

Development of the General Teaching Principles Scale

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Abstract

The aim of this study is to develop a scale to determine how often secondary school teachers adhere to general teaching principles. For this purpose, 211 teachers who work in secondary education institutions in Yunus Emre District of Manisa Province were included in the research group with the stratified sampling method. The 54-item experimental form of the scale was subjected to expert opinion, and as a result of the analysis, a 50 -item candidate scale was created. In order to determine the construct validity of the General Teaching Principles Scale, Exploratory Factor Analysis (EFA) was performed using the geominQ rotation method. Cronbach's Alpha coefficient was calculated for the reliability index and Confirmatory Factor Analysis (CFA) was performed to test the accuracy of the structure revealed by EFA. SPSS 26.0 software was used for reliability analysis, Jasp 0.13.1 for Exploratory Factor Analysis and R Studio 1.2.5033 software for Confirmatory Factor Analysis. The results of the validity and reliability studies conducted on teachers working in secondary education show that this developed scale gives valid and reliable results.

Keywords: General Teaching Principles, Scale Development. Academic Achievement

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INTRODUCTION

Taking into account the stunning pace of production and dissemination of information, a period is being passed in which those who have invested enough, especially in education, can survive. According to Kayadibi (2001), this period is a period in which quality production and services are carefully investigated in order to index them to the different and ever-changing consumer preferences. It is believed that the quality of production and services has improved spontaneously over time, and for this purpose, the importance of continuous assurance of human quality has been emphasized with the education reform in parallel with the changing world.

It is clear that the way to eliminate this need, which has been emphasized, in accordance with the requirements of the era, is to improve the quality of the educational service that countries provide to their citizens. The improvement of the education system is of great importance in achieving the desired quality. If the goal is to create behavior in the desired direction, then the system is a lively whole consisting of various suitable elements for achieving certain goals (Sönmez, 2011). The degree and level of achievement of goals can be considered evidence of the degree to which the system is effective, efficient and consistent.

The part of the educational process that is carried out in schools and similar controlled environments within the specified time frame is considered to be teaching. It is directly related to the quality of the teaching service provided in the acquisition of program outcomes by students. One of the most important pillars of the teaching process is undoubtedly the teachers. At this point, it is possible to say that the quality of teaching is shaped by the quality of the teacher. The educational requirements of the age, the new meanings assigned to the teacher, the differentiated needs of the students, the new approaches to the education of the individual impose new responsibilities on the teacher in a professional sense. In this context, teaching is considered as a profession that can bear the responsibility of human life in its entirety and requires high qualifications.

It is clear that teacher quality is explained by the concept of competence and that these competencies are one of the most important determinants of creating desired behaviors in students. The general competencies of the teacher profession, which are determined by many stakeholders in Turkey and accepted as a result of the analysis of the studies of international organizations on the subject, are discussed in three main headings. The first of these is professional knowledge, the other is professional skills, and the last is attitudes and values. Within the scope of these general competencies mentioned, the professional skill area is the competence area on which this study focuses. The professional skills competence area covers the sub-fields of planning the educational environment, creating learning environments, managing the teaching learning process and measuring assessment (öyggm, 2017).

All sub-fields that make up the professional skill competence area directly affect the quality of the teaching service. Carrying out such important planning, implementation and evaluation activities in line with certain principles plays an important role in achieving the targeted success. In other words, providing the teaching service within the framework of certain principles serves to ensure that the time, money and effort spent in this process is not wasted, and thus to achieve the desired results.

According to Ergün and Özdaş (1997), the principles that must be constantly taken into account during teaching and that are not allowed to do opposite work are called teaching principles. The principles also affect the choice of subject and method. In order to achieve success in teaching, it is necessary to comply with some principles in these activities as well as using appropriate methods. The teaching principles guide teachers both in their pre-lesson preparation and in the selection of methods and techniques that they apply during their lessons, as well as in the design of the teaching environments that they create. In other words, teaching principles are also used in the selection of course topics and writing textbooks for various courses in a teaching system, and in teaching that course by teachers in classrooms.

