelling. Some goodness of fit values were provided for the validity of the confirmatory factor analyses (CFAs) carried out in this direction, which are as follows: chi-square/degrees of freedom ratio ( $\chi^2/df$ ), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), comparative fit index (CFI), normed fit index (NFI), root mean square error of approximation (RMSEA) and Tucker–Lewis index (TLI). The goodness of fit values obtained by the subscales of the OLS are given in Table 5.

### 3.1. Population and sample

The study population comprised 669 teachers working in public high schools in the Eastern Anatolia Region of Turkey (in Van and Malatya provinces). Prior to selecting the sample, a total of nine public high schools located at city centres were identified. Five of these schools are located in the province of Van, whereas the remaining four are located in the province of Malatya. Following

the determination of public high schools to be included in the study, the teachers who participated in the study were determined via random sampling. In the sample selection, a simple random sampling method, which is one of the random/neutral sampling methods, was used. 'The method by which the selected units are sampled with the possibility of being selected equally for each sample selection (either with or without substitution of the selected unit) is called simple random sampling' (Buyukozturk, Kilic Cakmak, Akgun, Karadeniz & Demirel, 2009, p. 84). One of the main characteristics of random sampling methods is the high rate of representing the population. Accordingly, the study was conducted with 267 teachers who were selected randomly, 126 of whom were working at the public schools in Malatya and the remaining 141 of whom were working at the public schools in Van. A sample consisting of 267 teachers (margin of error = 0.03, alpha = 0.01,  $t = 2.58$ ) represents a sufficient sample size, which meets the continuous data criterion sought for in organisational studies (Barlett, Kotrlik & Higgins, 2001).

### 3.2. Data collection tool

#### 3.2.1. Organisational learning scale (OLS)

OLS was used as a data collection tool in this study. The items and subscales of this scale were prepared by reviewing the relevant literature and taking into consideration the opinions of the experts in the field. The Organisational Learning Values Scale (Ellis et al., 1999, pp. 166–175) was adapted to Turkish by Tasci and Koc (2007) (eight items have been taken from this scale); the Organisational Learning Values Scale, developed by Ellis et al., and the Organisational Learning Mechanism Scales, comprising 27 items and 6 subscales (receiving, analysing, disseminating, storing and retrieving the information, and placing it for use) developed by Schechter (2008), were used in the elaboration of the OLS, which was prepared in the form of a 5-point Likert scale. After the literature review process, a pool of 50 items in total was created. This 50-item form was sent via email to a professor, an associate professor and three assistant professors, who are experts in the field of Educational Administration, together with a scale assessment form prepared by the researchers. In addition, feedback on the scale was received after administering the scale to three school administrators and five teachers. Following the assessments made by the above-mentioned field experts, the 'OLS' was put into perspective as a scale comprising 31 items. Subsequently, the scale was checked for language equivalency by two language experts. Based on the data obtained, the construct validity of the subscales determined according to the literature was tested by factor analyses, whereas the internal consistency of the subscales was tested by Cronbach's alpha reliability coefficient. OLS was composed of four independent subscales and 18 items.

### 3.3. Data analysis

The study's data were analysed in a computer environment using the SPSS and AMOS packaged software. In this context, the exploratory factor analyses and the descriptive statistical analyses (frequency, percentage, arithmetic mean and correlation) of the 'OLS' used in the study were carried out and evaluated by means of SPSS, CFAs and AMOS packaged software.

