

The Scale for Student Arrangement in Traditional Classrooms: Validity and Reliability Study (SSATC)

Şkram Çinar

Department of Primary Education, Faculty of Education, Inonu University, Malatya, Turkey

Abstract: This study intends to develop a scale which aims at determining the criteria for the students while selecting the seat and classmate and certain personal characteristics of students who prefer certain places in the classroom. After being administered on 434 students studying at various departments in Educational Faculty of Inonu University, the final form of the scale was obtained. The scale is a three dimensional 5-point Likert-type scale including 20 items. Cronbach Alpha reliability coefficient was found 0.74 for the whole scale.

Key words: Classroom arrangement % physical arrangement of the classroom % seating order % classroom management

INTRODUCTION

Classrooms are the places where instructional/educational activities are conducted at their highest. In arranging the classrooms such factors as the number of students, quality and color of the walls and furniture, inside temperature, illumination, air-conditioning, cleanness and the arrangement of the students in the classroom have an indirect but important effects on the their levels o learning.

Several works about classroom management have analyzed the issue of student arrangement in the classroom [1-12]. A successful arrangement of students in the classroom both has a positive effect on the class interaction and instruction and facilitates students' access to sources. Moreover seating is an important factor for rational utilization of the classroom and arrangement of classroom traffic [2]. Furthermore arrangement of the materials in the classroom depends on how the students sit in the classroom.

Traynor [7] defines five strategies teachers use to arrange the students' seats in the classroom. These include: coercive, laissez-faire, task oriented, authoritative and intrinsic. Aydınlı [2] also states two basic approaches to classroom arrangement: First one is teacher-centered and the second one is student-centered. Based on these approaches, certain types of arrangement are represented in the relevant literature which includes U type, group study type, boardroom type, round type.

Teacher-centered (traditional) arrangement is usually given alternative names in the relevant literature, which include: lined arrangement [4], usual arrangement [5], teacher-centered classroom arrangement [2], boardroom type arrangement [6]. The photograph below shows a classroom arranged according to this type of arrangement.

The subject of this study is the arrangement of the students in traditional way of arranging seats in the classroom. It is observed that when the students are let free to take their seats some always sit in the front seats, some always sit in the middle seats and some always sit back seats.

In the teacher-centered arrangement style, students sit in two or three lines of desk groups, one behind the other so that they can see the nape of the one sitting ahead. As long as the seats are arranged in that manner the students usually

Corresponding Author: Dr. Şkram Çinar, Department of Primary Education, Faculty of Education, Inonu University, Malatya, Turkey



Photograph: Student arrangement in teacher-centered classrooms

take certain seats they prefer. Exceptions for this include the situations where teachers have the students in back seats sit in the front rows because they can not see the blackboard or hear the teacher well (when they are short or have seeing/hearing problems) or where teachers have the long students in the front rows sit in the back seats.

Moreover the places of the lesson materials are arranged rather according to the teacher. For the traditional arrangement communication usually takes place between teacher and students and student-student interaction is rather poor. Students in the front rows are more advantageous than those sitting in the back rows. In this type of arrangement usually some out-of-classroom behaviors by students are observed. The noise stemming from distraction and some misbehavior such as not paying attention to the lesson are perceived in a sense as the natural reactions to this arrangement type [2].

Tutkun [5] suggests that traditional arrangement is suitable for situations where classroom is small and the number of students is high, where a single teacher is responsible for combined classes, where there is considerable shortage of material and sources or the lesson content doesn't require these so much and where the communication is rather between teacher and students.

Traditional arrangement does not render the students but the teacher active. Since this type of arrangement decreases the interaction in the classroom, the negative interaction in the classroom also decreases. Students are interested in the teacher and his presentation. While the communication is between teacher and students in such an arrangement, student-student interaction decreases. Students sitting in the front rows have an advantage over those sitting in the back rows [2].

The proportion of the teachers who arrange their student in the traditional way is not known. Yet it can be said that this proportion for Turkey is very high. The main reason for this is the fact that the classrooms may sometimes accommodate as many students as 50-60 [12] and this type of arrangement is the one teachers know best since they also come from the same system. Another reason can be the teacher-centered curriculum.

Students can be lucky or unlucky in terms of the place they sit. Gage and Berliner [13] suggest that front and middle rows of the classrooms are the places where students who are lucky in terms of communication and interaction sit. In

general most of the teachers observe that students sitting next to the wall or in the back rows have poor participation and attention and are more likely to display undesired behaviors [9].

