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The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS): Validity and Reliability Studies

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ABSTRACT

The aim of this study is to develop "The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS)" parent and teacher forms, for the purpose of determining the level of parent's involvement in secondary school students' home-based science learning activities and clarifying its sub-scales. The development process of measurement tools has been performed in two stages in the manner that includes the exploratory factor analysis and confirmatory factor analysis. According to the results of the analysis, it was determined that the "PI-SHBScienceLAS" parent form consists of 30 items and 4 subscales and teacher form consist of 28 items and 4 subscales. Thereafter, internal consistency of the developed scale was calculated by Cronbach Alpha and found that the results obtained from this data set considerably have high reliability. The analysis studies have shown that the status of the developed scale is valid to measure the involvement level of parents in students' home-based science learning activities and that it provides reliable data.

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Keywords:
Parent involvement, science education, home-based learning

Introduction

The initial foundations of the scientific learning process begins by means of the answers given by the parents to the questions curiously asked by their children, before the children start their school life. The children try to understand the world and their environment by asking their parents hundreds of questions such as "how do the flowers blossom?", "why is the sky blue?, "why is it snowing?", "how does the sound and the music reveals?" and "where do the mountains come from?" (Paulu and Martin, 1991). Parents should encourage their children to ask questions instead of getting tired of these questions and leaving them out, because curiosity is natural for kids and they just need help interpreting the things they see. These questions are necessary for the children to be successful in their future life. Many parents think that they can't help their children in science. But parents are not required to have degrees in physics or chemistry to help their children all they need is to make observations together with their children and have willingness to learn. Also, parents need to allocate time to nurture the natural curiosity of their children and to make the necessary effort. While the parents who have improved themselves in terms of science literacy could satisfy their children's sense of wonder felt towards nature and science, they also can make explanations that are nearly scientific and can reinforce their children with the right information (Şahin, Sanalan, Bektaş and Kaygısız, 2010; Diana, 2008).

In our rapidly developing world, with the progress' in science and technology, the perspective of societies to parents and children is changing. The opinion that the parents should move away from traditional attitudes about child rearing is undisputedly accepted by the majority. In addition to this, parents

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also need more assistance in recognizing their children, in supporting their children's development and in improving positive feelings about parenting (Tezel-Şahin and Cevher-Kalburan, 2009). Mother, father and other adults in the family have an important role in the success of the child. Parent-school collaboration is taken as a process making significant contributins. To examine how this process should be run is considerably important in making the process effective (Beydoğan, 2006). However, most parents do not know how they can help their children with their homework, hinder or even harm their learning. Although homework functions as a bridge between parents and school, the expectations regarding the nature of the cooperation vary. Parents are often willing to support the learning of their children, but they often do not know how to help and why their involvement is important. Among parents, there may be the ones having difficulty with the time and content (task content, resources for more information or assistance, etc.) of the homework (Turanlı, 2009; Walker, Hoover-Dempsey, Whetsel and Green, 2004). Although parents want to be involved in the education process of their children, they do not know how to do this and remain outside the process (Keçeli-Kaysılı, 2008).

One of the processes that the parents may get involved in is the home-based learning activities of their children. Homework comes first in the home-based learning activities. In science education, homework gives student the opportunity to review the topics recited in lectures and provides the students scientific thinking skills, it is a key element of the curriculum (Ministry of National Education (MEB), 2006). Homework is defined as the study given by the teachers on a daily basis for the regular repetition of lectures, the development of the skills acquired and the preparation to the next lesson desired to be completed by the students outside of school (Secer, 2010; Van Voorhis, 2003). Homework, is the information given by teachers to the students to get prepared during the extracurricular times; sometimes for preparation for the lesson and generally aiming to consolidate, expand and complete the lessons learned. Besides the oral and written homework, homework allocated for individual and group studies also ranks among the educational activities (Arıkan and Altun, 2007). Homework is an effective way to communicate with parents, which also provides them the opportunity to be involved effectively in the education of their children and helps the parents to understand the program and follow the progress of their children in the class. Homework, in line with the learning needs of students, is the extracurricular activity that is given in order to prompt the students to do research and analysis, to reach better understanding of the topics covered in the lessons or to study about a course subject. According to the theories of learning, homework is one of the learning activities that enable active learning. Homework is a home-based teaching practice, commonly used by most of the educators in the educational institutions (Gündoğan-Özben, 2006; Yuladır and Doğan, 2009).

Doing homework is a daily routine for many children of school age and researches support the involvement of parents in their children's homework being helpful in increasing the academic performance of the students. However, despite the parents consider homework as an important part of education system, as the education grade of the child moves up from primary education, the involvement of parents in homework decreases. The efforts to include the parents of the students in activities related with school such as homework, are becoming an important strategy to improve the quality of education (Balli, Wedman and Demo, 1997).

Parents are often involved in the education of their children with homework. Either the children do their homework at home or complete it after school programs or they even study it on the school day, homework can be a powerful tool in providing an opportunity for (a) letting parents and other adults know what their children have learned (b) leading the children and parents to speak about what is happening in school and (c) enabling the teachers to receive feedback from parents regarding the learning of children (Walker, Hoover-Dempsey, Whetsel and Green, 2004).

According to the literature review of studies on parental involvement in homework, two important views have come to the fore in this regard. One of the views is that the homework done with the involvement of parents promotes students to learning and practice, and improves the relationship between the parents and the education system. In contrast, helping the students often with their homework provides forth meaningless tasks that are not pursuant to the individual needs of parents and may confuse the students. Likewise, research in respect to homework, expresses that the involvement of parents in homework might have both positive (for example, the emergence of a mechanism increasing the success of students) and negative effects (for example, the method used dissimilarly by the parents than the ones used

by the teachers may confuse the children (Balli, Wedman and Demo, 1997). Most of the teachers use homework as a teaching method either for the consolidation of a topic learned in the class or to ensure that the student comes prepared for the next lesson (Van Voorhis, 2004). Expressing in general, while homework increases the time elapsing with academic endeavor, contributes to the self- discipline and study habits and connects the parents to the school. Dealing with homework provides independent study habits, affects the parent - school relationship positively. However, homework may be annoying for children and the parents because homework, directly or indirectly, loads a significant burden on the family and limits the time of the student allocated for resting and socializing (Turanlı, 2009).

The involvement of parents in their children's home-based learning activities is one of the six types of parent involvement model in education, which was asserted by Epstein. Six different types of parent involvement have been identified by Epstein, as a result of her studies on parent involvement. The first one is the parenting related to fulfillment of the basic responsibilities at home by the parents for their children. The second one is the process of communication which provides a healthy exchange of information between the school - house in order to support the child's development and education programs in school. The third one is the volunteerism, requiring the willing involvement of parents in school activities. The fourth one is the learning at home, which includes the help of parents to their children in the home environment for the studies concerning training program and homework. The fifth one is the decision making, which enables the parents to reflect their views in the realization of management processes and other activities at school. The final one is the social collaboration requiring the parents to benefit from the social resources and services in the activities to be organized for themselves, in order to support their children's learning and development (Epstein and Van Voorhis, 2001; Ersoy and Anagün, 2009; Fan, Williams and Wolters, 2012; Keçeli-Kaysılı, 2008; Uludağ, 2008; Van Voorhis, 2003; Wingard and Forsberg, 2009).

The impacts of the parents on their children's education have long been one of the important issues of educational sociology. Studies in particular, supports that the responsibilities of the parents have various impacts on children's educational outcomes (Ho, 2010). In recent years, it has been consistently mentioned that the involvement of parents is an important factor affecting the students' academic achievement. Researches show that children that have parents involved in their education have children have better attitudes toward school and have better school attendance. Also they spent more time for their school tasks and the dropouts decreased. In addition, parents support was found to be an important factor in the school motivation of the students as well as other social factors (Anderson and Minke, 2007; Fan, Williams and Wolters, 2012; Ji and Koblinsky, 2009).