#### 3.3.1. Validity of the OLS

Exploratory factor analysis was conducted to examine the construct validity of the OLS. In order to determine the construct validity of the scale, the principal components analysis method and the varimax vertical rotation technique were implemented. As a result of the exploratory factor analysis conducted, a structure consisting of 4 factors was obtained, as shown in Table 2, which explains 54.15% of the total variance, and the eigenvalue of which is above 1.00. KMO coefficient (sample size pre-condition), the value generated by Bartlett's test of sphericity (normality condition) and the level of significance of the said value were examined in order to determine the suitability of the data for factor analysis. Accordingly, the study's data were determined to be suitable for factor analysis as the KMO value was found to be above 0.87 and the value generated by Bartlett's test of sphericity (Chi-square value of 1362,170; chi-square value being significant at 0.01 level, and  $p =$

0.000) was found to be statistically significant (Cokluk, Sekercioglu & Buyukozturk, 2010). As a result of the exploratory factor analysis, 4th, 6th, 8th, 10th, 17th, 18th, 19th 20th, 21st, 22nd, 23rd, 29th, and 31st items were excluded from the scale as they were categorised under different factors. On the other hand, the 25th item was also excluded from the scale since its factor load was found to be lower than 0.30 (Tabachnick & Field, 2001).

*3.3.1.1. Naming of the factors.* Five basic dimensions were determined within the scope of the organisational learning culture in line with the related literature (Popper & Lipshitz, 1999, as cited in Ellis et al., 1999), which are continuous learning, valid information, transparency, issue orientation and accountability. The existing repertoire of individual cognitive strategies, the organisation's network of informal cultures and norms and the formal structure of the organisation determine the level of members who may have the ability to accurately scan, translate and use information in preparing coherent or shared action (Daft & Weick, as cited in Rait, 1995). The OLS was constructed based on these five learning values and the three above-mentioned variables, whereas the 4 subscales as revealed by the exploratory factor analysis were named as continuous learning, cognitive processes (receiving, analysing, storing and placing the information), transparency and issue orientation. Accordingly, four subscales were created to include the following items: continuous learning subscale (1st, 2nd, 3rd, 5th, 9th and 30th items), cognitive processes subscale (11th, 12th, 13th, 14th, 15th and 16th items), transparency subscale (20th, 27th and 28th items) and issue orientation subscale (19th, 24th and 26th items). Factors and factor loads resulting from the exploratory factor analysis carried out for the OLS are shown in Table 1.

Table 1. Rotated factor Load Values of the OLS

Items	Factor Load Values			
	Continuous learning	Cognitive processes	Transparency	Issue orientation
OLS13. Every programme and activity in our school is regularly archived.	0.788			
OLS14. Achievement reports and materials of professional and educational nature are easily archived in our school, and everyone can access them whenever they want.	0.715			
OLS16. In our school, the summary of the previous meetings is put on the agenda of the subsequent meetings.	0.662			
OLS11. Written sources/reports about the professional changes and innovations in our school are circulated to everyone in the school.	0.661			
OLS12. Teachers in this school are included in the process of making important decisions.	0.613			
OLS15. We have a school culture that promotes learning about the successful practices and developments that take place in other schools.	0.526			
OLS3. In our school, we (as a team) implement a learning method that is specific to our school.		0.729		
OLS5. Discussion groups on professional issues are formed in our school.		0.661		
OLS2. Teachers in our school follow the lectures of other teachers for the sake of professional		0.613		

development.

OLS1. In our school, we follow various sources related to our profession (such as new books, articles, magazines and the internet).	0.561			
OLS9. Joint activities or projects are held with families and non-governmental organisations in our school.	0.554			
OLS30. There is continuous learning in this school in the professional sense.	0.488			
OLS27. Teachers at our school avoid telling the truth in order to appear successful.		0.788		
OLS28. Administrators and teachers in our school tend to cover up their own mistakes.		0.746		
OLS20. Administrators and teachers in our school lie to defend themselves about their mistakes.		0.743		
OLS24. In our school, the focus is on the mistake and its causes, rather than who made the mistake.				0.761
OLS19. Administrators and teachers in our school make an effort to be open to criticism.				0.666
OLS26. Everyone at our school has the idea that 'we are all on the same boat, everyone can make mistakes'.				0.623
<b>Eigenvalues</b>	5.336	1.997	1.308	1.108
<b>Variance explained</b>	29.64%	11.09%	7.26%	6.15%
<b>Total variance explained</b>			54.15%	

As shown in Table 1, the contribution of each factor to the total variance is 29.54% for continuous learning, 11.09% for cognitive processes, 7.26% for transparency and 6.15% for the issue orientation factor. The contribution of these four factors to the total variance is 54.15%. In addition, factor loads for all items ranged from 0.43 to 0.68.

