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# Developing an Attitude Scale for In-Service Training

**By**

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## Abstract

*Teachers usually begin teaching in their twenties and continue to work until their sixties in Turkey. During these forty years of teaching, their knowledge and competences fade day by day and are lost over time. The Ministry of National Education organizes in-service training programs in order to make up for this problem. One of the factors that affects benefiting from these programs is related to teacher attitudes towards in-service training. This study has developed a valid and reliable attitude scale, in which it is acknowledged that attitude has cognitive, emotional and behavioral factors, and a test plan has been designed considering negative and positive attitude potentials. A group of teachers was asked to write an essay that explained their thoughts related to in-service training and the sentences that pointed to their attitudes were identified. At first, 60 items were written, but it was reduced to forty-three items based on expert opinions. Then the Likert type scale was applied to 176 teachers (101 males and 75 females) by organizing test groups. According to results of analysis, a total of 30 items were selected that included 5 positive and 5 negative items for each component. According to exploratory factor analysis carried on the selected items, the scale explained 53.5% of the variance in total points and had a factor loading value of .47 and .85 (median= .76) between the items. Item-total correlation values were found to be between .48 and .85 (median= .75). Cronbach Alpha and Split Half reliability values were calculated as .97. Thirty items designed previously were applied to 288 teachers (168 males and 120 females) via internet and the confirmatory factor analysis was defined. When the related indexes were examined, it was observed that the scores obtained from the scale fit a one-factor structure.*

**Keywords:** *attitude, in-service training, scale development*

## 1. Introduction

Training individuals is the main occupation of society. Learning requires efforts supported by education. Education is required to raise individuals in line with targeted terminal behaviors. In general, learning requires individuals to go through experiences, learn through these experiences and live their lives under specific conditions prepared for them (Laska, 1976). Experience process has two indispensible main elements. One of these elements is the student, who receives all the services. The second element is the teacher, who provides services for students. It is highly probable that teacher qualifications directly affect the quality of educational services provided for students. Therefore, the necessity of training quality teachers and increasing teacher quality are interesting fields of research in our country (Karagözoğlu, 1993; Azar, 2011; Aykaç, Kabaran and Bilgin; 2014).

In order to teach in Turkey, it is necessary to graduate from a 4-year graduate program in the education faculties of universities, or to obtain pedagogical formation following graduation from other graduate programs. Common belief states that even though teacher candidates are trained in the best quality, their knowledge will increase, some knowledge will be forgotten or new methods and approaches will be available after they start teaching (Gürkan, 2001; Şişman, 2006). Therefore, it is necessary to support teachers through various in-service training activities during their profession. This need is expressed in literature through the concept of in-service training. In-service training is defined as the training provided through planned educational activities to provide teachers with the required knowledge, skills and attitudes to ensure higher success during the period between entering the profession and retirement (Yalın, 1997). In-service training programs are expected to contribute to the formation of a stronger

foundation by reviewing and developing knowledge gained through education and by learning related approaches and techniques (Moeini, 2008).

It is the among the responsibilities of the Ministry of National Education Directorate General for Teacher Training and Directorate General for Human Resources to provide centralized activities in required fields for in-service training. Each year, the annual in-service training activity calendar is announced to teachers in January. Teachers are asked to apply for up to 5 trainings about which information is provided such as eligible participants, purpose and date of activity and number of participants. On the other hand, each provincial directorate also provides teachers with local in-service training activities. In recent years, teachers are also provided with trainings free-of-charge by non-governmental organizations and by the private sector for specific fees. Studies that include the assessment of the quality, effectiveness and problems of both central and local in-service training provided, especially by the Ministry, report both positive and negative teacher views. Especially, teachers criticize in-service trainings under different dimensions in some studies (Sezer, 2006; Yalın, 2001; Gülmez, 2004; Karasolak, Tanrıseven and Yavuz Konokman, 2013; Başkan, 2001; Durmuş, 2003; MoNE, 2006; Uçar, 2005; Köstereliođlu and Bayar, 2014). Current teacher views related to in-service training may positively or negatively affect their participation in other upcoming activities that will be presented to them. Teachers' attitudinal approaches may directly affect the efficiency of in-service training programs.

