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Cross Country Study of School Environment Effects on Reading Comprehension Performance[1]

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Abstract

Reading comprehension skills is in the basic skills that are tried to gain in students. It is likely that a person who has not reached the reading comprehension skill will face many difficulties, whether in daily life or professional life. In the study, the characteristics of school environment of different countries have been determined and the similarities and differences between the countries have been revealed based on the results. The sample included students from Netherlands, Korea and Turkey in PISA 2009 practice. Data was used from reading achievement test and from school questionnaire. For analyzes two levels of Hierarchical Linear Models was used. According to the findings, the most valuable and common variable is the school size, than student behavior for Holland and Korea. The number of the girl at school and student-teacher ratio variables are significant for Turkey
Keywords: Programme for international student assessment (PISA); reading comprehension; school enviroment; cross-country studies.

Introduction

In today's world where individualistic abilities gain importance, individuals living intertwined with the society need to use the language effectively to meet their needs, to share their feelings and thoughts with others and to exchange information. Using language effectively is dependent on having adequate basic language skills. Reading has an important place among the basic language skills.

Considering the fact that many of the learning activities inside the school are based on reading, it is not expected from students who do not have adequate reading skills to succeed in school. Developing the individuals' reading comprehension and critical thinking skills and developing the skill of integrating expressive power by

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understanding the written material are among the purposes of providing students with reading skills during the first years of their school education (Carter, Bishop & Kravtis, 2002). In this respect, reading is an active process and reading comprehension comes to the forefront during this process (Moje, 2002).

In the course of time, concerns about the inadequacies of students' reading comprehension became frequently the subject of discussion among the educators and politicians (Allington, 2002).. Studies put forth that the number of students who cannot read and comprehend at advanced and even adequate levels are quite above expectations (OECD, 2010; Perie, Grigg & Donahue, 2005). In the last decade, the societies those are aware of the importance of reading comprehension focus on developing this skill starting from the elementary school years. In particular, countries have been developing projects in which they can observe their students' levels in terms of reading compression and getting involved in different reliable and valid projects that include large-scale test applications at international level. Program for International Student Assessment (PISA) is one of these large-scale test applications at international level. PISA gives information about whether students at the end of their compulsory education have the necessary knowledge and skills in reading, science and math to overcome the challenges they will meet in life or not (OECD, 2010).

PISA, in which the students' reading comprehension performances are mainly measured, was carried out in 2009 the latest. According to the 2009 PISA results, Turkey was ranked the 31st among the 33 OECD countries and Turkish students did not show adequate performance in reading. Taken this into consideration, it is seen that majority of the Turkish students do not have high-level competencies like *"making critical assessments of texts with unusual subjects, overcoming concepts anomalous to expectations or interpreting the text based on many characteristics to determine the similarities and differences"* In addition to this, the studies on Turkish students' reading comprehension performances clearly show the inadequacy of the students (Karatay, 2007; OECD 2010; PIRLS, 2003).

Students' low performance in reading comprehension may be affected by many individual and environmental variables. Particularly the student's school environment is among these characteristics. The studies that focus on student success under the concept of "effective school" stress the importance of school environment in the student's academic development (Hammond & Bransford, 2005; Koth, Bradshaw & Leaf, 2008; Else-Quest & Peterca 2015; Lee & Loeb, 2000; Schneider, Wyse, & Keesler, 2007; Song & Kang, 2012). In this study, variables like school population, number of students per teacher, shortage of teachers in certain courses, student and teacher behaviors, amount of school material and enrollment rate of female students were examined together. These variables are believed to affect student performance in the school environment.

Hammond & Bransford (2005) stated that the professional development of the teachers are important for student academic success and development of reading skills and pointed out that having not enough teachers compared to the high number of students decreased the student success. When the number of students increases

per teacher, the teacher cannot meet each student's needs about reading and falls short in giving enough feedback to the students. Thus, this situation does not support the student performance.