### 3.3.2. Reliability and Internal Consistency of the OLS

3.3.2.1. *Correlation matrix.* The correlations between the total score of each factor and the grand total of all the items in the scale were examined in order to determine the internal consistency of the measurement tool. The correlation matrix with the arithmetic mean and standard deviation values over the total scores of the OLS and its subscales are given in Table 2.

Table 2. The mean and standard deviation values and the inter-factor correlations for OLS and its subscales

Factor	$\bar{x}$	sd	1	2	3	4	5
1. Continuous learning (CL)	20.43	4.71	1				
2. Cognitive processes (CP)	17.68	4.06	0.490**	0.1			
3. Transparency (T)	10.42	2.49	0.345**	0.120*	1		
4. Issue orientation (IO)	9.56	2.41	0.520**	0.409**	0.298**	1	
5. Organisational learning (OL) (Total)	58.10	10.18	.867**	0.753**	0.524**	0.715**	1

\* $p < 0.05$ , \*\* $p < 0.01$ .

As shown in Table 2, there is a significant and positive relationship between the grand total of the OLS and all of its subscales. These values indicate that the internal consistency of the OLS is high.

3.3.2.2. *Cronbach's alpha reliability.* Alpha method was used to determine the reliability of the measurement tool in terms of both the overall scale and each subscale. Cronbach's alpha coefficients in the alpha method were calculated and are given in Table 3.

Table 3. Reliability coefficients of the OLS

Factors	Cronbach's alpha
Continuous Learning (CL)	0.819
Cognitive Processes (CP)	0.666
Transparency (T)	0.711
Issue Orientation (IO)	0.659
Organisational Learning (OL) (Total)	0.852

If the alpha coefficient is between 0.66 and 0.85, then the measurement tool is considered to be quite reliable, and when it is between 0.80 and 1, the measurement tool is considered to be highly reliable (Kalayci, 2006).

3.3.2.3. *Item analyses.* Item analyses were conducted in order to identify the ability of the items included in the OLS to distinguish the teachers participating in the study in terms of the characteristic aimed to be measured in this study and in order to examine the internal consistency of the scale. In this context, the fact that whether the answers given in response to the items of the scale by the teachers in the lower 27% and upper 27% groups differ or not was examined with the independent samples *t*-test, and the relationships between each item and the total score of the scale were examined by calculating the item-total score correlations. Also, the alpha value of the measurement tool was recalculated with the deletion of each item, and in this way, it was tried to determine how important the relevant item is for the measurement tool (Table 4). As a result of the *t*-test, the *t*-value of each item was found to be significant at a level of  $p < 0.001$  (Table 4). Accordingly, it can be said that the OLS distinguishes teachers' views on the subject-matter quite well and has a high internal consistency.

Table 4. Item analysis of organisational learning scale

Item number	<i>t</i>	<i>r</i>	$\alpha$
OLS1	6.673*	0.407*	0.851
OLS2	5.309*	0.388*	0.851
OLS3	7.304*	0.454*	0.849
OLS5	5.853*	0.440*	0.849
OLS9	8.058*	0.580*	0.842
OLS11	12.918*	0.654*	0.838
OLS12	10.230*	0.610*	0.841
OLS13	11.687*	0.614*	0.841
OLS14	13.090*	0.676*	0.837
OLS15	11.115*	0.681*	0.837

OLS16	8.914*	0.536*	0.845
OLS19	8.599*	0.559*	0.843
OLS20	6.226*	0.403*	0.851
OLS24	8.774*	0.551*	0.844
OLS26	8.681*	0.544*	0.844
OLS27	7.755*	0.480*	0.848
OLS28	5.409*	0.364*	0.851
OLS30	11.473*	0.650*	0.830

\* $p < 0.001$ ;  $n = 267$ ;  $t$ : comparison of item scores of teachers in lower 27% ( $n_1 = 72$ ) and upper 27% ( $n_2 = 72$ ) groups;  $\alpha$ : Cronbach's alpha coefficient that the scale will assume following the deletion of an item,  $r$ : item-total score correlation coefficient.