Thurstone (1931) defines attitude as positive or negative intensity grading towards a psychological object and Allport (1935) defines it as "affective and mental readiness developed through experiences towards all related objects and cases which prompts individuals' behaviors or that has a dynamic power of influence on them. According to Smith (1968), attitude is "a trend attributed to individuals that regularly forms their thoughts, emotions and behaviors about a psychological object." Hilgard, Atkinson and Atkinson (1971) report that although attitude includes getting to or move away from certain objects, it also involves readiness to exhibit certain behaviors. Anderson (1988) states that attitude is a psychological construct regarded as an important and critical predictor of human behavior with its cognitive, affective and behavioral dimensions.

What is noteworthy in these definitions is the emphasis on human behavior. Morgan (1991) expresses this emphasis in the following manner: "Attitudes of individuals affect their fondness, hatred and behaviors to an important extent." Knowing individuals' attitudes towards an object or a stimulant will help predict the behaviors towards the related stimulant (Üstüner, 2006). Therefore, as Erkuş (2003) points out, measurement of attitudes is very desirable in various fields. However, it should be kept in mind that attitude is not the only factor that affects behavior. According to Tavşancıl (2002), attitudes are neither the precondition of, nor sufficient causes for behavior; they can only be mediating causes.

Behaviors are the results of the interaction among attitudes, environment, habits and expectations (Kağıtçıbaşı, 1999). Attitudes are obtained through experiences and they are not temporary; they are continued for a certain time. Although it takes a long time, attitudes can be changed. Attitudes are formed as a result of organizing one's experiences and knowledge and when these experiences and information change, attitudes may also follow suit (Tavşancıl, 2002).

The current study attempted to develop an attitude scale to measure teacher attitudes towards in-service training. It is believed that the developed scale will identify the factors that affect teacher attitudes.

## 2. Methodology

***Research Design***

The study focused on scale developing a scale. The scale development process was suggested by Crocker and Algina (1986) and the Likert type scale development steps identified by Anderson (1988)

were followed in the development of a scale that would measure teacher attitudes towards in-service training. Additionally, the developed scale was re-implemented on a different sampling group and confirmatory analysis was undertaken.

***Working Group***

In 2012, the scale was piloted on 176 teachers employed in various schools in Eskişehir and the actual implementation was conducted on 288 teachers working in different provinces of Turkey in 2014. Some of the characteristics of participating teachers are presented in Table 1 and the characteristics of teachers who participated in the actual implementation are presented in Table 2.

**Table 1. Some characteristics of teachers who participated in piloting**

| Characteristic | Number | % | Characteristic | Number | % |
|---|---|---|---|---|---|
| **Gender** | | | **Average Numbers of IST participated in annually** | | |
| Male | 101 | 57.4 | 1 | 62 | 35.2 |
| Female | 75 | 42.6 | 2 | 45 | 25.6 |
| **Educational Status** | | | 3 | 34 | 19.3 |
| Associate degree | 9 | 5.1 | 4 and higher | 35 | 19.9 |
| Undergraduate degree | 154 | 87.5 | **Number of IST in the last year** | | |
| Master's degree | 11 | 6.3 | 1 | 80 | 45.5 |
| Doctorate | 2 | 1.1 | 2 | 46 | 26.1 |
| **Seniority** | | | 3 | 26 | 14.8 |
| 1-5 Years | 59 | 33.5 | 4 and higher | 24 | 13.6 |
| 6-10 Years | 39 | 22.2 | **Type of Educational Institution** | | |
| 11-15 Years | 40 | 22.7 | Primary +Secondary | 151 | 85.8 |
| 16 Years and higher | 38 | 21.6 | High School | 25 | 14.2 |
| **Total** | **176** | **100.0** | **Total** | **176** | **100.0** |

As can be observed from Table 1, 57.4% of the teachers participating in piloting stage were males. The majority of the participating teachers (87.5%) had an undergraduate degree. One third of the participating teachers (33.5%) had 1-5 years seniority. All of the teachers reported that they attended at least one in-service training annually and in the last year they participated in at least one in-service training program. The majority of the participating teachers (85.8%) were employed in primary or secondary schools.