Another variable that is considered environmental is the school population. In their study, Schneider, Wyse & Keesler (2007) observed that the more the school population rises, the more the student performances increases. In these schools, educational programs are diversified to meet the needs of the students and efficiency from education increases. Lee & Loeb (2000) presented the opposite finding. According to them, when the school population is lower, the student performance increases. This may be related to the time the teachers and the school administration spent on the students and to the adequacy of the school material.

The rapid development in information and communication technologies in our lives has made internet an important part of our lives and naturally the ability to use computers became essential from a young age. Another variable discussed in the study is the ratio of computers in schools. With this data, it was aimed to identify how students' access to computers and students' performance is related because previous studies pointed out that using information and communication technologies in educational settings affect student success positively (Banerjee, Cole, Duflo & Linden, 2007; Demir & Yıldırım, 2015; Song & Kang, 2012).

Another variable that come to mind is the behavior of students and teachers' behavior towards each other and towards their environment. Students getting attached to the school, being interest to school, finding school important, staying afterschool for activities and teachers loving their professions, thinking their profession valuable and displaying positive behavior towards their students are signs of positive school climate. These factors play an important role the increase of student performance (Koth, Bradshaw & Leaf, 2008).

The last variable discussed in the study is the ratio of female students in the schools. Particularly the traditional cultural structure may be influential in difference between male and female students in terms of reading comprehension. In these societies, female students may find education important as a way to gain their social and economic independence. Studies show that female students are more successful in schools than male students (Else-Quest & Peterca 2015; Kotte, Lietsz & Lopez, 2005; Linnakyla, Malin ve Taube, 2004; Kutlu, Yıldırım ve Bilican, 2010).

As mentioned above, Turkish students scored low in reading comprehension in every PISA conducted between 2003 and 2009. Contrary to Turkey, some countries display high performances in this area and continue to show similar results in every PISA conducted. The Netherlands and Korea are at the top of this list. In reading comprehension, the Netherlands and Korea were among the top ten countries in the three PISAs conducted until 2009. The difference between the Turkish students' reading comprehension performances and the Dutch and Korean students' performances may be the result of education systems of the countries, the school environment and students' lives. Considering the fact that Turkey is bridge connecting Europe and Asia, it is expected for Turkey to be affected of the two continents' social and cultural characteristics. For this reason, in this study the

Netherlands from Europe and Korea from Asia were examined. Both countries were found suitable for comparison with Turkey.

Method

Sample

The PISA sample is selected by using random sampling method. The participants are 15-year-old students enrolled in schools selected according to certain strata based on the countries' geographical structure. The study's sample is made up of 4760 Dutch students from 185 schools, 4989 Korean students from 157 schools and 4996 students from 170 schools. All the statistical estimates were conducted through weighted sampling at student (Level1) and school (Level2) levels.

Instrument and Procedure

In PISA 2009 different data collection tools about students' success in certain areas and demographic, socioeconomic and educational variables that can be related to students' success in these areas were used. The study made use of achievement test scores for reading comprehension and raw and index values collected from Turkish, Dutch and Korean school questionnaires. The data was taken from the official website of OECD which carries out the PISA applications. The study's varaiables are described briefly below.

Plausible values of reading. These scores are obtained from the reading cognitive test. Reading test includes items ranging from basic analysis of a text to word knowledge, grammar, linguistic and textual structure. From item writing to its application, there are national and international studies on PISA 2009 cognitive test (OECD, 2012). The reliability coefficient for the Netherlands was 0.93, 0.91 for Korea and 0.91 for Turkey. It means the reliability of the test conducted in the countries was high. Within this study, five plausible values from each student's PV1READING to PV5READING are analyzed together.

School environment characteristics. The data obtained from the school questionnaires was used. The school questionnaire is answered by the school principals of the schools where the test is administered. As part of the study, seven variables related to school environment that are considered to have indirect impact on the student's reading comprehension achievement are identified. The variables' brief explanations and abbreviations are given below:

School population (SCHPOP): The number of students in the school is the total number of female and male students.

Female student ratio (FEMRAT): Female student ratio is the ratio of female students in the school to the number of students in the school.

Student teacher ratio (STDTCHRAT): Student teacher ratio is the ratio of total number of students in the school to the total number of teachers in the school.