The item-total score correlations of the items in the OLS ranged between 0.36 and 0.68 (Table 4). These values indicate that the internal consistency of the measuring tool is high. In addition, it can be also said that each item in this scale distinguishes teachers' opinions on the subject matter quite well, since the item-total score correlations were found to be over 0.30 (Buyukozturk, 2003).

#### 4. Findings

For the validity of the OLS, exploratory factor analysis was carried out and KMO and Bartlett's sphericity test values were examined. Subsequently, CFA was carried out and the goodness of fit indexes of the OLS were examined. CFAs were conducted on the first and second orders, and on the first order, the correlation between the factors was evaluated, whereas, on the second order, the correlation of the scale itself with the four factors was evaluated.

##### 4.1. Confirmatory factor analyses

With the data obtained as a result of the pre-application, it was determined that the scale has a four-dimensional factor structure. CFA was applied to test the validity of this four-dimensional structure. The goodness of fit values obtained in association with the scales are given collectively. Factor loads of the continuous learning subscale were found to vary between 0.45 and 0.61. Factor loads of the cognitive process's subscale were found to vary between 0.54 and 0.74. Factor loads of the transparency subscale were found to vary between 0.60 and 0.81. Factor loads of the issue orientation subscale were found to vary between 0.58 and 0.67.

Table 5. Goodness of fit values associated with four factors

Subscales	$\chi^2$	df	$\chi^2/df$	GFI	AGFI	CFI	NFI	TLI	RMSEA
Continuous Learning	26.291	9	2.921	0.969	0.929	0.929	0.899	0.882	0.085
Cognitive Processes	18.837	9	2.093	0.978	0.949	0.979	0.961	0.965	0.064
Transparency	0.000	0	0.000	1.00	-	1.00	1.00	-	-
Issue Orientation	0.000	0	0.000	1.00	-	1.00	1.00	-	-

The goodness of fit indexes associated with the OLS are given in Table 5. According to these results, these four subscales consisting of 18 variables each can also be accepted as valid and appropriate models (Hu & Bentler, 1999; Kline, 2005).

#### 4.2. First-order multi-factor model

In this model, four factors were validated in terms of the items they represent and the relationships between them. The results of the first-order CFA carried out for the OLS are shown in Figure 1, whereas the goodness of fit values of the said analysis are given in Table 6.