Success in educational/instructional activities depends on how well teacher and students know each other. In teacher-centered instruction the teacher as the initiator of and a major actor in the learning process should know his/her students very well. In this respect the seat where the students prefer to sit can be an important indicator for the teacher to know them.

Purpose of study: In Turkey the students generally sit in the classroom according to the traditional arrangement type. In this type of arrangement which results in teacher-centered instruction students sit facing the teacher and the board, one behind another and generally in the same seat. This study intends to develop a scale which measures, based on students' own perceptions, the determining quality of a student's personal characteristics, those characteristics he/she seeks for in his/her mate to sit with and the features of the place he/she chooses in terms of choosing a seat in this type of arrangement.

METHODS

Participants: This study was administered on a sample of 434 students representing a population of 4900 students attending various grades of different departments at Inonu University including Primary School Teaching, Teaching Music, Teaching Science, Counseling and Guidance, Pre-School Teaching, English Language Teaching, Teaching Maths for Primary School, Teaching Social Studies, Physical Education Teaching during the academic year 2004-2005. Of this number 228 are female (52.5%) and 206 are male (47.5%).

Development of the scale: In accordance with the aim described above the students were asked to write their views as to where and why they prefer to sit in the classroom both in the high school and at the university. Based on the data obtained from students' answers, interviews with some students and analysis of the relevant literature, 27 items were written. These items were prepared carefully enough to include behavioral statements.

Obtained draft was analyzed in terms of language used by a specialist, an instructor teaching "Classroom Management" course at Inonu University was consulted for the content validity of the scale and corrections were done accordingly. A Likert type final draft scale was obtained which consists of five responses scored from 5 to 1 (representing respectively Always, Often, Sometimes, Seldom, Never).

This final draft five-point Likert type scale with 27 items was administered on the participants. The analysis of the items and the construct validity test of the scale were done with factor analysis using basic components and for the reliability of the scale Cronbach Alpha coefficient was calculated. Analyses were done using SPSS software program.

Data collection: After given its last shape for trial the scale was administered by the researcher on the participant group described above in May, 2005. It takes about 10-15 min to complete the scale.

FINDINGS AND RESULTS

Findings concerning the validity of the SSATC: Prior to the factor analysis, the suitability of the data for the analysis was tested using Kaiser-Meyer-Olkin (KMO) test. KMO test is used in order to test whether partial correlations are small and whether distribution is enough for factor analysis. The value obtained was 0.775 (n=434). This value is bigger than 0.60 which is the smallest value proposed by Pallat [14]. The distribution in the population ought to be normal in the factor analysis. This assumption applies for all variables and all linear combinations of the variables. It is tested by Bartlett test that the data derive from multi-variabed normal distribution [15], which revealed 3204.059 ($p < 0.000$). The degree of freedom is 351. These results indicating the validity of the scale are enough for factor analysis.

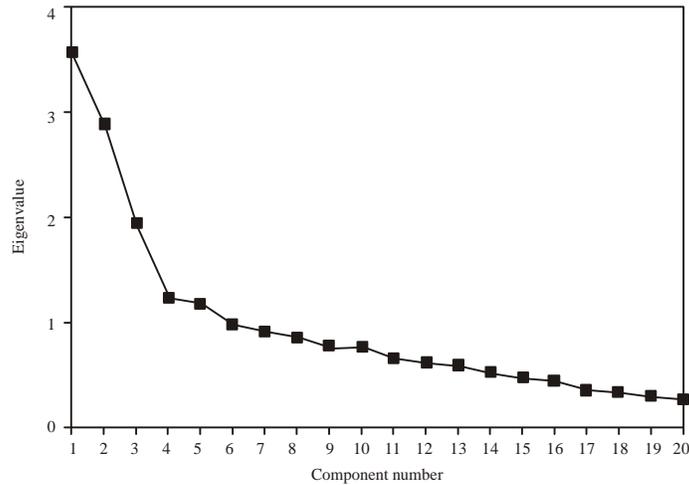


Figure: The curve for factor eigenvalues

The 1st and the 19th items which have negative statements are scored the opposite way round (from 1 for always to 5 for never). Moreover in order to test the construct validity, to determine the possible number of dimension (factor) and to select items a factor analysis was done. Factor analysis is a statistical technique which intends to explain the measurement with a small number of factors by gathering together the variables measuring the construct or quality of the measurement instrument [16, 17].