Computer ratio (COMRAT): Computer ratio is the ratio of computers to the number of 15-year-old students in the school.

Teacher shortage (TCHSHR): Teacher shortage is the shortage of teachers in certain classes based on the school principals' views. There are four items in the scale. High scores from the scale indicate an increase in the problem in the number of teachers. The reliability of the scale for the Netherlands is 0.74, 0.86 for Korea and 0.91 for Turkey.

Student behavior (STDBEH): This is an index developed to present the students' behaviors related to the school climate. All the items are reverses coded in data input. High scores from this variable indicate positive student behavior. The reliability of the scale for the Netherlands is 0.82, 0.82 for Korea and 0.91 for Turkey.

Teacher behavior (TCHBEH): This is an index developed to present the teachers' behaviors related to the school climate. The scale consists of seven items. All the items are reverses coded in data input. High scores from this variable indicate positive teacher behavior. The reliability of the scale for the Netherlands is 0.78, 0.80 for Korea and 0.90 for Turkey.

The detailed information on reading test and development steps of the school questionnaire, evaluation process and sample questions can be found at the website of OECD PISA

Data Analysis

The data analysis used in the study is determined according to the study's sample and purpose. It is appropriate to use hierarchical linear models in studies where stratified sampling methods are used and correlation models are examined (Raudenbush & Bryk, 2002). The data in the study was analyzed based on two-level Hierarchical Linear Models (HLM). First A one-way ANOVA with random effects model was formulated to achieve the first purpose and intraclass correlation coefficient was calculated. As second means as outcomes regression model was used, school level variables that predict the students' reading comprehension performances were identified. Before the analysis of the data, assumptions based on simple regression and multilevel modeling was examined. Data was found suitable for analysis.

Results

Determining the difference between the Dutch, Korean and Turkish schools' average reading comprehension scores

Whether or not the data is suitable for hierarchical linear model application by country and whether or not there is a difference between the schools' average reading comprehension scores was examined individually by One-way ANOVA with Random Effects model and the model is shown in the following equation.

Level1 $(Y_{ij}|R_{PV1\text{-}5}) = \beta_{0j} + r_{ij}$

Level2 $\beta_{0j} = \gamma_{00} + u_{0j}$

Combined model $(Y_{ij}| R_{PV1\text{-}5}) = \gamma_{00} + u_{0j} + r_{ij}$

In the above formulas, β0j is fixed; γ00 is average dependent variable; rij and u0j are random error coefficients.

The One-way ANOVA with Random Effects Model fixed and random effect results for the Netherlands, Korea and Turkey are given in Table 1.

Table 1

Results from the One-Way ANOVA with Random Effects Model

Countries	Fixed effects				Random effects			Explained variance
	Coefficient	SE	t	p	χ^2	d	p	
Netherland	5.090	0.058	86.668	0.000	5687.388	176	0.000	60
Korea	5.274	0.0544	96.824	0.000	1995.532	153	0.000	27
Turkey	4.331	0.115	37.629	0.000	7703.667	163	0.000	67

*p< 0.01

Using Table 2, intraclass correlation coefficient (ICC) was calculated and how much of the variance on the result caused by the student and school level was determined. The difference being less than 10% in school indicates that the data is not suitable for HLM analysis (Ma, 2001). When Table 2 is examined, it is seen that 60% of the change in terms of reading comprehension scores resulted from the difference among the schools in the Netherlands. This is 27% for Korea and 67% for Turkey. This shows that the data structure is suitable for HLM analysis. In addition, the data shows that more than half of the change in terms of reading comprehension scores in the Netherlands and Turkey resulted not from student related characteristics but from differences among the schools. On the other hand, the majority of the change in Korea resulted from differences among students. This difference between the schools in terms of scores is random. (χ^2_h=5687.388, d=176; χ^2_k=1995.532, d=153; χ^2_t=7703.667, d=163, p<0.01).