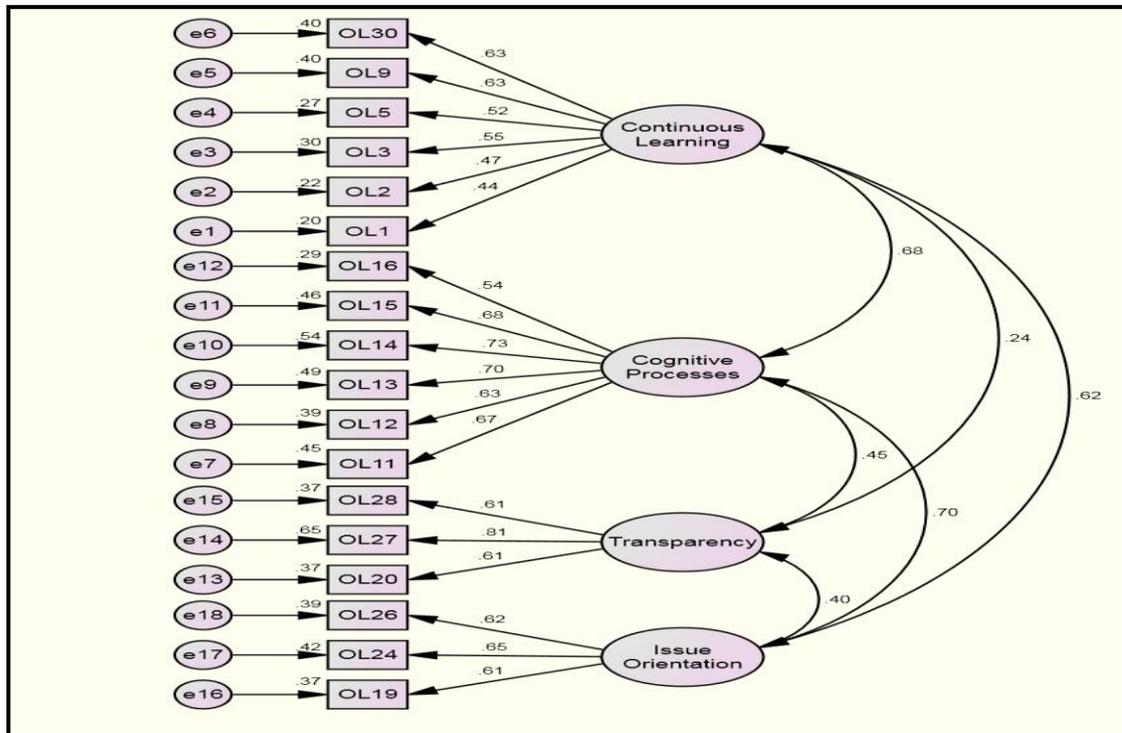


Figure 1. First-order CFA

According to the results of first-order CFA, the highest relationship was found to be between the cognitive processes and issue orientation subscales, which are at a level of 0.70. Based on these values, it can be said that there is a high-level, positive relationship between all the subscales except for the relationship between the continuous learning and transparency subscales.

Table 6. Goodness of fit values resulting from the first-order factor analysis

Scale	$\chi^2$	df	$\chi^2/df$	GFI	AGFI	CFI	NFI	TLI	RMSEA
Organisational Learning	221.499	129	1.717	0.911	0.883	0.926	0.842	0.912	0.052

The first-order multi-factor model fitness indexes of the OLS given in Table 6 indicate that the GFI value is 0.91, the CFI value is 0.92, the AGFI value is 0.88 and the RMSEA value is 0.05. According to these results, the OLS comprising four sub-factors, which consist of 18 observed variables, can be accepted as a valid and appropriate model (Kline, 2005).

#### 4.3. Second-order multi-factor model

In this model, four factors were connected to a single factor and were validated as such. Accordingly, the OLS was found to have a positive effect on the cognitive processes, issue orientation, continuous learning and transparency subscales.