Factors affecting the success of the student throughout the education life, even though they contain various sub- factors in different studies, in general can be divided into as internal factors and external factors (Çelenk, 2003; Memiş, 2007; Talib, Luan, Azhar and Abdullah, 2009; Yenilmez and Duman, 2008). In these studies, considering the external factors influencing the success, as the common point among all, the issues (interest, ensuring the study environments, values, communication, etc.) affecting directly or indirectly the parent involvement draw attention. Similarly, when the factors affecting student achievement are evaluated, many study results have also been presented in regard to the socio-economic structure of the family, educational status of the parents and occupation of the parents influencing the success or failure status of the student (Yenilmez and Duman, 2008). It has been mentioned that the involvement of parents in education have lots of benefits for students, families and teachers (Epstein and Van Voorhis, 2001; Fan and Chen, 2001; Henderson and Mapp, 2002; Hill and Craft 2003; Jeynes, 2003. However, both parents and teachers expressed the factors preventing the active involvement of the parents as limited knowledge and skills, limited opportunities for collaboration, psychological and cultural conditions. These aforementioned factors have led many schools and parents to never be aware of the benefits of parent involvement (Kim, 2009; Lemmer, 2011; Mendez, 2010).

Researches (Kaya and Lundeen, 2010; Salıcı-Ahioğlu, 2006; Smith-Hill, 2007; Pala-Günkan, 2007; Kotaman, 2008; Şad and Gürbüztürk, 2013) about the contribution to student success show the importance of homework and the involvement of the parents to these studies. It is an inevitable fact that measuring the level of parent involvement, which is a concept significantly emphasized, will reveal important data for the progress and developments in this regard. It occurs that Kotaman (2008) and Yavuz-Güler (2014) have used attitude scales towards the involvement of parents. However, when looked at these research studies, it

appears that the existing attitudes towards parent involvement cannot measure the level of involvement. Similarly Lindberg and Demircan (2013), for the purpose of evaluating the parent involvement in secondary education institutions, by making the Turkish version of the scale, of which the original was developed by Epstein, Connors and Salinas (1993), have contributed to the literature. When the study was examined, it was realized that the scale was developed for secondary school students. Therefore, it is understood that in our country, especially at primary level and when Science courses are taken to the center, there is no level scale that could help both to the researchers, the school management and the teachers in this regard.

Acting from this point, the aim of this study is to develop "The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS)" parent and teacher forms, for the purpose of determining the level of parent involvement in secondary school students' home-based science learning activities and demonstrating its sub-scales.

Method

Participants

In scale development studies some parameters are used to calculate the sample size. While Hoyle (1995) stated that the sample size should be of 250 and above, for the sample size Comrey and Lee (1992) qualified 300 as well, 500 as very good and 1000 as excellent. On the other hand, Büyüköztürk (2002) said that in the literature, when the factors are strong and significant, and the number of variable is not too big, it is indicated that the sample size between 100 and 200 is sufficient and for the test subject-variable (item) to be taken into consideration, he proposed the ratio of 10:1 as to be regarded. However, as these parameters they have very poor generalizability, for the measurement application to be made, the original indicator of its own must be taken into consideration (Keskin and Atmaca, 2014). These are indicators such as confidence level, error rate and universe size (Brown, 2006). Accordingly, when the minimum confidence level 95% , error rate 5 % and universe are taken into consideration, the sample sizes for the Teacher survey was calculated approximately as 379 and for the Parent survey as 385 (Raosoft, 2004). As the final status of the scales developed in this study is applied to 418 Science teachers and 580 parents, it is possible to say that the minimum sample size for both scales is ensured. The 69% of the parents participating in the study were women and the majority of them (64%) consist of mothers. While only 10% of parents consist of individuals under the age of 30, the majority (65%) consist of individuals in the age range of 31-43. The majority of parents (88%) are married and living with their spouses. Only 24 % of the participants have a high school or higher education level. In addition, more than half of the participants (58%) are not working at a regular job with income. The vast majority (52 %) of those are housewives. The majority of parents surveyed (78%) have a monthly income below the minimum salary of civil servants in Turkey. Approximately half of the student of parents who participated in the study (50.5%) does not take any special courses or courses outside of school.

The parent involvement in students' home based science learning activities scale (PI-SHBScienceLAS) parent form. (see in appendix): For this study, primarily, 10 state-affiliated schools have been randomly chosen, among which the four are representing the lower, the four are representing the medium and the two are representing the upper socio-economic level determined by the maximum diversity sampling method, which is one of the random sampling methods and by taking the expert opinions method,. For the implementation of the (PI-SHBScienceLAS) Parent Form developed in this study, the sample consists of a total of 580 parents from 10 schools located in different districts of province of Samsun. Preliminary studies for the scale have been conducted with 75 parents who resident in the province of Kars. 24 of the parents in this group serving as teachers were asked for extra feedback regarding the intelligibility of the scale, accompanied by experts and by having joint interviews the items considered to be problematic have been revised and put into practice.

The parent involvement in students' home based science learning activities scale (PI-SHBScienceLAS) teacher form. (see in appendix): For the implementation of the (PI-SHBScienceLAS) Teacher Form developed in this study, the sample consists of a total of 418 Science teachers from the provinces of Kars and Samsun. During the development of the scale for teachers, expressions contained in the parent survey were utilized. The developed scale has been investigated in terms of peculiarities of grammar, intelligibility and clarity, totally by 53 teachers, of which 45 are Science teachers and 8 of them are

Turkish language teachers. Ensuring that the scale does not contain any problematic item, the implementation stage has started.

Data Analysis

The data obtained for the developed scales were analyzed by using SPSS and LISREL softwares. First, to determine whether the scale items are suitable for factor analysis, the Kaiser- Meyer- Olkin (KMO) and Bartlett's tests have been implemented. After testing the suitability of the data exploratory factor analysis (EFA) has been used. Exploratory factor analysis is an analysis technique aiming for the researchers' to form groups by finding out the items measuring the ones having the same structure or quality within the identified items and to explain the scaling through these so few significant superstructures. In EFA, in the determination of the items taking place in the scale, it has been taken into account that the load value should be at least 0:30 and that the items should take place under one single factor; in case where it takes place under two factors, the differences between the factors should be at least 0:10 (Çokluk, Şekercioğlu & Büyüköztürk, 2010). To make the structure of the factor simpler and more understandable, rotation has been made and varimax has been used as a method. To determine the reliability of the scale, the internal consistency coefficient of Cronbach alpha has been calculated. Later, with the help of LISREL, the confirmatory factor analysis (CFA) has been conducted. In the evaluation of CFA results, the following goodness of fit scales have been used (Schermelleh-Engel, Moosbrugger & Müller 2003):

Table 1. Evaluation of SEM fit

Fit measure	Perfect fit	Acceptable fit
χ^2	$0 < \chi^2 \leq 2df$	$2df < \chi^2 \leq 3df$
p value	$.05 < p \leq 1.00$	$.01 < p \leq .05$
$\chi 2 / df$	$0 \leq \chi 2 / df \leq 2$	$2 < \chi 2 / df \leq 3$
RMSEA	$0 \leq RMSEA \leq .05$	$.05 < RMSEA \leq .08$
SRMR	$0 \leq SRMR \leq .05$	$.05 < SRMR \leq .10$
NFI	$.95 \leq NFI \leq 1.00$	$.90 \leq NFI < .95$
NNFI	$.97 \leq NNFI \leq 1.00$	$.95 \leq NNFI < .97$
CFI	$.97 \leq CFI \leq 1.00$	$.95 \leq CFI < .97$
GFI	$.95 \leq GFI \leq 1.00$	$.90 \leq GFI < .95$
AGFI	$.90 \leq AGFI \leq 1.00$	$.85 \leq AGFI < .90$

Note: AGFI=Adjusted Goodness-of-Fit-Index, CFI= Comparative Fit Index, GFI = Goodness-of-Fit Index, NFI = Normed Fit Index, NNFI=Nonnormed Fit Index, RMSEA=Root Mean Square Error of Approximation, SRMR= Standardized Root Mean Square Residual

Findings

The parent involvement in students' home based science learning activities scale (PI-SHBScienceLAS) parent form. The scale consists of two parts. In the first part there are 23 questions containing information on the demographic peculiarities. In this part of the scale, questions aiming to gather information regarding the parent's gender, proximity level to the student, age, occupation, income level, education level, marital status, the grade level of the child and tutoring-course taking situation of the child take place. In the second part, 40 expressions of 5 point likert type (5 Always, 4 Often, 3 Sometimes, 2 Rarely, 1 Never) containing the opinions of the parents regarding the parent involvement take place. During the development of the scale, behaviors related to home-based parent, which take place in the parent involvement model within the literature, have been categorized and the items belonging to this category have been written.