Determining the school environment variables related to students' reading comprehension scores in the Netherlands, Korea and Turkey

Means as outcomes regression model is used to determine the school environment variables that predict the schools' average reading comprehension scores by country and cause the differentiation among schools. A similar model is tested individually for every country. The model is shown in the following equation.

Level1: $(Y_{ij}| R_{PV1-5})= \beta_{0j} + rij$

Level2: $\beta_{0j}= \gamma_{00} + \gamma_{01}(SCHPOP)+ \gamma_{02}(FEMRAT) + \gamma_{03}(STDTCHRAT) + \gamma_{03}(COMRAT) + \gamma_{05}(TCHSTR)+ \gamma_{06}(TCHBEH) + \gamma_{07}(STHBEH) + u_{0j}$

Combined Model $(Y_{ij}| R_{PV1-5})= \gamma_{00} + \gamma_{01}(SCHPOP)+ \gamma_{02}(FEMRAT) + \gamma_{03}(STDTCHRAT) + \gamma_{03}(COMRAT) + \gamma_{05}(TCHSHR)+ \gamma_{06}(TCHBEH) + \gamma_{07}(STHBEH) + u_{0j} + rij$

Means as outcomes regression model including the fixed and random effects for the Netherlands, Korea and Turkey is given in Table 2.

Table 2

Results from the Means as Outcomes Model

Fixed Effect	Netherlands		Korea		Turkey	
	Coefficient (se) [p]	t	Coefficient (se) [p]	t	Coefficient (se) [p]	t
Overall mean achievement γ_{00},	5.144 (0.047) [<0.001]	108.206	5.398 (0.0381) [<0.001]	141.649	4.512 (0.071) [<0.001]	64.079
SCHPOP, γ_{01}	0.474 (0.084) [<0.001]	5.638	0.342 (0.086) [<0.001]	3.963	0.0163 (0.013) [0.214]	1.250
FEMRAT, γ_{02}	0.005 (0.083) [0.956]	0.056	0.233 (0.137) [0.091]	1.697	0.079 (0.0323) [<0.001]	2.445
STDTCHRAT, γ_{03}	0.035 (0.140) [0.810]	0.241	-0.067 (0.142) [0.632]	-0.479	-0.641 (0.073) [<0.001]	-8.773
COPRAT, γ_{04}	-0.181 (0.114) [0.116]	-1.580	-0.091 (0.183) [0.618]	-0.499	-0.454 (0.409) [0.270]	-1.108
TCHSTR, γ_{05}	0.017 (0.074) [0.815]	0.235	-0.004 (0.054) [0.941]	-0.074	-0.0815 (0.078) [0.301]	-1.039
STDBEH, γ_{06}	0.323 (0.073) [<0.001]	4.397	0.283 (0.066) [<0.001]	4.303	0.0239 (0.104) [0.818]	0.231
TCHBEV, γ_{07}	-0.006 (0.097) [0.953]	-0.060	-0.139 (0.073) [0.058]	-1.904	-0.0571 (0.135) [0.674]	-0.421
Random Effect	Variance (d) [p]	$\chi 2$	Variance (d) [p]	$\chi 2$	Variance (d) [p]	$\chi 2$
School mean, u_{0j}	0.283 (173) [<0.001]	4103.093	0.104 (146) [<0.001]	1338.893	0.283 (156) [<0.001]	4355.961
Level1 effect, r_{ij}	0.277		0.438		0.295	

In PISA 2009 application, for the Netherlands and Korea it is found that female student ration in the school, student teacher ratio, computer ratio, teacher shortage and teacher behavior variables do not predict the schools' reading comprehension scores significantly ($p > 0.05$). However, the most important variable that showed relation to the scores for both countries is the school population ($t_H^{=}5.638$, se=0.084, $p<0.01$; $t_K^{=}3.963$, se=0.086, $p<0.01$). The higher the number of students in schools means the higher the reading comprehension scores of the schools. Although the school population variable positively predicts the schools' reading scores in Turkey, the prediction power is not significant. According to Table 2, another variable that was common for the Netherlands and Korea is student behavior ($t_H^{=}4.397$, se=0.073, $p<0.01$; $t_K^{=}4.303$, se=0.066, $p<0.01$). The increase in student behavior

variable indicates positive student behaviors. Accordingly, the more behaviors like not having absences, being respectful to the teacher and participating in the classes increase, the higher the reading comprehension scores the students get. Although there is a positive relation between this variable and scores in Turkey, the relation is not found significant.