Especially when the non-Turkish literature is examined, it is seen that there are different teaching principles stated by different authors for different fields. For example, according to Loughran (1997), the principles to be followed in teaching are building relationships, trust, independence, relevance, reflection and risk taking; while according to Graham, Cagiltay, Lim, Craner, and Duffy (2001), the principles required for higher quality teaching services are stated as increasing teacher-student communication, ensuring cooperative learning, ensuring participation, providing immediate feedback, giving importance to homework, managing high expectations, respecting different abilities and learning styles. On the other hand, Smittle (2003) states that in order to make teaching more effective, some principles must be strictly followed. These principles are listed as increasing students' readiness, choosing methods according to their learning styles, preparing open and sensitive teaching environments, setting high standards, and providing in-service training. According to Perkins (2010), who deals with the teaching process with a game analogy, principles such as seeing the teaching (game) as a whole, making the game worth playing, playing the difficult parts, combining the game with different games, finding the hidden game, learning in the team and teaching the game should be included in the process. On the other hand, Astleitner (2005) stated the principles that a well-planned teaching should be based on as follows: Multiple support of cognitive, motivational and emotional characteristics, consideration of students' strengths, supportive evaluation, gaining incentive argumentation skills, directing self-controlled learning, arousing and maintaining interest, increasing positive feelings and reducing negative ones.

When the literature in Turkey is examined, it is seen that more similar definitions are found about the teaching principles. These principles, which are collected under the umbrella of general teaching principles, are almost in consensus. As Köksal (2016), Gökalp (2016), Duman (2019), Arı (2018) Güven ve Özerbaş (2016), Demerel (2012), Yıldızlar (2018) ve Taşpınar (2017) reveals, the general teaching principles are as follows: relevance to the child, openness, from easy to difficult, activity, from the known to the unknown, economy, from near to far, from concrete to abstract, integrity and closeness to life. Although some principles derived from the above-mentioned principles are encountered in some sources outside the field, the principles gathered under the heading of general teaching principles are accepted as listed above.

Although they are discussed under different names, these principles are described as road maps that teachers must follow in order to increase the quality of education and training services, and therefore for the success of the programs prepared by spending great effort and financial resources. It is clear that teachers who apply these principles, which are rooted in developmental and learning psychology, in their classrooms will increase the quality of education.

Considering the studies conducted in Turkey on general teaching principles, which are thought to directly affect the quality of education and teaching, it is seen that they are generally considered as chapters in academic books named teaching principles and methods. However, the quantitative insufficiency of scientific studies, especially focusing on the general principles of teaching, addressing their importance and indicators, is noticeable. Etem (2020)'s work titled *The Compass of Teacher*, Kaya (2011)'s work *Examination and Evaluation of English and Turkish Coursebooks Which are Used for Foreign Language Teaching at TÖMER in Terms of Past Tense Teaching Principles* and Karaca (2020)'s studies on the evaluation of the compatibility of some literary works with general teaching principles can be counted.

As a result of the literature review, no scale for compliance with general teaching principles has been found that can enable teachers to comment on the quality of the teaching service they provide. Therefore, the main purpose of the study is to develop this adaptation scale, which is considered to fill this gap in the field relatively well.

METHOD

The stages of the "Adaptation to Teaching Principles Scale" development work and the characteristics of the research group are presented below.

Model of the Research

The "Adaptation to Teaching Principles Scale" development study is a descriptive study in the screening model. Such studies can be observed, measured and analyzed independently of the researcher and objectively (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2013). Quantitative research methods are divided into screening and trial models. According to Şimşek (2012), screening models show reality as it exists (Karasar, 2012).

Research Group

While determining the research group of the study, secondary education institutions in Yunus Emre District of Manisa Province were determined and it was determined that there were 900 teachers working in the relevant institutions in the 2019 – 2020 academic year.

The research is carried out through a sample representing the entire universe or the universe (Karasar, 2012). In this context, as stated by Şahin (2012), one of the 1906 pre-service teachers registered in the MCBÜ Faculty of Education, which constitutes the research universe, in the spring term of the 2018 - 2019 academic year, considering the 95% reliability level and the 5% margin of error, 364 pre-service teachers were reached through stratified sampling, first by department and then by gender, as shown in Table 1.

Development of the Scale

In the first stage of scale development, general teaching principles were determined by examining the literature. Subsequently, a 54-item item pool was created. In the pool, care was taken to write more than one item for each teaching principle.

The prepared 54-item experimental form was submitted to the opinion of 7 experts from Educational Sciences, 2 experts from Psychology and 2 experts from the field of Language, who were knowledgeable in the subject area and were informed about the study subject, in order to receive expert opinions. Candidate scale was tried to be created with the help of feedback from experts. In order to obtain the opinions of the experts, a 3-point Likert scale was used. In the prepared form, experts were expected to select one of the options "suitable", "partially suitable" and "not suitable" for each item. By combining all the expert forms into a single form, it was determined how many experts approved the possible options for each item. As a result of the feedback from the experts, 4 items were removed from the scale, the statements in some items were corrected and a new 50-item form was created.