To determine whether the obtained data is suitable for factor analysis, primarily KMO and Bartlett Sphercity tests have been used. Test results are given in Table 2:

Table 2. The results of suitability examination of PI-SHBScienceLAS parent form for factor analysis

KMO test	Bartlett's test		
	χ^2	df	p
0.832	1770.812	435	0.0001

As seen in Table 2, value has been found as 0.832. The results of Bartlett's test has been found as significant ($\chi 2 = 1770,812$; df = 435; p <0.001). As KMO ensued greater than 0.60 and Bartlett's test ensued as significant, this indicates the suitability of the data for factor analysis (Çokluk, Şekercioğlu&Büyüköztürk, 2010). Therefore, these obtained results indicate that the data are suitable for exploratory factor analysis. As a result of factor analysis, from 40 items present in the scale, some of the 10 items have been excluded due to taking place in more than one sub-scale, not taking place in any of the sub-scale or that their loads are low. 30 items have taken place in the scale and found out that the scale has 6 factors. However, due to the reason that some factors contained less than three factors and according to the results of the reliability analysis made for the items taking part in six factors, Cronbach's Alpha coefficient of some of the factors ensued below 0.40, the 30 items have been taken and for the 4 factors the factor analysis has been made again. As a result of factor analysis, 4-factor solution with the eigen values of 1.00 and over has been obtained. As a finding of the result, it has been observed that the four factors with the eigenvalues 1.00 and over, explained 42.634 % of the total variance. Among the total of 30 items, 8 of has taken place in the first and second factors, 7 of them has taken place in the third and fourth factors. For the final version of the scale, the loads of item factor, the variance percentage explained by each factor and Cronbach's Alpha values are presented in Table 3:

Table 3.EFA results, the variance explanation ratios and Cronbach's Alpha values for PI-SHBScienceLAS parent form

Item codes	Factor 1	Factor 2	Factor 3	Factor 4	Variance explained for (%)	Cronbach's Alpha (α)
item4	.749					
item2	.734					
item1	.708					
item18	.664				18.703	.816
item20	.645					
item36	.597					
item5	.567					
item3	.332					
item33		.643				
item19		.568				
item28		.567				
item21		.543			9.010	.674
item26		.536				
item22		.487				
item35		.464				
item38		.457				
item30			.664			
item17			.625			
item37			.527			
item32			.491		8.151	.752
item34			.435			
item6			.380			
item31			.367			
item25				.542		
item39				.491		
item15				.460		
item13				.456	6.770	.686
item12				.450		
item40				.341		
item24				.311		
The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS) – parent form					42.634	0.85

When the items remaining in the factors are examined, in the first factor it has been observed that these are the items reflecting the active involvement of the parents in their children's home-based learning activities and the knowledge and skill related to the support provided during the involvement and this factor has been named as "The active involvement of the Parent (AIP)". The items taking place in the second factor have been determined as the items reflecting the perspectives of the parents to home-based learning

activities, communication with the teacher and the lack of knowledge and skill in relation with providing support and this factor has been named as "Parent 's perception of inadequacy (PPI)". As the items in the third factor contained the items reflecting perception of the parents about responsibility and support towards home-based learning activities and the peace and happiness of giving support, this factor has been named as "Parent's Perception of Responsibility (PPR)". As the items in the fourth factor contained the items that will reflect the awareness towards involvement, effort for providing effective support to home-based learning activities and being open to improvement, this factor has been named as "Self- development effort (SDE)".

When the EFA results in Table 3 are examined, it has been observed that the values for the factor of parent's active involvement rank between .749 and .332, the values for the factor of parent's perception of inadequacy rank between .643 and .457, the values for the factor of parent's perception of responsibility rank between .664 and .367 and the values for the factor of self-development efforts rank between .542 and .311. Besides, when the reliability values of the factors are considered, it has been observed that respectively they have the values of; .816, .674, .752 and .686. Cronbach's Alpha value of the entire scale has been found as .85. Both for the factors and for the scale entirely to have the reliability coefficient $\alpha \geq .60$ shows that the scale has a sufficient reliability level and for the scale to be $\alpha \geq .70$ shows that it has a high reliability level (Özdamar, 2011).

To determine with which factor and to what extent the variables that have been obtained in EFA result are correlated to and for these variables the status of being represented by the factors, CFA has been made to the scale by the help of LISREL program. In the CFA, primarily, the *t* values have been analyzed and the results obtained are given in Table 4:

Table 4. *t* values of CFA between items and factors and between factors of PI-SHB Science LAS parent form

AIP		PPI		PPR		SDE	
item	*t*	item	*t*	item	*t*	item	*t*
AIP1	11.00	PPI19	5.91	PPR6	3.80	SDE12	8.88
AIP2	9.96	PPI21	5.03	PPR17	8.06	SDE13	6.35
AIP3	4.00	PPI22	4.59	PPR30	9.66	SDE15	3.55
AIP4	11.08	PPI26	5.50	PPR31	11.92	SDE24	9.08
AIP5	8.34	PPI28	6.34	PPR32	9.28	SDE25	5.85
AIP18	8.55	PPI33	7.00	PPR34	3.58	SDE39	5.05
AIP20	10.09	PPI35	5.41	PPR37	8.38	SDE40	5.13
AIP36	8.53	PPI38	4.15				
PPI	-1.26						
PPR	20.89		-2.01				
SDE	4.28		-2.66		18.11		

When the t values of the scale developed after the CFA has been analyzed, all the ways between the factors and the scale items have been found significant ($p<.05$). Standardized values of CFA are given in Figure 1:

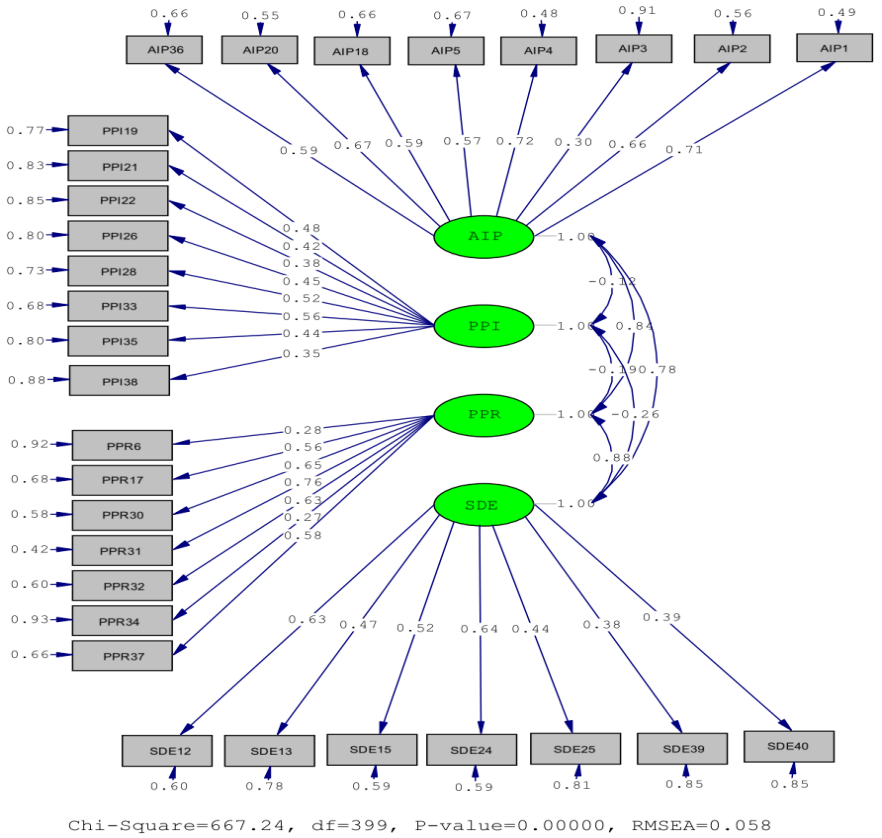


Figure 1. The standardized CFA values of PI-SHBScienceLAS parent form

As the results of CFA $\chi 2 = 667.24$, df=399 and p=0.00000 have been found. The values of goodness of fit developed after the CFA with these results are given in Table 5:

Table 5. The goodness of fit values of PI-SHBScienceLAS parent form

AGFI	GFI	NFI	CFI	RMSEA
0.88	0.92	0.94	0.95	0.058

When the goodness of fit values of the scale are evaluated according to the index given in Table 1 it has been observed that all the values are at the acceptable level. In addition to that, $\chi 2/df$ value developed as a result of CFA has been found as 1.67. Having this value smaller than 2 shows that the model has a very good fit.