**Table 2. Some characteristics of teachers in the working group who participated in the actual implementation**

| Characteristic | Number | % | Characteristic | Number | % |
|---|---|---|---|---|---|
| **Gender** | | | **Average Numbers of IST participated in annually** | | |
| Male | 168 | 58.3 | 1 | 117 | 40.6 |
| Female | 120 | 41.7 | 2 | 101 | 35.1 |
| **Educational Status** | | | 3 | 36 | 12.5 |
| Associate degree | 6 | 2.1 | 4 and higher | 34 | 11.8 |
| Undergraduate degree | 216 | 75.0 | **Number of IST in the last year** | | |
| Master's degree | 61 | 21.2 | 1 | 159 | 55.2 |
| Doctorate | 5 | 1.7 | 2 | 71 | 24.7 |
| **Seniority** | | | 3 | 32 | 11.1 |
| 1-5 Years | 103 | 35.8 | 4 and higher | 26 | 9.0 |
| 6-10 Years | 56 | 19.4 | **Type of Educational Institution** | | |
| 11-15 Years | 66 | 22.9 | Primary +Secondary | 213 | 74.0 |
| 16 Years and higher | 63 | 21.9 | High School | 75 | 26.0 |
| **Total** | **288** | **100.0** | **Total** | **288** | **100.0** |

Table 2 shows that 58.3% of the teachers participating in the actual implementation were males, 75% had undergraduate degrees and one third of them (35.8%) had 1-5 years seniority. Similar to the piloting group, all of the teachers in the actual implementation group participated in at least one in-service training every year and attended at least one in-service training program in the previous year as well.

***Data Collection***

Piloting was implemented on the piloting working group by face-to-face interviews. The schools in which teachers were employed were visited and after explaining the purpose of the study, the teachers were asked to respond to the scale. In the real implementation stage, the scale was published on a website and teachers participating in the implementation responded online. Implementation commenced early March in 2014 and the data collection period was completed in September, 2014.

***Data Analysis***

SPSS and Lisrel programs were utilized during data analysis. Other results related to "test and item analysis" are provided in findings and interpretation sections.

## 3. Findings and Interpretation

The study, which attempted to develop a scale to measure teacher attitudes towards in-service training, followed the test development process suggested by Crocker and Algina (1986). Likert type scale development steps identified by Anderson (1988) were also taken into account. The step following the purpose of the test is to define the behaviors that will reflect the construct to be measured. In this phase, attitude, the characteristic to be measured by the test, was regarded as a trend consisting of cognitive, affective and behavioral elements as described by Rosenberg and Hovland (1960) and Smith (1968). It was also thought that items should display positive or negative attitudes (Tavşancıl, 2002) and a test plan presented in Figure 1 was prepared.

**Figure 1. Attitude scale test plan for in-service training**

| | **Cognitive** | **Affective** | **Behavioral** |
|---|---|---|---|
| **Positive Attitude** | | | |
| **Negative Attitude** | | | |

In order to identify the statements that presented attitude towards in-service training, 11 teachers were asked to write a composition that reflected their thoughts and emotions related to in-service training before the items were written. These compositions were examined with a group of students attending a doctorate program. The statements, including any cognitive, affective or behavioral elements of altitude, were identified. Test items were written with the same student group after examining the current attitude scales. Items were placed in the related boxes in the test plan provided in (Figure 1) A total of 60 statements were written by placing 10 in each box. The statements were presented to expert academicians in program development, assessment, and evaluation and educational management fields to obtain their ideas. 17 items were eliminated following the expert review because they were found to measure a characteristic other than attitude, were factual and carried almost the same psychological loading value with another statement. The remaining 43 items were used to create a pilot form and a 5-point Likert type scale with options: "completely disagree, disagree, partially agree, agree and completely agree" was developed for the form.