When Table 2 is examined, significant variables that predict the Dutch, Korean and Turkish schools' reading comprehension performances in common were not observed. Also, school population, computer ratio, teacher shortage, teacher behavior and student behavior do not significantly predict the school scores in Turkey. According to the model, the most important variable that significantly predict the scores is the student teacher ratio (t_T=-8.773, se=0.073, p<0.01). Less number of teachers compared to the number of students is identified as a variable that decreases the schools' reading comprehension performances. Another variable affecting the scores in Turkey is the female student ratio (t_T=2.445, se=0.0323, p<0.01). When the number of female students increases contrary to the number of male students, the schools' reading comprehension performances increase.

Finally, when the random effects in table 2 are examined, the differences between the schools in terms of school average reading comprehension scores by countries were random when the school level variables were added (χ^2_H=4103.093, d=173, p<0.01; χ^2_K=1338.893, d=146, p<0.01; χ^2_T=4355.961, d=156, p<0.01).

How much the variables by countries constituted the variance between the schools was examined by using the intergroup variance values of the study's first and second models. According to this, 29% of the variance in the Netherlands, 36% of it in Korea and 31% of it in Turkey are explained by these variables. To determine the remaining percentages different variables based on school should be added to the model.

Discussions and Conclusions

According to the results of the study, it was found that there were differences between the schools in the Netherlands, Korea and Turkey in terms of students' reading comprehension scores. More than half of the change arising in terms of reading comprehension achievement in the Netherlands and Turkey originates from the differences among the schools. In Korea, this change originates from the differences among the students.

It was found that there was no variable that significantly predict all of the countries in common. However, it is remarkable that the variables significantly predicting the reading performances in the Netherlands and Korea are common. The first of these variables is school population. When the school population rises, the schools' average reading comprehension performances increases. In Turkey, the variable shows an insignificant low-level positive relation with the performance. In their study, Schneider, Wyse & Keesler (2007) stated that the student achievement increases with the increase in student number at school. In addition to this findings, there are opposite findings that show when the student numbers decrease, student achievement increases (Lee & Loeb, 2000; Lee & Smith, 1997). According to the studies that support this study, educational programs are diversified and efficiency from education increases to meet the student needs in big schools. In the Netherlands and Korea, a big part of the school environment and education system has private school structure that is shaped by the stakeholders. Schools

tend to form their educational programs and school environments high-quality and effective to attract the students and parents. This may affect positively the students' knowledge and skills in terms of reading comprehension even though the number of students increases. According to American Federation of Teachers (1999), only a small portion of the students have difficulties related to reading when an effective learning environment is created.

In the Netherlands and Korea, another common variable affecting schools' average reading performances is the student behaviors inside the school. When the discipline level related to student's increases, the schools' average reading comprehension scores increase. Student connecting to the school, caring for the school, giving importance to the school and participating in after-school activities all point to a positive school climate (Koth, Bradshaw & Leaf, 2008). The programs supporting the development of positive student behavior show increase in students' academic achievements (DiPerna, Volpe & Elliott, 2002; Ota & Du Paul, 2002). In addition, discipline and obedience have important place in Korean education system. The student being and brought up in this cultural system may be an important feature supporting students' interest towards school and education.

When the findings are examined for Turkey, it is found that student performance decreases when the number of students increases contrary to the number of teachers. The studies support our finding. According to the studies, when the number of students in schools increases, the teacher cannot meet each student's needs about reading and falls short in giving sufficient feedback to the students. Thus, this situation does not support the student performance (Foorman, Francis, Fletcher, Schatschneider ve Mehta, 1998; Elbaum, Vaughn, Hughe & Moody, 2000; Krassel & Heinesen, 2014). In Turkey, in spite of making compulsory education 12 years and increase in enrollment rate of students, not having enough teachers to meet the psychological and educational needs of the students may have a negative effect on the student performance.