When the standardized values in Figure 2 are examined, it has been seen that the correlation coefficients among the observed variables of AIP rank between 0.30 and 0.72; the correlation coefficients of PPI rank between 0.35 and 0.56; the factor loads of PPR rank between 0.27 and 0.76 and the correlation coefficients of SDE rank between 0.38 and 0.64. It is possible to say that these correlation coefficients between the observed and unobservable variables, have a positive effect on the constitution of unobservable variables. However, the correlation coefficients between the factors constituting the scale are given in Table 6:

Table 6. The correlation coefficients between the factors

Factors	PPI	PPR	SDE
AIP	-0.12	0.84	0.78
PPI		-0.19	-0.26
PPR			0.88

When Table 5 is examined; it has been observed that the correlation between PPI and AIP, PPR and SDE is negative and low leveled. Furthermore, positive and high correlation between other factors has been observed. (Cohen, 1988).

The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS) teacher form: The scale consists of two parts. In the first part there are 5 questions

containing the information regarding the demographic peculiarities. In the second part, 40 expressions of 5 point likert type scale (5 Always, 4 Often, 3 Sometimes, 2 Rarely, 1 Never) containing the opinions regarding the parent involvement take place.

To determine whether the data are suitable for factor analysis, primarily KMO and Bartlett Sphercity tests have been used. Test results are given in Table 7:

Table 7. Suitability examination results for Factor analysis

KMO test	Bartlett's test		
	χ^2	df	p
.864	1391.299	378	.00001

As seen in Table 6, KMO value has been found as 0.864. The result of Bartlett's test has been found significant ($\chi 2 = 1391.299$; df = 378; $p<0.001$. As KMO ensued greater than 0.60 and Bartlett's test ensued as significant, this indicates the suitability of the data for factor analysis (Çokluk, Şekercioğlu & Büyüköztürk, 2010). Therefore, these obtained results indicate that the data are suitable for exploratory factor analysis. As a result of EFA analysis, among 40 items present in the scale, as 12 of them have been loaded on more than one factor and that their factor percentage were below 0.30, they have been excluded from the scale and the analysis process have been performed again. As a result of the analysis, 4 factors with the eigen values greater than 4 has been obtained. The factor loads of the item for the final version of the scale, the variance percentage explained by each factor and Cronbach's Alpha values are given in Table8:

Table 8. EFA results, the variance explanation ratios and Cronbach's Alpha values for PISHBScienceLAS teacher form

Item codes	Factor 1	Factor 2	Factor 3	Factor 4	Variance explained for (%)	Cronbach's Alpha (α)
item8	.760					
item1	.733					
item4	.690					
item7	.652					.865
item14	.604				17.310	
item2	.567					
item10	.549					
item6	.520					
item5	.506					
item18	.383					
item17		.675				
item26		.671				
item13		.569			11.555	.786
item25		.550				
item16		.490				
item11		.469				
item39			.663			
item36			.650			
item38			.610		10.958	.760
item37			.559			
item30			.555			
item20			.469			
item34				.688		
item24				.669		
item40				.637		
item12				.548	10.698	.769
item31				.530		
item29				.474		
The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS) – teacher form					50.251	.921

When the remaining items in factor 1 have been examined, it has been observed that in the 1. factor there were items reflecting the active involvement of parents in home-based learning activities of their children and to have knowledge and skill regarding the support they provide during the involvement and this factor has been named as "Parent's active involvement and perception of adequacy (PIPA)". The items taking place in the second factor have been determined as the items reflecting the perspectives of the parents to home-based learning activities, communication with the teacher and the lack of knowledge and skill in relation with providing support and this factor has been named as "Communication with the teacher and perception of inadequacy (CTPA)". As the items in the third factor contained the items reflecting perception of the parents about responsibility and support towards home-based learning activities and the peace and happiness of giving support, this factor has been named as "Parent's perception of responsibility and psychological sense of comfort (PPRC)". As the items in the fourth factor contained the items that will reflect the awareness towards involvement, effort for providing effective support to home-based learning activities and being open to improvement, this factor has been named as "Parent's willingness and being open to improvement (PWOI)".

When the EFA results in Table 8 are examined, it has been observed that the values for the factor of parent's active involvement and perception of adequacy rank between .760 and .383, the values for the factor of communication with the teacher and perception of inadequacy rank between .675 and .469, the values for the factor of parent's perception of responsibility and psychological sense of comfort rank between .663 and .469 and the factor of parent's willingness and being open to improvement rank between .688 and .474. Besides, when the reliability values of the factors are considered, it has been observed that respectively they have the values of; .865, .786, .760 and .769. Cronbach's Alpha value of the entire scale has been found as .921.

To determine with which factor and to what extent the variables that have been obtained in EFA result are correlated to and for these variables the status of being represented by the factors, CFA has been made to the scale by the help of LISREL program. In the CFA, primarily, the *t* values have been analyzed and the results obtained are given in Table 9:

Table 9. *t* values of CFA between items and factors and between factors of PI-SHBScienceLAS teacher form

PIPA		CTPA		PPRC		PWOI	
item	*t*	item	*t*	item	*t*	item	*t*
PIPA1	6.86	CTPA11	7.18	PPRC20	6.38	PWOI12	5.55
PIPA2	7.36	CTPA13	6.29	PPRC30	6.21	PWOI24	5.75
PIPA4	7.20	CTPA16	8.04	PPRC36	5.39	PWOI29	6.62
PIPA5	9.47	CTPA17	6.51	PPRC37	7.64	PWOI31	7.59
PIPA6	7.40	CTPA25	6.80	PPRC38	5.39	PWOI34	7.56
PIPA7	5.88	CTPA26	6.73	PPRC39	5.65	PWOI40	6.17
PIPA8	9.97						
PIPA10	8.45						
PIPA14	5.46						
PIPA18	5.42						
CTPA	13.12						
PPRC	9.82		11.31				
PWOI	11.07		11.90		9.08		

When the t values of the scale developed after the CFA has been analyzed, all the ways between the factors and the scale items have been found significant ($p<.05$). The CFA standardized values of the scale are given in Figure 2:

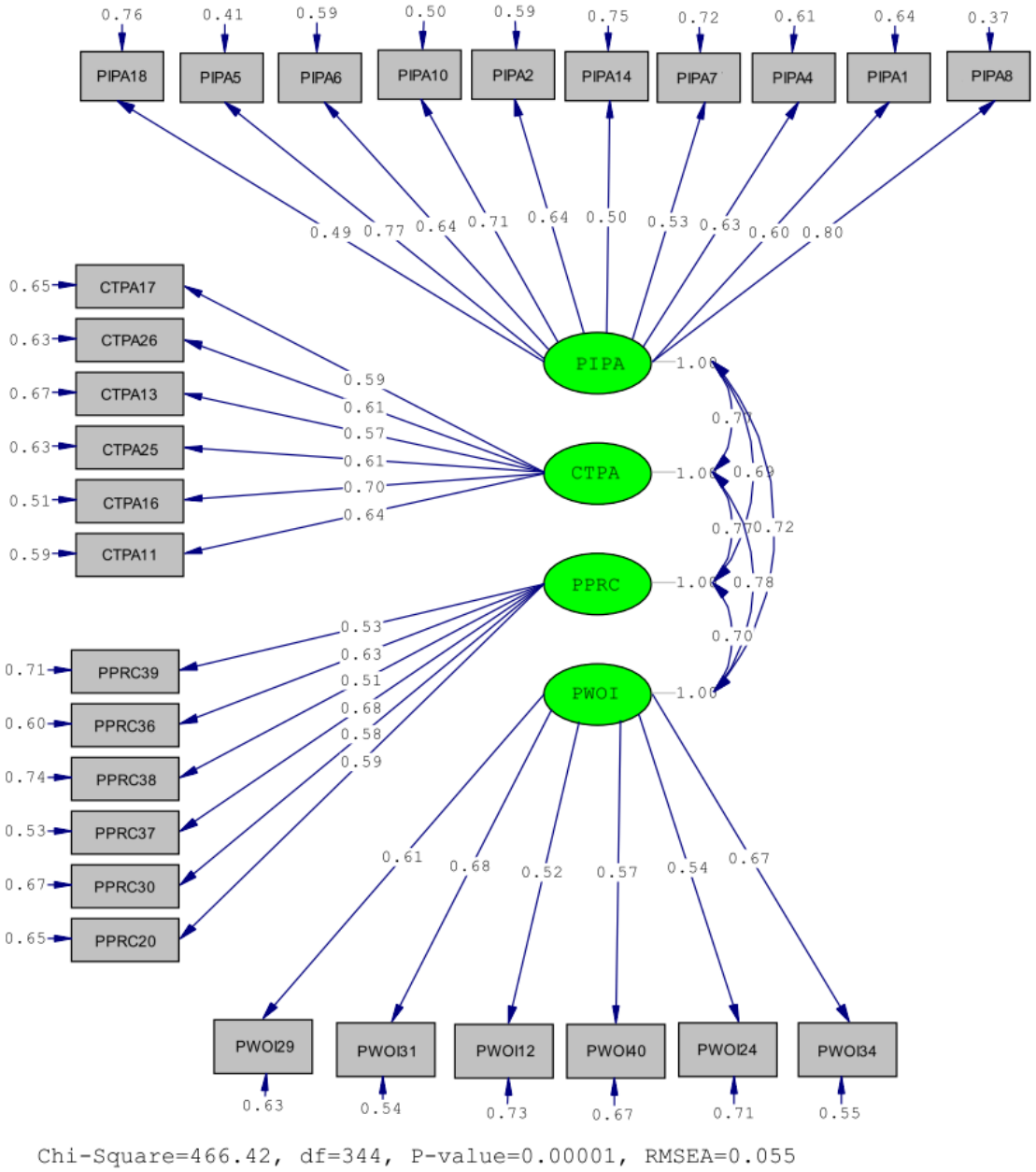


Figure 2. The standardized CFA values of PI-SHBScienceLAS teacher form

As the results of CFA $\chi 2$ = 466,42 df=344 and p=0.00001 have been found. The values of goodness of fit developed after the CFA with these results are given in Table 10:

Table 10. The goodness of fit values of the scale

AGFI	GFI	NFI	CFI	RMSEA
0.86	0.92	0.93	0.96	0.055

When the goodness of fit values of the scale are evaluated according to the index given in Table 8, it has been observed that all the values are at the acceptable interval. In addition to that, $\chi 2$/df value developed as a result of CFA has been found as 1.35. Having this value smaller than 2 shows that the model has a very good adaptation.

When the standardized values in Figure 4 are examined, it has been seen that the correlation coefficients among the observed variables of PIPA rank between 0.49 and 0.80; the correlation coefficients of CTPA rank between 0.57 and 0.70; the correlation coefficients of PPRC rank between 0.51 and 0.68 and the correlation coefficients of PWOI rank between 0.52 and 0.68. It is possible to say that these correlation coefficients between the observed and unobservable variables, have a positive effect on the constitution of

unobservable variables. However, the correlation coefficients between the factors constituting the scale are given in Table 11:

Table 11. The correlation coefficients between the factors

Factors	CTPA	PPRC	PWOI
PIPA	0.77	0.69	0.72
CTPA		0.77	0.78
PPRC			0.70

When Table 9 is examined; it can be said that the correlation between all the factors are high (Cohen, 1988).

Result and Discussion

The aim of this study is to develop "The Parent Involvement in Students' Home Based Science Learning Activities Scale" parent and teacher forms, towards the determination of to what extent the parents, whose children are secondary school students, involve in their children's home-based science learning activities. During the dictating of the items of these scales, it has been benefited from the developed scales intending the models of parent involvement taking place in the literature (Epstein and Van Voorhis, 2001; Ersoy and Anagün, 2009; Fan, Williams and Wolters, 2012; Keçeli-Kaysılı, 2008; Uludağ, 2008; Van Voorhis, 2003; Wingard and Forsberg, 2009) and from the suggestions of the researches intending the parent involvement. As the main notion in the dictating of the items, the answers for the questions like "What should the parents do about involving in home-based learning activities of their children?", "What should be done for the realization of parent involvement effectively?" have been adopted. As the result of the exploratory factor analysis (EFA) made for the data obtained with the original parent form of PISHBScienceLAS consisted of 40 items, it has been determined that the scale consists of 30 items and 4 subscales. The subscales of PISHBScienceLAS parent form has been named as "The active participation of parent (AIP), "Parent's perception of inadequacy (PPI)", "Parent's perception of responsibility (PPR)" and "Self- development effort (SDE)". The factor structure of PISHBScienceLAS parent form has been supported by the confirmatory factor analysis (CFA) and evidence has been provided for the construct validity. In addition to this, it has been observed that the Cronbach's Alpha values obtained for the reliability of the entire factors and scale have values ranking between .67-.85. The analysis studies have shown that the status of the developed PISHBScienceLAS parent form is valid to measure the involvement level of parents in students' home-based science learning activities and that it provides reliable data.

During the development of The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS) teacher form, in the dictating of the items it has been benefited from the expressions taking place in the parent form. As the result of the exploratory factor analysis (EFA) made for the data obtained with the original parent form of PISHBScienceLAS consisted of 40 items, it has been determined that the scale consists of 28 items and 4 subscales. The subscales of PISHBScienceLAS parent form has been named as "Parent's active involvement and perception of adequacy (PIPA)", "Communication with the teacher and perception of inadequacy (CTPA)", "Parent's perception of responsibility and psychological sense of comfort (PPRC)" and "Parent's willingness and being open to improvement (PWOI)". The factor structure of PISHBScienceLAS teacher form has been supported by the confirmatory factor analysis (CFA) and evidence has been provided for the construct validity. In addition to this, it has been observed that the Cronbach's Alpha values obtained for the reliability of the entire factors and scale have values ranking between .76-.92. The analysis studies have shown that the status of the developed PISHBScienceLAS teacher form is valid to measure the involvement level of parents in students' home-based science learning activities and that it provides reliable data.

In the researche taking place in the literature that examine the involvement of parents in their children's education and learning process for the students of preschool, elementary, secondary and high school level, the scales towards different parental involvement models have been used. Khajehpoura and Ghazvina (2011), in their study, in which they examined the impact of parental involvement on children's academic performance, have used the parental involvement scale that was originally developed by Fantuzzo, Tighe