At the first step of the factor analysis Principal Components Analysis was used and 8 items with eigenvalues over 1 were gathered under sub-dimension and 60.544% of the total variance was explained. Since the scale was supposed to be three-dimensional the analysis was conducted according to three-dimensions. The 23rd, 24th, 25th, 26th and 27th items whose factor loads are below 0.30 were discarded from the scale and 22 items with factor loads above 0.40 were obtained with Varimax Rotation Technique. These items were seen to be covering all three factors. The 7th and 15th items which have similar values though in different factors were also discarded, which led to the final three-dimensional form with 20 items. The variance these three factors explain are given respectively as follows: First factor explains 18.015% of the variance, second factor explains 14.586% of it and third one explains 9.860%. Total variance explained by these three factors is 42.461%. Aggregating variance on the other hand is 18.015% for the first factor, 32.601% for the second one and 42.461% for the third one. The communalities of the three factors described regarding the items varied between 0.406 and 0.825.

The number of factors required by the analysis according to eigenvalue criteria is three. This can also be seen in the curve prepared according to eigenvalue criteria. In this curve the steep decline after third factor was replaced by a horizontal line.

Gorsuch, Lee and Comrey suggest that the more the variance rates obtained after the analysis are, the stronger the factor construct of the scale is [15]. For the analysis in social sciences variance rates between 40% and 60% are regarded as sufficient [15]. Thus the scale developed has construct validity.

Factors are named taking into consideration the meanings of the items. First factor includes 7 items and is named "Personal Characteristics". Second factor includes 10 items and is named "Preferred Seat-mate". Three-itemed third factor is named "Preferred Place".

Internal consistency coefficient was estimated in order to determine the reliability of the scale. Cronbach Alpha was found 0.74 for the whole scale, 0.78 for the first factor, 0.74 for the second factor and lastly 0.75 for the third factor. These values also indicate the reliability of the scale.

Table 1: Converted factor loads of the items in the final analysis*

Factor	Order **	Items	1st Factor	2nd Factor	3rd Factor
Personal characteristics	1	M3	0.754	0.105	
	2	M5	0.733		
	3	M2	0.697		
	4	M8	0.661		
	5	M1	0.632		-0.152
	6	M4	0.572		0.102
	7	M6	0.521		
Prefered seat-mate	8	M11		0.706	
	9	M12	0.105	0.687	
	10	M17		0.630	
	11	M10	-0.122	0.582	
	12	M14	0.106	0.521	
	13	M13	0.104	0.520	
	14	M18	0.161	0.503	0.265
	15	M16		0.466	
	16	M19		0.451	
	17	M9	-0.227	0.406	0.194
Preferred place	18	M20			0.825
	19	M21			0.803
	20	M22			0.768

* Values lower than 0.10 are excluded,

** The items in the Annex are arranged according to this order

Draft scale was administered on 62 students other than the participants of this study for two weeks using the test-retest method. As a result of this test-retest application the reliability coefficient of the scale (Pearson Moment Correlation Coefficient) was found $r=0.96$. An absolute value of correlation coefficient between 0.70 and 1.00 is interpreted as a high level of correlation [16], which means the scale is reliable.

CONCLUSION AND SUGGESTIONS

The findings show that the scale is a valid and reliable one with three factors which can be used to measure the personal characteristics of the students and the criteria they use while selecting a place in traditionally arranged classrooms and the characteristics they consider important while choosing their seatmates.

The findings from this scale are expected to help teachers know better about the students according to the seat students take.

It is also recommended that the scale be tested in primary and secondary schools.

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Annex: Classroom Seating Arrangement Scale

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- A. Personal characteristics
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1. I describe myself as *someone handsome/beautiful*
 2. I describe myself as someone *successful*
 3. I describe myself as someone *active/enterprising*
 4. I describe myself as someone *bodily fit*.
 5. I describe myself as someone *introvert**
 6. I describe myself as someone *hardworking*.
 7. I describe myself as someone *humorous/funny*
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- B. Preferred seat-mate
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8. I prefer my seat-mate to have similar *understanding of the world*.
 9. I prefer my seat-mate to have similar *political stance*.
 10. I prefer my seat-mate not to have some age difference with me.
 11. I prefer my seat-mate to come from the same city with me.
 12. I prefer my seat-mate to have a good economical condition.
 13. I prefer my seat-mate to have a *fine physical appearance*.
 14. I prefer my seat-mate to have a *good deal of social skills*.
 15. I prefer my seat-mate to be *someone I already know*.
 16. I am *not interested* in what my seat-mate is like*
 17. I prefer my seat-mate to be in the *same sex with me*.
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- C. Preferred place
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18. I believe that the place I sit should allow me to actively participate into lesson.
 19. I believe that the place I sit should be near the teacher.
 20. I believe that the place I sit should allow me to see the board well.
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* The statements in bold letters are the negative items in the scale