Collection of Data

The created form was sent to the teachers by an explanatory e-mail containing information about the research and an internet address was given to them to participate in the study. Teachers who agreed to participate in the study completed the scale through this address.

Analysis of the Data

In accordance with the responses received from a total of 211 teachers who agreed to participate in the study, validity and reliability studies of the scale were conducted. Within the scope of the research, the data size that was considered necessary for factor analysis was examined and the size of the study group was considered sufficient (Tabachnick & Fidell, 2001). In order to determine the structural validity of the "Adaptation to Teaching Principles Scale", exploratory factor analysis (EFA) was performed using the geominQ rotation method. In the analysis, factor loads were determined as at least 30 (Büyüköztürk, 2006). The Cronbach Alpha coefficient was calculated for the

reliability index of the scale. In addition, confirmatory factor analysis (CFA) was performed to test the accuracy of the structure revealed by EFA. SPSS 26.0 for reliability analysis, Jasp 0.13.1 for exploratory factor analysis and R Studio 1.2.5033 software for confirmatory factor analysis were used in data analysis.

Findings and Comments

Descriptive Statistics of the Research Group

The demographic variables of the teachers participating are presented in Table 1 below.

Table 1. Distribution of teachers participating in the study by gender

Gender	Frequency	Percent
Male	67	31,8
Female	144	68,2
Total	211	100

When Table 1 is examined, it is seen that 67 (31.8%) of the research group are male and 144 (68.2%) are female teachers. The branch distribution of the teachers participating in the research is given in Table 2 below.

Table 2. Distribution of teachers participating in the study by branch

Department	Frequency	Percent
Geography	39	18,5
History	32	15,2
Physics	30	14,2
Math	65	30,8
Literature	21	10
Chemistry	24	11,3
Total	211	100

39 (18.5%) of the teachers in the research group are in the Geography, 32 (15.2%) in History, 30 (14.2%) in Physics, 65 (30.8%) in Math, 21 (10%) in Literature and 24 (11.3%) in Chemistry branches.

The Cronbach Alpha reliability index of the 51-item "Adaptation to Teaching Principles Scale" was calculated as 0.971. The fact that this value is above 0.70 means that the reliability value of a scale is acceptable. The calculated reliability value can be interpreted as the fact that the reliability value of the "Adaptation to Teaching Principles Scale" is quite high.

Exploratory Factor Analysis Results

In factor analysis, the adequacy of the sample size and its suitability for factor analysis was evaluated by using the Kaiser-Meyer-Olkin (KMO) value and the Bartlett test of Sphericity sphericity test. The fact that the KMO value of the scale is 0.929 indicates that the sample size is sufficient. The result of the sphericity test, which was performed to test whether the data came from multiple normal distributions, was found to be statistically significant ($p < 0.05$). These obtained values mean that the data in question meet the assumptions required for exploratory factor analysis.

When Table 3 is examined, it is seen that item factor loads vary between 0.336 and 0.811. However, when the item factor loads are examined in detail, it is seen that the factor loads of 5 items are below 0.5 and 46 items are above 0.5. In addition, it was found that the scale consisting of 51 items explains 44.7% of the total variance.

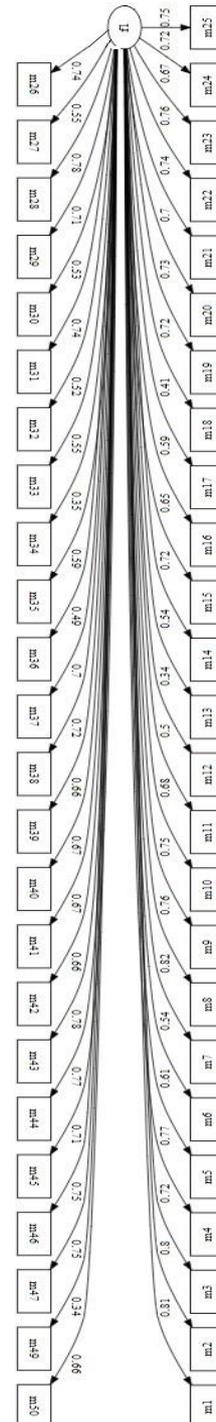
Confirmatory Factor Analysis Results

It was examined whether the model formed as a result of the exploratory factor analysis was confirmed in the confirmatory factor analysis with the same factor loads and it was determined that the RMSEA value, one of the most reliable fit indices, was 0.074. The fact that this value is below 0.08 means that it is an acceptable fit, that is, the model has been verified.