and Child (2000). The same scale has been used by Gürşimşek, Kefi and Girgin (2007) in their studies concerning the examination of the variables associated with the level of involvement of the fathers in preschool education. The parent involvement scale of Fantuzzo, Tighe and Childs (2004) consists from a total of 25 items and 3 subscales (Home-Based Involvement-ETK, School-Based Involvement-OTK, School-Parent Collaboration-Based Involvement-OATK). Gürbüztürk and Şad (2010) developed a Parent Involvement Scale consisting of a total of 8 sub-scales and 39 items, aiming to measure the involvement levels of the parents in their children's education who are in primary school. The subscales of the scale have been named as; Communication with school and the teacher, Supporting the child's homework and studies, Parent's self-improvement about involvement, Voluntary active involvement, Communication with the child, Creation of a home environment supportive for learning, Supporting the personality development of the child and Supporting socio-cultural development of the child. Tan and Goldberg (2009), in the study where they examined the alteration of parental involvement according to the gender of the parent and gender of the child and the impacts of parental involvement on the achievements and on school adjustment of primary school children, used the Parental School Involvement Scale that was originally developed by Goldberg and consists of 26 items. The scale includes four sub-scales and these are involvement directly in school, involvement in homework, involvement in activities apart from the official program and involvement in interpersonal (communication with the child). Sheldon (2002) in his study where he examined the impacts of the social networks and beliefs of the family on the parental involvement has used the survey that was developed by taking advantage of the scale developed by Hoover-Dempsey and Sandler (1997). In the scale used, sub-scales have taken place for the determination of the behaviors towards the demographic characteristics, beliefs of the parents, social Networks of the parents and involvement of the parents. Ünüvar (2010), in his study intending to compare the opinions of parents and teachers regarding the parental involvement study made in the pre-school educational institutions, have used the revised parent and teacher forms of the survey called "Parental Involvement Studies". 19 items have taken place in the survey for the purpose of determining the opinions of parents and teachers regarding the parental involvement studies made in the preschool educational institutions. Tekin (2008), in his study where he examined the beliefs and perceptions related to their involvement in the education of their children studying in primary school, has used the scale containing the sub-scales developed by Hoover-Dempsey and Sandler (1997) and those are: "Parents Role Effectiveness Beliefs For Involvement, Parents Competence For The Success Of The Child In School, The Perception Of The General Invitations By The Parents Asked By The School For Involvement, The Perception Of The Specific Teacher Invitations By The Parents For Involvement, The Perception Of The Parents Towards Their Personal Knowledge And Skills Related To The Involvement Activities, The Perception Of The Parents Towards Their Personal Time and Energy Related To The Involvement. In his study, Demircan (2012) has made the Turkish adaptation of the teacher, student and parent form of the scale concerning the parental involvement in secondary school (High School and Family partnerships Teacher Parent Students Survey), which was originally developed by Epstein, Connors and Salinas (1993). The home-based involvement is one of the six types of the model for parental involvement in education, which was revealed by Epstein. Also, one of the three subscales of the Parantal Involvement Scale is home-based involvement, which was originally developed by Fantuzzo, Tighe and Childs (2000). However, in the literature examination, within the home-based involvement itself, no studies have been attained related to its sub-scales.

In general, despite the scales towards the determination of parental involvement have been developed for all the levels of education, in particular, in science lessons limited number of studies have been made on parental involvement. In these studies it has been observed that the scales that can reveal the different aspects of the home-based involvement have not been used. By the PI-SHBScienceLAS developed in this study, the knowledge and skill levels can be determined regarding the active involvement behaviors of the parents in their children's home-based science learning activities and the support provided during the involvement. In addition, by using the developed scales, it is possible to determine the perspectives of the parents for the home-based learning activities and their knowledge and skill deficits in communication with the teacher and in providing support. By using PI-SHBScienceLAS, the consciousness of responsibility of the parents towards the home-based learning activities and with their perception of supporting, their children can be determined. By using PI-SHBScienceLAS, it will also be possible to determine the consciousness

levels of the parents for involvement in home-based learning activities and to determine the levels of their behaviors of being open to effort and improvement about providing efficient support.

Consequently, by using PI-SHBScienceLAS parent and teacher forms developed in this study, the involvement levels of the parents in students' home-based science learning activities, the competence and deficiencies regarding involvement and with the perceptions of faith and responsibility in relation to involvement, in order to ensure the effective parental involvement, the data required for the creation of the content of training programs that will be prepared by addressing the needs of parents can be obtained. Also, the PI-SHBScienceLAS parent and teacher forms, in order to measure the level of involvement of parents in home-based learning activities of the secondary school students for the courses of Mathematics, Turkish Language, Social Sciences, can be available by rearranging in the proper format.

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Appendix

Öğrencilerin Ev Temelli Fen Öğrenme Etkinliklerine Aile Katılımı Ölçeği (ÖETFenÖEAKÖ)
The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS)
Veli Formu / *Parent Form*

Sayın Veliler,
Bu ankette, ailelerin fen dersine ilişkin ev ödevleri, performans görevleri, projeler vb. gibi evde öğrenme etkinliklerine katılım düzeylerini tespit etmek amacıyla yapılan bir araştırma için görüşleriniz istenmiştir. Lütfen aşağıdaki her bir ifadeye ait görüşünüzü seçeneklerden (HİÇBİR ZAMAN, NADİREN, BAZEN, SIK SIK, HER ZAMAN) birini işaretleyerek belirtiniz. Verdiğiniz cevaplar sadece bu araştırma için kullanılacak, başka hiçbir yerde kullanılmayacaktır. Katkılarınız için şimdiden teşekkür ederiz.

Dear Parents,
In this survey, your opinions are requested for a research made to determine the involvement scales of parents in home-based learning activities related to science lesson such as homework, performance tasks, projects and so on. Please indicate your opinion for each of the statement by marking one of the options (NEVER, RARELY, SOMETIMES, FREQUENTLY, ALWAYS) below. The answers you provide will only be used for this research, will not be used anywhere else. Thank you in advance for your contributions.

Faktör 1: Velinin aktif katılımı (VAK) / *Factor 1: The active involvement of the Parent*

1	Çocuğum ile onun fen becerilerini geliştiren çalışmalar yapmaya zaman ayırırım	*I allocate time to make studies with my child improving his/her science skills.*
2	Çocuğuma fen ile ilgili yeni şeyleri öğrenmeyi çok sevdiğimi anlatıyorum	*I am telling my child that I like to learn new things about science.*
3	Evde çocuğumun fen ödevlerine yardımcı olabilecek materyalleri bulundururum	*I provide materials at home that may be helpful for my child's science homework.*
4	Çocuğuma yaratıcı etkinlikler yaptırmak için zaman ayırırım (yeni bir şey üretme, farklı çözüm yolları geliştirme… vb)	*I allocate time for my child to have him/her make creative activities (to produce something new, to develop different solutions… etc.).*
5	Fenin günlük hayattaki kullanımını görmesi için çocuğumu farklı yerlere (geziye, bilim şenliklerine vb.) götürürüm	*I take my child to different places (a trip, science festivals, etc.) to enable him/her see the usage of science in daily life.*
18	Çocuğumun fen dersi ödevlerine yardımcı olabilecek kadar bilgim var	*I have enough knowledge to help my child with his/her homework of science lesson.*
20	Çocuğumun fen dersinde başarılı olabilmesi için evde nasıl yardım edebileceğimi biliyorum	*I know how to help my child at home to enable him/her succeed in science lesson.*
36	Çocuğumun fen dersi ödevlerine yardım ederken kitapta yer alanların dışında örnekler vererek açıklamalar yapabiliyorum	*While helping my child with his/her homework of science lesson, I can make explanations by giving examples apart from the ones given in the book.*

Faktör 2: Velinin yetersizlik algısı (VYA) / *Factor 2: Parent 's perception of inadequacy*

19	Çocuğumun fen dersi ödevlerine yardımcı olurken ona kendimi iyi anlatamıyorum	*While helping my child with his/her homework of science lesson, I can't express myself well.*
21	Öğretmen benden çocuğumun fen dersi ödevlerinde yardım etmemi istiyor	*The teacher wants me to help my child in his/her homework of science lesson.*
22	Öğretmen benden sadece çocuğumun fen dersi ödevleri gözetip denetlememi istiyor	*The teacher wants me only to observe and check my child's homework of science lesson.*
26	Çocuğumun fen dersindeki başarısı düşük olduğu için onun ödevlerine yardımcı olmam gerektiğini düşünüyorum	*Because that my child fails to succeed in science lesson, I think that I have to help my child with his/her homework.*
28	Çocuğumun fen dersi ödevlerine yardım etmeye çalışırken o benim verdiğim bilgilerin öğretmenin verdiklerinden farklı olduğunu söylüyor	*While trying to help my child with his/her homework of science lesson, he/she is telling me that the information given by me differs from the ones given by the teacher.*
33	Benim fen konularındaki bilgilerim, çocuğumun gördükleri ile uyumlu olmadığı için yaptığım katkılar yetersiz oluyor	*As my knowledge regarding the science subjects is not compatible with the ones that my child is instructed, my contributions remain insufficient.*
35	Yanlış bilgi verme endişesiyle çocuğumun fen dersi ödevlerini okulda edindiği bilgilerle yapmasının doğru olacağını düşünüyorum	*As I am worried about giving misinformation, I think that it would be right for my child to do his/her science lesson' homework with the knowledge acquired at school.*
38	Çocuğumun öğretmeni çocuğumun fen dersi ödevlerine yaptığım katkının yeterliliği ya da yetersizliği hakkında bana bilgi veriyor.	*My child's teacher gives me information about the adequateness or inadequateness of my contribution to my child's homework of science lesson.*