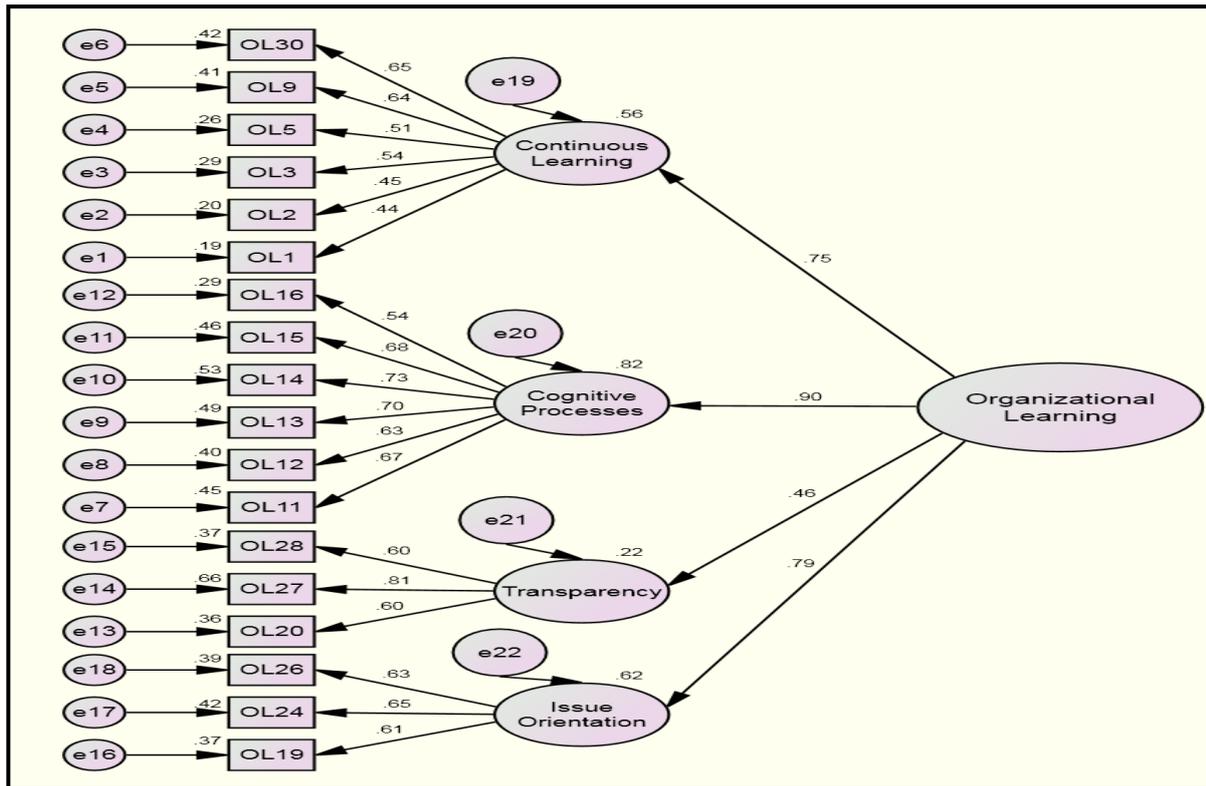


Figure 2. Second-order CFA

Table 7. Goodness of fit values resulting from the second-order factor analysis

Scale	$\chi^2$	df	$\chi^2/df$	GFI	AGFI	CFI	NFI	TLI	RMSEA
Organisational Learning	225.984	131	1.725	0.909	0.881	0.924	0.838	0.911	0.052

The second-order, multi-factor model fitness indexes of the OLS given in Table 7 indicate that the  $\chi^2/df$  value is 1.725, the GFI value is 0.91, the CFI value is 0.92, the AGFI value is 0.89 and the RMSEA value is 0.05. According to these results, it can be said that the model has acceptable goodness of fit values (Arbuckle, 2007; Joreskog & Sorbom, 1993; Kline, 2005).

#### 4. Discussion, conclusion and recommendations

Following change and possessing a learning momentum that is adapted to change is an inevitable requirement for today's organisations, especially for schools. Berends and Lammers (2010) revealed that learning affects institutionalised temporary structures. The fact that organisational learning is a key concept in management research (Barette, Lemyre, Corneil & Beauregard, 2012) attributes an important role to organisational learning. Reasons such as the need for managing the institutions with universal values, intercultural and multicultural education, how to manage the knowledge and the fact that institutions have unique learning styles and learning speeds based on the concept of learning, which is specific to an individual's learning style and learning speed, and have led to the need to develop an *organisational learning measurement tool* intended for institutions.