Pilot implementation of the scale was implemented on 176 teachers employed in Eskisehir. According to Kline (1994), it is usually sufficient for factor analysis to have a sample size larger than 200. However, this number can be reduced to 100 in open constructs with small number of factors. Since the factor structure of the tool developed to measure attitude, which has a single dimension, would be

examined in this study, a pilot implementation group size of 176 was accepted as sufficient. Factor analysis was implemented on the data obtained through the implementation. Analysis results presented KMO value to be 0.94 and significant Bartlett test results at $p<0.01$ level. Tabachnick and Fidel (2001) reported that KMO Value should be 0.60 or higher. It was also seen that the scale met the single dimensionality assumption identified by Tavşancıl (2002) since it explained 46% of the total score variance of the first dimension of the scale and the contribution of other dimensions was not significant. Therefore, factor analysis was continued by focusing on a single dimension. The analysis was repeated by eliminating the statements whose factor loading values were below 0.40 starting with the lowest one. 30 statements were selected by taking the distribution in the test plan into consideration. It was observed that 30 statements that were selected explained 53.5% of the change in the total score. Büyüköztürk (2002) reported having 30% or higher percentage in this regard was sufficient in single dimensional scales. Cronbach alpha internal consistency reliability and split-half reliability for those 30 statements were calculated as 0.97 and 0.95, respectively. Factor loading values and item total correlations are presented in Table 3.

**Table 3. Factor loading values and item total correlations of the items selected for the actual test following the pilot implementation**

| Item No | Loading Value | r | Item No | Loading Value | r | Item No | Loading Value | r |
|---|---|---|---|---|---|---|---|---|
| **1** | .78 | .78 | **11** | -.68 | -.70 | **21** | .77 | .76 |
| **2** | -.47 | -.48 | **12** | .78 | .77 | **22** | -.54 | -.55 |
| **3** | .77 | .77 | **13** | -.67 | -.68 | **23** | -.85 | -.85 |
| **4** | .78 | .77 | **14** | .69 | .68 | **24** | -.74 | -.75 |
| **5** | .76 | .75 | **15** | .73 | .72 | **25** | -.85 | -.85 |
| **6** | -.68 | -.69 | **16** | -.74 | -.75 | **26** | -.83 | -.83 |
| **7** | -.66 | -.66 | **17** | .76 | .75 | **27** | .78 | .78 |
| **8** | -.64 | -.65 | **18** | .79 | .78 | **28** | .83 | .82 |
| **9** | -.77 | -.77 | **19** | .70 | .69 | **29** | .79 | .78 |
| **10** | -.56 | -.58 | **20** | .75 | .75 | **30** | -.63 | -.64 |

Examination of (Table 3) shows that all factor loading values were higher than the lower limit of .45 identified by Büyüköztürk (2002). The lowest and highest factor loading values were identified to be .47 and .85, respectively. Factor loading value median was calculated as .76. Examination of item total correlations also provides a similar result. All items have a statistically significant relation to the total score at $p<0.001$ level. These correlation values are between .48 and .85 (median=.75).

Examination of the distribution of scores obtained from these 30 statements included in the scale shows that the scores changed between 31 and 147; arithmetic mean was 94.88 and the standard deviation was 25.71. Kurtosis and skewness coefficients and histogram graphic results show that the scores are significantly skewed from normal distribution. Kolmogrov Smirnov test values ($KS=0.056$, $p>0.05$) also support this finding.