Faktör 3: Velinin Sorumluluk algısı (VSA) / *Factor 3: Parent's Perception of Responsibility*

6	Evde çocuğumun ödevlerini yapması için açık kurallar koyarım	*I establish clear rules for my child to do his/her homework at home.*
17	Çocuğumun fen dersi ödevlerine yardımcı olmakla onun okul performansında fark yarattığımı düşünüyorum	*By helping my child with his/her homework of science lesson I think that I make a difference in his/her school performance.*
30	Çocuğumun ödevlerine yardımcı olarak onun öğrenme sürecine katıldığımdan dolayı eğitimin önemini daya iyi anladığıma inanıyorum	*As I involve in my child's learning process by helping him/her with his/her homework, I believe that I understand the importance of education much better.*
31	Çocuğumun fen dersi ödevlerine yardımcı olmaktan zevk alıyorum	*I enjoy helping my child with his/her homework of science lesson.*
32	Benim fen konularındaki bilgim çocuğumun tüm sorularını cevaplamaya yeterli olmasa da ona yardımcı olmaya istekliyimdir	*Although my knowledge in science subjects is not enough to answer all the questions asked by my child, I am willing to help him/her.*
34	Çocuğuma fen konularıyla ilgili bilgi sağlamada yetersiz olsam da ev ödevlerinin zamanında yapılmasını sağlayacak tedbirleri alırım	*Despite I am insufficient in providing information to my child about science subjects, I take measures to ensure the homework is done timely.*
37	Çocuğumun fen dersi ödevlerine yardımcı olduğumda çocuğum bu durumdan memnun oluyor	*When I help my child with his/her homework of science, my child is pleased with this situation.*

Faktör 4: Kendini geliştirme çabası (KGC) / *Factor 4: Self- development effort*

12	Çocuğumun fen dersi ödevlerine yardımcı olabilmek için kendimi geliştirmeye ihtiyaç duyuyorum	*I am in the need of improving myself to help my child with his/her homework of science lesson.*
13	Çocuğumun dersleri içerisinde en çok Fen dersindeki ödevlere yardımcı olmak isterim	*Among the lessons of my child the most I would like to help with is Science lesson.*
15	Çocuğumun fen dersi ödevlerine yardımcı olabilmek için başkalarının yardımına ihtiyaç duyuyorum	*I need the help of others in order to help my child with his/her homework of science lesson.*
24	Çocuğumun fen dersi ödevlerine yardımcı olabilmek için kaynaklar, dergiler ve ansiklopedilerden faydalanıyorum	*I benefit from the resources, magazines and encyclopaedias to help my child with his/her homework of science lesson.*
25	Çocuğumun fen dersi ödevlerine yardımcı olabilmek için internetten faydalanıyorum	*I benefit from the internet to help my child with his/her homework of science lesson.*
39	Fen dersi ödevlerinin yapılmasına yönelik aile eğitim materyallerinin olması gerektiğine inanıyorum	*I believe that there should be training materials for parents in order to help in doing the homework of Science lesson.*
40	Öğretmenlerin fen dersi ödevleri hakkında velileri (haber mektubu, e-mail, not, telefon vb.) bilgilendirmesinin faydalı olacağına inanıyorum	*I believe that it would be useful if the teachers inform the parents (letters, e-mails, notes, phone, etc.) about the homework of science lesson.*

Çıkarılanlar / *Others*

7	Çocuğumun fen derslerinde okulda yaptığı çalışmaları kontrol ederim. / *I check the studies of my child in school during the science lessons.*
8	Evde çocuğumun ödevlerine yardımcı olabilmek için öğretmenden okulda yaptırdığı çalışmalarla ilgili bilgi alırım. / *I receive information from the teacher about the studies commissioned by him/her at school to help my child at home with his/her homework.*
9	Çocuğumun fen dersi ödevlerini birlikte yaparız. / *We are doing my child's homework of science lesson together.*
10	Çocuğumun fen dersinden ödevi olduğunda kendisi bana söyler. / *When my child has homework of science lesson he/she tells me about it.*
11	Çocuğum fen dersi ödevlerini yaparken ben onun yakınında olurum. / *While my child is doing the homework of science lesson I remain near him/her.*
14	Çocuğum ödevleriyle en az onun ilgili olduğu kadar ilgiliyimdir. / *I am concerned with my child's homework at least as much as he/she is.*
16	Diğer çocukların velileriyle çocukların fen dersi ödevleri hakkında konuşuyorum. / *I am talking with the parents of other children about the homework of science lesson of the children.*
23	Çocuğuma ödevlerini ilgilendiren şeyleri nasıl açıklayacağımı biliyorum. / *I do not know how to explain my child the things concerning his/her homework.*
27	Ben yardımcı olsam da olmasam da çocuğumun fen dersini öğrenmesinin okulda ve öğretmenin sorumluluğunda gerçekleştiğine inanıyorum. / *Whether I am helpful or not, I believe that my child's learning of science lesson can be actualized at school and under the responsibility of the teacher.*
29	Çocuğumun fen konularıyla ilgili sorularını cevaplayamadığım zaman onu kaynaklara yönlendiriyorum. / *When I can't answer the questions asked by my child about science subjects I canalise him/her to resources.*

Öğrencilerin Ev Temelli Fen Öğrenme Etkinliklerine Aile Katılımı Ölçeği (ÖETFenÖEAKÖ)
The Parent Involvement in Students' Home Based Science Learning Activities Scale (PI-SHBScienceLAS)
Öğretmen Formu / *Teacher form*

Sayın Öğretmenim,
Bu ankette, ailelerin fen dersine ilişkin ev ödevleri, performans görevleri, projeler vb. gibi evde öğrenme etkinliklerine katılım düzeylerini tespit etmek amacıyla yapılan bir araştırma için görüşleriniz istenmiştir. Lütfen aşağıdaki her bir ifadeye ait görüşünüzü seçeneklerden (HİÇBİR ZAMAN, NADİREN, BAZEN, SIK SIK, HER ZAMAN) birini işaretleyerek belirtiniz. Verdiğiniz cevaplar sadece bu araştırma için kullanılacak, başka hiçbir yerde kullanılmayacaktır. Katkılarınız için şimdiden teşekkür ederiz.

Dear Teacher,
In this survey, your opinions are requested for a research made to determine the involvement scales of parents in home-based learning activities related to science and technology lesson such as homework, performance tasks, projects and so on. Please indicate your opinion for each of the statement by marking one of the options (NEVER, RARELY, SOMETIMES, FREQUENTLY, ALWAYS) below. The answers you provide will only be used for this research, will not be used anywhere else. Thank you in advance for your contributions.

Faktör 1: Velinin aktif katılımı ve yerlilik algısı (AKYA) / *Parent's active involvement and perception of adequacy*

1	Aileler, çocuklarıyla onların becerilerini geliştirici çalışmalar yapmaya zaman ayırmaktadır.	*The parents allocate time to make studies with their children to improving their skills.*
2	Aileler, çocuklarına yeni şeyleri öğrenmeyi çok sevdiklerini anlatmaktadır.	*The parents tell their children that they like to learn new things.*
4	Aileler, çocuklarına yaratıcı etkinlikler (yeni bir şey üretme, farklı çözüm yolları geliştirme vb) yaptırmak için zaman ayırmaktadır.	*The parents allocate time for their children to have them make creative activities (to produce something new, to develop different solutions, etc.).*
5	Aileler, derslerdeki etkinliklerin günlük hayattaki kullanımını görmeleri için çocuklarını farklı yerlere (geziye, bilim şenliklerine vb.) götürmektedirler.	*The parents take their children to different places (a trip, science festivals, etc.) to enable them see the usage of the lesson activities in daily life.*
6	Aileler, çocuklarının ev ödevlerini yapmaları için açık kurallar koymaktadırlar.	*The parents establish rules in order to make their children do their homework.*
7	Aileler, çocuklarının derslerinde yaptığı çalışmaları kontrol etmektedirler.	*The parents check the studies made by their children during their lessons.*
8	Aileler, çocuklarının ev ödevlerine yardımcı olabilmek için öğretmenden okulda yaptırdığı çalışmalarla ilgili bilgi almaktadır.	*The parents receive information from the teacher about the studies commissioned by him/her at school to help their children at home with their homework.*
10	Aileler, çocuklarının ödevleri olduğunda kendilerine ilettiklerini söylemektedir.	*The parents tell that when their children have homework they inform them about it.*
14	Aileler, çocuklarının ödevleriyle en az onlar kadar ilgilidir.	*The parents are concerned with their children's homework at least as much as their children are.*
18	Aileler, çocuklarının ev ödevlerine yardım edecek kadar bilgiye sahip olduklarını söylemektedirler.	*The parents tell that they have enough knowledge to help their children with their homework.*

