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Development of teacher attitude scale towards the field trip

Hasan Said Tortop*

Bulent Ecevit University, Faculty of Education, Zonguldak, Turkey

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Abstract

A field trip is an excursion by group of students with teachers to a place away from classroom such as natural field, science center, and zoo. So, it is an important tool for renewable energy education. This study was carried out to develop a new scale for measuring teacher attitudes towards the field trip. Teacher attitude scale towards the field trip (TASFT) was an inventory made up of 15 items and two dimensions. This study included such stages as literature review, the preparation of the item pool and the reliability and validity analysis. Firstly, the draft scale including 30 items was prepared depending on field trip studies and interviews of teachers. The draft version of scale was applied to 389 teachers from the cities of Zonguldak and Isparta in Turkey. The results of the exploratory factor analysis revealed that TASFT consists of two factors included such dimensions as educational contribution and organizational difficulty. The final version of the scale included 15 items. The reliability coefficients were found to be 0.86 and 0.70 respectively, and explained variances were calculated as 27.29 and 11.20 respectively. Total variance of TASFT was 38.50, and the cronbach alfa coefficient was 0.75. The results of study indicated that this new "Teacher Attitude Scale towards the Field Trip" was a valid and reliable scale for measuring teachers' field trip attitudes.

***Keywords*:** Renewable energy education; Field trip; Attitude; Teacher; Instrument

1.Introduction

The field trip, known as school trips, is an excursion by students with teachers to a place away from classroom such as natural field, science center, zoo [1]. The field trip is an important tool for education, especially renewable energy education [2-4]. Nowadays, a number of countries attach importance to the renewable energy resources [5-15]. A number of researchers emphasize that the outdoor field trip is an important educational tool in the views of bringing first-hand experience to students, joining to the students' life, supporting to students' learning [16-25]. And there are many studies about the field trip and its effects [26-33]. Kisiel [34] have designed meaningful field trip (5E Model of constructivism) course program. In addition Tortop et al., [2] conducted a meaningful field trip in the physics course about renewable energy and applications topic.

Tortop et al., [2] and Tortop [3] found out that the meaningful field trip was affected positively students' achievement and attitudes towards field trip and ecology. It was acknowledged that importance of the field trip stated by many educators or teachers, however many researchers surprisingly was reported that teachers hesitate to arrange the field trip [1, 35]. This situation may be derived from the teachers' attitudes. There is a great deal of research on students' attitude towards the field trip, yet there is little on obstacles in arranging the field trip [35].

There are studies carried out on developing attitude scale for measuring students' attitudes towards the field trip [36, 37]. However, there were few studies conducted on reasons for teachers' unwillingness to arrange the field trip [35]. For this reason, putting forth teachers' attitudes towards the field trip is important for educational studies. The field trip studies should be carried out to measure teachers' attitudes towards the field trip.

Findings emphasizing the importance of field trips form educational aspects demonstrate that this importance is not supported in practice. There are a number of studies explaining this situation [1, 16, 18, 20-25]. It seen that there are two scale development studies conducted to measure students' attitudes in the field trips [36, 37]. However, there are few studies examining the attitudes of teachers, who constitute the most important factor in organizing field trips. This situation led to the idea that the lack of a psychometric measurement tool that allows measuring teachers' attitudes towards the field trips is an important problem. Thus, the present study aimed at developing such a scale.

2. Methodology

The stages were followed at process of developing teachers' attitude scale towards the field trip. Firstly, the author made a comprehensive and extensive review of the related literature and of the existing surveys and solicited options from teachers' experiences in field trip. A number of studies on field trip were examined [32, 34, 34-37].

The initial draft consisted of draft 30 items. The draft was sent to experts in educational psychology and frequent studied who researchers on field trip in order to check in the respect of content relevance, readability, and consistency. The draft was revised by author, and their views of each item were regulated. The final instrument consisted of 30 items which included 14 negative 16 positive items. This scale is a 5-point Likert type scale where strongly disagree:1, disagree:2, undecided:3, agree:4, strongly agree:5. The higher score on scale indicated more positively attitudes towards the field trip.

2. 1. Sample

The study was carried out with 389 teachers working in the cities of Zonguldak and Isparta in Turkey in the spring term of academic year of 2011-2012. Certain criteria were determined by the author for selection of teachers who would participate in the study. Firstly, the fields related to field trip in the curriculum were selected. The participants were teachers of science, classroom and social studies teachers in primary and secondary schools and those of geography, history, physics, chemistry and biology teachers in high school. The second criteria were that these teachers previously arranged a field trip. There were 170 female teachers, 219 male teachers. As for teacher experiences of teachers, it was 18.5% (1-5 years), 18.3% (6-10 years), 23.4% (10-15 years), 19.8% (16-20 years), 12.3% (21-25 years), 2.6% (26-30years), 5.1% (30 + years or over).