Many scales related to organisational learning were reviewed prior to developing the scale used in this study. Some of these scales were taken as the basis for factor dimension, whereas others were taken as the basis for item dimension. Haibo, Liluo and Weigen (2009) examined the individual, collective and organisational learning dimensions as well as different dimensions of continuous learning through the six-dimensional OLS that they have developed. Lloria and Moreno-Luzon (2014)

developed an OLS consisting of 18 items and 5 factors. Lloria and Moreno-Luzon focused on the creation of knowledge and types of learning. The OLS developed by Jerez-Gomez, Cespedes-Lorente & Valle-Cabrera (2005) consists of 18 items and 4 factors and is similar in structure to the scale used in this study. The items included in the openness and experimentation and transfer and integration factors of the scales reported in the literature are similar to the items included in the transparency and cognitive processes factors of the scale used in this study. Dermol (2013) investigated organisational learning in terms of both information acquisition and information interpretation dimensions. The cognitive processes' dimension of the scale which we developed corroborates the above-mentioned dimensions indicated in Dermol's work. On the other hand, Yaslioglu, Sap and Toplu (2014) adapted an OLS through the perspective of learning organisations. The shared value dimensions included in this learning organisations scale, which they adapted, is a dimension that catches the attention.

Organisational learning is built based on individual learning and learning as a team. As we have also emphasised on the scale that we have developed, individuals play a key role in organisational learning (Argote & Hora, 2017; Jesus Ginja Antunes & Pinheiro, 2020). However, Senge (1993) stated that in modern organisations the teams have replaced individuals as the unit of learning and that the organisations cannot learn unless the teams learn. Most authors (Chuah & Law, 2020; Cook et al., 1993; Duncan & Weiss, 1979; Etheredge & Short, 1983; Herriot, Levinthal & March, 1985; Lant & Mezias, 1990; Law & Cao, 2020; Shrivastava, 1983; Sitkin, 1992) who study organisational learning have explained how individuals learn in an organisational structure, or have examined the ways through which individual learning theories can be applied to organisations or both to the individual and the organisation.

The measurement tool that has been developed within the scope of this study is a 4-factor scale and can be easily applied to schools with its 18-item form. The cognitive processes and continuous learning dimensions of the scale are the prominent dimensions of the scale. There is a positive and high ( $r = 0.86$ ) correlation between the OLS and the continuous learning subscale, and a positive and moderate ( $r = 0.52$ ) correlation between the organisational learning and the transparency subscale. Continuous learning dimension (Q30: There is continuous learning in this school in the professional sense) is a dimension related to continuity of dynamic learning. Continuous learning at school is part of being an open social system as well. Van Breda-Verduijn and Heijboer (2016) stated that continuous learning in the organisation will create a learning culture.

This scale, which was developed for schools, examines the behaviours and attitudes of individuals in the school, in terms of continuous learning, ways of access to current information, processing of information, learning from mistakes and transparency within the school. The scale developed within the scope of this study contains important items related to the support and roles of school administrators. Zhao & Ordonez de Pablos (2009) stated that organisational learning is closely related to the success or failure of the school's management in terms of innovativeness. Louis & Murphy (2017) also emphasised on the role and influence of the school principal in the organisational learning process. The relevant item in the scale, that is 'Q24: The focus in our school is on the error and on its reasons rather than the individual who committed the error', questions whether the school principal has created this culture. The creation of organisational information and knowledge in organisational learning constitutes another dimension. There are several studies in the literature conducted on this dimension (Brix, 2017). The fact that organisational learning is based on sharing and interpretation of information beyond its acquisition and dissemination has been expressed in the transparency and issue orientation subscales in this scale as well. As a result, the overall Cronbach's alpha reliability coefficient of the OLS was found to be 0.85, whereas its KMO value was found to be 0.87. These values indicate that the scale is valid and reliable. The results of the CFAs revealed that the scale is appropriate and acceptable as a model within the framework of the fit indexes. This measurement tool can be a source in the development of a learning model that is specific to an educational organisation or a school.

#### 4.1. Recommendations for researchers

It can be suggested that the short 18-item version of the OLS developed in this study can be applied in the course of time to different samples at different educational levels and in different educational institutions, subjected to validation and reliability studies once again. In this way, a prominent 'institutional learning' measurement tool that is derived from the OLS and which is specific to the educational institutions can be developed. Moreover, organisational learning can be researched in-depth with qualitative studies.

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