Faktör 2: Öğretmenle iletişim ve yetersizlik algısı (OIYA) / *Factor 2: Communication with the teacher and perception of inadequacy*

11	Aileler, çocuklarının ev ödevlerini yaparken onların yakınlarında olduklarını söylemektedir.	*The parents tell that while their children are doing their homework, they remain near their children.*
13	Aileler, çocuklarının ödevlerine yardımcı olmak istemektedirler.	*The parents tell that they want to help their children with their homework.*
16	Aileler, diğer çocukların velileriyle çocuklarının ev ödevleri hakkında konuşmaktadır.	*The parents talk to the parents of other children about the homework of the children.*
17	Aileler, çocuklarının ev ödevlerine yardımcı olmakla onların okul performansında fark yarattıklarını düşünmektedirler.	*The parents think that they make a difference in their children's school performance by helping them with their homework.*
25	Aileler, çocuklarının ödevlerine yardımcı olabilmek için internetten faydalanmaktadırlar.	*The parents benefit from the internet to help their children with their homework.*
26	Aileler, çocuklarının derslerdeki başarıları düşük olduğu için onların ödevlerine yardımcı olmaları gerektiğini düşünmektedirler.	*The parents think that as their children fail to be successful in the lessons, they have to help them with their homework.*

Faktör 3: Velinin sorumluluk algısı ve psikolojik rahatlık hissi (SAPR) / *Factor 3: Parent's perception of responsibility and psychological sense of comfort*

20	Aileler, çocuklarının derslerde başarılı olabilmeleri için evde nasıl yardım edebileceklerini bilirler.	*The parents know how to help their children at home to make them become successful in their lessons.*
30	Aileler, çocuklarının ödevlerine yardımcı olarak onların öğrenme sürecine katılmalarından dolayı eğitimin önemini daha iyi anladıklarını ifade etmektedirler.	*The parents express that due to their involvement in their children's learning process by helping them with their homework, they understood the importance of education much better.*
36	Aileler, çocuklarının ödevlerine yardım ederken kitapta yer alanların dışında örnekler vererek açıklamalar yaptıklarını söylemektedirler.	*The parents tell that while helping their children with homework, they make explanations by giving examples apart from the ones given in the book.*
37	Aileler, çocuklarının ödevlerine yardımcı olduklarında çocuklarının bu durumdan memnun olduklarını ifade etmektedirler.	*The parents express that when they help their children with their homework, their children are pleased with this situation.*
38	Aileler, çocuklarının ödevlerine yaptıkları katkının yeterliliği ya da yetersizliği hakkında öğretmen tarafından bilgilendirildiklerini ifade etmektedirler.	*The parents express that they are being informed by the teacher about the adequateness or inadequateness of their contribution to their children's homework.*
39	Aileler, çocuklarının ödevlerinin yapılmasına yönelik aile eğitim materyallerinin olması gerektiğini talep etmektedirler.	*The parents demand that there should be training materials for parents in order to help their children with their homework.*

Faktör 4: Velinin gelişime açık ve istekli olması (GAIO) / *Parent's willingness and being open to improvement*

12	Aileler, çocuklarının ödevlerine yardımcı olabilmek için kendilerini geliştirmeye ihtiyaç duymaktadırlar.	*The parents are in the need of improving themselves in order to help their children with their homework.*
24	Aileler, çocuklarının ödevlerine yardımcı olabilmek için kaynaklar, dergiler ve ansiklopedilerden faydalanmaktadırlar.	*The parents benefit from the resources, magazines and encyclopaedias to help their children with their homework.*
29	Aileler, çocuklarının ödevleri ile ilgili sorularını cevaplayamadıkları zaman onları kaynaklara yönlendirmektedirler.	*The parents canalise their children to resources when they can't answer the questions asked by their children regarding science and technology subjects.*
31	Aileler, çocuklarının ev ödevlerine yardımcı olmaktan zevk aldıklarını söylemektedirler.	*The parents tell that they enjoy helping their children with their homework.*
34	Aileler, çocuklarının ödevleri ile ilgili bilgi sağlamada yetersiz olsalar da ev ödevlerinin zamanında yapılmasını sağlayacak tedbirleri almaktadırlar.	*Although the parents are insufficient in providing information about the homework of their children, they take measures to ensure the homework is done timely.*
40	Aileler, ev ödevleri hakkında öğretmenler tarafından kendilerine bilgi verilmesinin (haber mektubu, e-mail, not, telefon vb.) faydalı olacağını söylerler.	*The parents express that it would be useful to receive information (information letters, e-mails, notes, phone, etc.) from the teachers about the homework.*

Çıkarılanlar / *Others*

3	Aileler, çocuklarının ödevlerine yardımcı olabilecek materyalleri evlerinde bulundurmaktadır. / *The parents keep available the materials at home which could be helpful with their children's homework.*
9	Aileler, çocukları ile birlikte ev ödevlerini yapmaktadırlar. / *The parents do the homework together with their children.*
15	Aileler, çocuklarının ev ödevlerine yardımcı olabilmek için başkalarının yardımına ihtiyaç duymaktadır. / *The parents need the help of others in order to help their children with their homework.*
19	Aileler, çocuklarının ev ödevlerine yardımcı olurken onlara kendilerini iyi anlatamadıklarını ifade etmektedirler. / *The parents mention that they can't express themselves well while helping their children with their homework.*
21	Aileler, öğretmenlerin en önemli isteklerinin çocuklarının ev ödevlerine yardım etmeleri olduğunu ifade etmektedirler. / *The parents express that the most significant request of the teachers is parents being helpful in children's homework.*
22	Aileler, öğretmenlerin kendilerinden çocuklarının ev ödevlerini yapıp yapmadıklarını gözetip denetlemelerini istediklerini söylemektedirler. / *The parents tell that the teachers ask them to observe and check whether their children are doing their homework.*
23	Aileler, çocuklarının ödevleri ile ilgili süreci nasıl açıklayacaklarını bilmemektedirler. / *The parents do not know how to explain the process regarding the homework of their children.*
27	Aileler, çocuklarının derslerine yardımcı olsalar da olmasalar da öğrenmenin okulda ve öğretmenin sorumluluğunda gerçekleştiğine inanmaktadırlar. / *Whether the parents are helpful or not in their children's lessons, they believe that the learning can be actualized at school and under the responsibility of the teacher.*
28	Aileler, çocuklarının ev ödevlerine yardım etmeye çalışırken verdikleri bilgilerin öğretmenin verdiklerinden farklı olduğunu söylemektedirler. / *The parents tell that while trying to help their children with their homework, the information given by them differs from the ones given by the teacher.*
32	Aileler, çocuklarının tüm sorularını cevaplamaya yeterli olmasalar da onlara yardımcı olmaya istekli olduklarını ifade etmektedirler. / *Although the parents are not sufficient to answer all the questions asked by their children, they express that they are willing to help them.*
33	Aileler, bilgilerinin çocuklarının gördükleri ile uyumlu olmadığı için yaptıkları katkıların yetersiz olduğunu söylemektedirler. / *The parents tell that their contributions remain insufficient because that their knowledge is not compatible with the ones their children are instructed.*
35	Aileler, yanlış bilgi verme endişesiyle çocuklarının ödevlerini okulda edindiği bilgilerle yapmalarının doğru olacağını düşünmektedirler. / *As the parents are worried about giving misinformation, they think that it would be right for their children to do their homework with the knowledge they acquired at school.*