*Corresponding author. Tel.: +90-372-323-3874; fax: +90-373-323-8693.
E-mail address: hasansaid@yahoo.com (H. S. Tortop).

3. Findings

The final version of the instrument was administrated to 389 teachers. Afterwards, exploratory factor analysis was conducted. The Kaiser-Mayer Olkin (KMO) measurement of sample adequacy and Barlett's test of spherity were calculated. KMO coefficient was found to be .89, which was higher than critical value of 0.3 [38,39]. Barlett's test of spherity statistic was significant ($p<0.05$). It seems that factor analysis could be applied to the results of these tests. The purpose of applying factor analysis was to determine the number of separate components. As there was no normal distribution, the principal axis factoring was used on all the data to extract the appropriate number of factors. The principal axis factoring analysis yielded five components with an eigen value greater one. These factors explained 38.50 % of the total variances. The varimax rotation was administrated, and factor loadings for each items was examined. The items with a loading less than .30, those loaded on more than one factor or whose communality values decreased excessively were excluded [38,39]. At the end of study, the factor analysis revealed five independent factor structures. The factor structures and loading of 15 items in TASFT are given Table 1.

Table 1. Factor structures and loading of the 15 items in TASFT

	Factor 1	Factor 2
Item 27. I believe that field trips affect training sensitive and conscious individuals in a society	0.789	
Item 19. Students feel they are a part of the ecosystem by exploring their environment thanks to field trips	0.741	
Item 28. I think field trips will be effective in developing students' consciousness of ecology	0.714	
Item 9. Field trips may be used as an effective method for increasing students' awareness of ecological issues.	0.668	
Item 23. Field trips are important for students' understanding that they are a part of the community where they live.	0.643	
Item 17. Field trips are important for students' better-understanding of nature.	0.634	
Item 3. Field trips provide students with a good friendly atmosphere.	0.603	
Item 13. I believe that field trips encourage students to learn.	0.521	
Item 30. Field trips meet educational goals that cannot be reached in the classroom.	0.483	
Item 26. Field trips are organized for students to have fun, so it is unnecessary.*	0.474	
Item 6. I get seriously distressed while organizing field trip.*		0.642
Item 20. Organizing field trips take a lot of my time.*		0.583
Item 18. Field trips are an important part of the curriculum.		0.577
Item 10. While organizing of field trip, parents' allowance for students' attendance is a serious problem.*		0.555
Item 4. Collecting money for a field trip bothers me a lot.*		0.506

*negative statement.

As seen that Table 1 TASFT consists of five factors. There were ten items with items 27, 19, 28, 9, 23, 17, 3, 13, 30 and 26 clustered as Factor 1, and five items with items 6, 20, 18, 10 and 4 clustered as Factor 2. Then these factors were labelled Factor 1: Educational Contribution, Factor 2: Organizational Difficulty.

Following the factor analysis, reliability analysis was carried out for each factor, and cronbach alfa coefficients were used. Internal consistency coefficients for the 15 items for each subscale were calculated as 0,86 and 0,70 respectively and the explained variances of 27.29 and 11.20 respectively. Total variance of TASFT was 38.50 and cronbach alfa coefficient was 0.75. Correlatioanal analysis revealed that all subscales and TASSF were highly related (Table2). The item-total correlations of the scale are ranged between 0.15 and 0.60.

Table 2. Correlation of TASFT and subscales

	TASFT	Factor1	Factor2
Factor1	0.781**		
Factor2	0.484**	0.026	
TASFT	1.000	0.781**	0.484**

**Correlation is significant at the 0.01 level (2-tailed).

5. Discussion

This study was carried out to develop a scale for teachers' attitude towards the field trip. The findings obtained from the validity works revealed that this scale was valid. The fact that the internal consistency coefficient of the scale was found to be 0.75 shows that the scores to be taken from the scale were consistent with each other, therefore the reliability of internal consistency is normal level [38, 39]. The results item-total statistics analysis demonstrated that the item-total correlations of the scale are ranged between 0.15 and 0.60. As results of study, it could be said that TASSF was valid and reliable tool. In the light of findings, TASFT can be used in educational studies for measuring teachers' attitude towards the field trip. Orion & Holftein [36] developed students' attitudes scale. Besides, Ozturk [32] developed self-efficacy scale for field trip for teachers. In addition, there is no scale development study carried out for teachers in related literature. In this respect, the scale developed in present study will bridge an important gap in studies regarding the field trips.

6. Implications

TASFT can be used for science, geology, and renewable energy education researches.This studies are important in respects of developing education, especially energy and renewable energy education [40-43]. For future studies, it can be conformatory factor analysis for TASFT.

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