Findings obtained from the scale that was refined as a result of pilot implementation ensured content validity, and the scale was found to be a reliable and valid measurement tool to measure the single dimensional construct. The scale was then implemented on the actual implementation group to test and validate the construct validity on a data set obtained form a different sample.

Data was collected with the implementation carried out through Internet from 288 teachers employed in different provinces of Turkey. Analyses undertaken on the pilot implementation data were repeated. Exploratory factor analysis results showed KMO value to be 0.96 and Bartlett test results to be significant at $p<0.01$ level. The scale explains 52.2% of the change in the total score with its single dimensional structure. Cronbach alpha internal consistency reliability (0.97) was found to be the same

with the results obtained after the pilot implementation and split-half reliability was calculated to be 0.95. Table 4 presents the factor loading values of the items in the scale and item total correlations.

**Table 4. Factor loading values and item total correlations of the items in the actual test**

| Item No | Loading Value | r | Item No | Loading Value | r | Item No | Loading Value | r |
|---|---|---|---|---|---|---|---|---|
| **1** | .72 | .72 | **11** | -.68 | -.70 | **21** | .82 | .80 |
| **2** | -.70 | -.71 | **12** | .85 | .85 | **22** | -.60 | -.62 |
| **3** | .70 | .69 | **13** | -.73 | -.73 | **23** | -.78 | -.78 |
| **4** | .81 | .80 | **14** | .74 | .72 | **24** | -.65 | -.65 |
| **5** | .73 | .71 | **15** | .76 | .74 | **25** | -.80 | -.80 |
| **6** | -.57 | -.60 | **16** | -.74 | -.75 | **26** | -.80 | -.80 |
| **7** | -.72 | -.73 | **17** | .80 | .78 | **27** | .73 | .71 |
| **8** | -.72 | -.74 | **18** | .80 | .79 | **28** | .79 | .77 |
| **9** | -.42 | -.45 | **19** | .81 | .80 | **29** | .81 | .80 |
| **10** | -.42 | -.44 | **20** | .81 | .79 | **30** | -.40 | -.43 |

(Table 4) shows all factor loading values to be between .40 and .85 and item total correlation values to be between .43 and .85. Median values are .74 and .73 respectively. All correlation values are significant at $p<0.001$ level.

Examination of distribution of scores obtained from the scale points to the fact that scores changed between 37 and 150; arithmetic mean was 108.35 and standard deviation was 20.92. Kurtosis and skewness coefficients and histogram graphic results show that scores are not significantly skewed from normal distribution.

Confirmatory factor analysis was conducted to test whether the single dimensional construct formed by the scores obtained from the scale was validated. Extreme values that threatened the normalcy assumption were eliminated from the data set and data obtained from 270 teachers were used. Fit Index Values presented in Table 5 were obtained at the end of the analysis.

**Table 5. Fit Index Values Obtained From Confirmatory Factor Analysis**

| Fit Index | Value |
|---|---|
| $\chi^2$ | 980.51 ($p<0.05$) |
| sd | 373 |
| $\chi^2$ / sd | 2.63 |
| RMSEA | .078 |
| SRMR | .060 |
| CFI | .98 |
| NFI | .97 |
| NNFI | .98 |

Examination of $\chi^2$ / sd in Table shows this values as 2.63. Values below 3 in large samples point to perfect fit whereas values below 5 point to medium level fit (Bollen, 1989; cited in: Kline, 2005; Şimşek, 2007). RMSEA and RMR values below or equal to 0.05 point to good fit, RMSEA and RMR values between 0.05 and 0.08 point to sufficient fit and RMSEA and RMR values between 0.08 and 0.10 point to moderate fit (Jöreskog and Sörbom, 1993; Anderson and Gerbing, 1984; Şimşek, 2007). Values in the current study were calculated as 0.078 and 0.06, respectively and were regarded as acceptable. Fit values above 0.90 in CFI, NFI and NNFI indices are regarded as acceptable and fit

values above 0.95 are considered to be a perfect fit (Hu and Bentler, 1999). Values related to those three indices were calculated to be above 0.95. Examination of all indices validates the fact that the scale measures a single dimensional construct.