Table 3 below shows the distribution of item factor loads resulting from exploratory factor analysis and the model obtained at the end of confirmatory factor analysis.

Table 3 Item factor loads resulting from exploratory factor analysis and the model resulting from confirmatory factor analysis.

Item	Factor 1
m1	0.811
m2	0.795
m3	0.720
m4	0.772
m5	0.613
m6	0.536
m7	0.822
m8	0.763
m9	0.746
m10	0.685
m11	0.498
m12	0.342
m13	0.542
m14	0.722
m15	0.649
m16	0.594
m17	0.413
m18	0.720
m19	0.728
m20	0.701
m21	0.739
m22	0.756
m23	0.671
m24	0.715
m25	0.751
m26	0.744
m27	0.552
m28	0.779
m29	0.712
m30	0.534
m31	0.743
m32	0.523
m33	0.550
m34	0.352
m35	0.594
m36	0.486
m37	0.705
m38	0.716
m39	0.664
m40	0.671
m41	0.668
m42	0.663
m43	0.781
m44	0.766
m45	0.707
m46	0.748
m47	0.750
m49	0.336
m50	0.660



CONCLUSION AND DISCUSSION

The aim of this study is to develop a scale to determine teachers' compliance with general teaching principles. In the development of the scale, all the necessary operations were performed to develop a Likert-type scale. In the first stage of the study, 54 items were created showing compliance with the teaching principles. The suitability of the items in the first form was checked by taking the opinions of 11 subject field experts. Field experts gave their opinions with the help of a triple Likert-type scale consisting of "suitable", "partially suitable" and "not suitable" options for each item. As a result of the feedback from field experts, some items were corrected, 4 items were removed from the scale and a new 50-item form was created and applied. Studies conducted to develop the scale have shown that the scale of compliance with teaching principles consists of 51 items and is a valid and reliable scale. The exploratory and confirmatory factor analysis performed to determine the construct validity of the scale reveals that the scale is one-dimensional.

According to the EFA results (Hayton, Allen, & Scarpello, 2004; Hurley, Scandura, Schriesheim, Brannick, Seers et al., 1997), which help to explain the existing structure, it is seen that the item factor loads vary between 0.336 and 0.811. The finding that the factor load of 5 items is below 0.5 and 46 items is above 0.5 brings the result that the items in the scale serve the purpose of the scale. In addition, it was determined that the scale of compliance with general teaching principles explained 44.7% of the total variance, and it was concluded that this value was at the desired level.

According to the results of the confirmatory factor analysis carried out to test the validity of the scale, it was seen that the scale of compliance with teaching principles, consisting of 51 items and a single dimension, had sufficient suitability for the model. The RMSEA value, which is one of the most reliable fit indices, was determined to be 0.074, and it was concluded that this value being below 0.08 was an acceptable fit, that is, the model was confirmed. For RMSEA, there are statements that values below 0.05 indicate good fit, and values between 0.05 and 0.10 indicate acceptable fit (Çokluk et al., 2010; Schermelleh et al., 2003; Yılmaz and Çelik 2009).

On the other hand, the Cronbach's alpha internal consistency coefficient of the 51-item scale was found to be ($\alpha = 0.97$). The obtained value was also expressed as "high reliability" by Alpar (2010: 350). It was concluded that the internal consistency coefficient value of the scale was between 0.80 and 1.00, which is an important finding and the reliability value of the "Adaptation to Teaching Principles Scale" was quite high.

It is thought that the one-dimensional structure of the scale of adaptation to teaching principles is consistent with the conceptual framework of teaching. Due to this theoretical consistency, it is thought that this structure of the scale should be preserved.

This scale is a scale that teachers can benefit from in terms of increasing the teaching performance of teachers and thus achieving more successful results in achieving the goals of teaching. Türel and Yıldırım (2018) underline the positive effects of the process and materials created in accordance with general teaching principles on the academic success of students. Similarly, Gagne, Wager, and Golas (2007) and Brown (2016) pointed to the principles to be followed in the teaching process and stated that compliance with these principles is important for students' academic success. For this reason, it is thought by the researchers that this scale can be used while teachers are preparing their lesson plans, applying them and evaluating the process, and examining the relationship between the quality of teaching service and compliance with general teaching principles will contribute to the literature.

As a result, the findings obtained as a result of the validity and reliability study carried out in secondary education institutions revealed that the scale has sufficient validity and reliability to measure the importance of teaching quality and teaching principles.

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