## 4. Result and Suggestions

The following results were found in line with the findings obtained during the piloting and actual implementation of "attitudes towards in-service training scale" completed as a development study:

- Attempts were made to ensure face validity for the scale developed by taking expert opinion into consideration during item construction. Items declared suitable by the experts to measure related attitude were included among scale items.

- A test plan was created to ensure content validity in the selection of the items and items suitable for this plan were used. Therefore, the scale has content validity.

- After the pilot implementation, 30 items that fit the single dimensional construct were selected. The construct's percentage of explaining the variation in the total score was found sufficient and it was regarded as proof for the test's construct validity. Items' one factor loading values and item total correlations also support this.

- Explanatory factor analysis results obtained after actual implementation were found to be significantly similar to the results obtained after the pilot implementation and this finding supports the single dimensional construct. Fit index values obtained from confirmatory factor analysis also confirmed that the scale was sufficient to measure the construct defined with a single dimension.

- Cronbach Alpha and two split-half reliability coefficients calculated in both implementations implied that the scale was suitable, got reliable measurement and that items were consistent with each other.

Based on these results, it can be claimed that the scale is a valid and reliable tool to measure attitudes towards in-service training. However, it should be kept in mind that criterion validity and test-retest reliability of the test have not been proven yet. Studies can be conducted by using the scale developed in this study to describe teacher attitudes for different variables in our country. Experimental studies with pre and post test design can be planned to affect teacher attitudes.

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**Annex 1:**

**In-Service Training (IST) Attitude Scale**

| **Instructions:** This scale is prepared to identify teacher views related to in-service training. You are expected to state your agreement level. It would be sufficient to put an "x" to the related box. | | Completely agree | Agree | Partially agree Partially disagree | Disagree | Completely disagree |
|---|---|---|---|---|---|---|
| 1. | I would participate in IST voluntarily | | | | | |
| 2. | I want the IST that I participate in to end quickly | | | | | |
| 3. | IST is an integral part of teaching profession | | | | | |
| 4. | Participating in IST increases my motivation at work | | | | | |
| 5. | I can listen to the topics discussed in IST | | | | | |
| 6. | I would cancel IST if I was given the authority | | | | | |
| 7. | I find IST boring | | | | | |
| 8. | I would participate only if in mandatory IST | | | | | |
| 9. | I do not believe that IST can develop me | | | | | |
| 10 | I feel alone in IST | | | | | |
| 11 | I feel uncomfortable in IST | | | | | |
| 12 | I enjoy participating in IST | | | | | |
| 13 | The purpose in IST is to fill the time | | | | | |
| 14 | IST helps complete my shortcomings related to pre-service training | | | | | |
| 15 | I apply what I learned in IST in my profession | | | | | |
| 16 | I am not interested in IST | | | | | |
| 17 | If I had the opportunity, I would definitely participate in more IST | | | | | |
| 18 | IST contributes to specialization in my academic area | | | | | |
| 19 | I feel lucky when I participate in IST | | | | | |
| 20 | Participating in IST is important for my personal development | | | | | |
| 21 | The IST that I participate in provides me with new outlooks | | | | | |
| 22 | I only participate in IST to receive certificate of participation | | | | | |
| 23 | I don't even want to hear about IST | | | | | |
| 24 | IST has no role in adapting to school | | | | | |
| 25 | IST is unnecessary | | | | | |
| 26 | I wish there were no IST | | | | | |
| 27 | I am eager to apply the knowledge I gain in IST at my school | | | | | |
| 28 | IST helps me follow the developments in education | | | | | |
| 29 | It is useful to participate in IST | | | | | |
| 30 | There is no need to refresh the professional knowledge I attained pre-service. | | | | | |