Another variable affecting the Turkish schools' average performances is the increase in the number of female students in schools. The schools with more female students compared to male students have higher reading comprehension performances. Being female is a factor that increases the student's reading comprehension score. In many studies in which the effect of gender factor on the reading comprehension performance is examined, it was found that female students performed better compared to male students (Freeman, 2004; Kutlu, Yalçın ve Bilican, 2011; OECD, 2010). Female students generally show higher performance in verbal areas compared to male students. In literature, this is discussed from two angles. These are cognitive and non-cognitive factors. From the cognitive angle, female students using different or same cognitive processes more effective during reading can be a factor increasing their achievement. According to studies, girls are more successful in particularly grammar skills, using long or complex sentences, verbal fluency and identifying matching parts of speech compared to boys (Hyde, 2005; Weiss et al, 2003). From the non-cognitive angle, the gender differences in reading comprehension performances can be evaluated in terms of the student's societal and cultural characteristics. In literature, this is explained by female students being more disciplined, being more sensitive towards school climate, accepting their responsibilities easier compared to male students (Ma, Willms & Douglas, 2004).

Notes

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References

Allington, R. L. (Ed.). (2002). *Big brother and the national reading curriculum: How ideology trumped evidence*. Portsmouth, NH: Heinemann.

Alvermann, D. E. (2001). Reading adolescents' reading identities: looking back to see a head. *Journal of Adolescent and Adult Literacy*, *44* (8), 676-691 Retrieved from: https://webpages.uncc.edu/~amedina1/21%20C%20lit/cultural%20literacy.pdf

American Federation of Teachers. (AFT). (1999). *Building on the best, learning from what works: exemplary center for reading instruction*. Retrieved August 03, 2011, from http://www.readingrockets.org/article/22888/

Banerjee, A., S. Cole, E. Duflo, & L. Linden, (2007). Remedying education: evidence from two randomized experiments in India. *Quarterly Journal of Economics*, *122* (3), 1235-1264. doi: 10.1162/qjec.122.3.1235

Carter, C. Bishop, J. & Kravits, S.L. (2002). *Keys to effective learning* (3rd ed.). Ch. 1: ‘Becoming a lifelong learner’. Upper Saddle River, NJ: Prentice Hall.

Demir, B., S. ve Yıldırım, Ö. (2016). An Examination of the Relationship Between Information Communication Technology at School or Outside of School and Student’s Performance in Pisa 2012. *Kastamonu Eğitim Fakültesi Dergisi*, 24 1, 251-262. Retrived from http://dergipark.gov.tr/download/article-file/210042

DiPerna, J. C., Volpe, R. J., & Elliott, S. N. (2002). A model of academic enablers and elementary reading/language arts achievement. *School Psychology Review, 31*(3), 298–312. doi: 10.1002/pits

Eğitimi Araştırma ve Geliştirme Dairesi Başkanlığı (EARGED), (2010). *PISA 2009 ulusal ön raporu.* Ankara: Eğitim Araştırma ve Geliştirme Dairesi Yayınları. [Online] Retrieved from http://earged.meb.gov.tr/pdf/ pisa2009rapor.pdf.

Else-Quest, N.M. & Peterca, O. (2015). Academic attitudes and achievement in students of urban public single-sex and mixed-sex high schools. *American Educational Research Journal, 52* (4), 693-718 doi: 10.3102/0002831215591660

Elbaum, B., Vaughn, S., Hughes, M. T. & Moody, S. W. (2000). How effective are one-on-one tutoring programs in reading for elementary students at risk for reading failure? A meta-analysis of the intervention research. *Journal of Educational Psychology*, *92* (4), 605-619. doi: http://dx.doi.org/10.2307/748034

European Commission. (EC), (2001). *European report on the quality of school education: sixteen quality ındicators*. Luxembourg: Office for Official Publications of European Communities.

Freeman, C. E. (2004). *Trends in educational equity of girls and women: 2004*. NCES 2005-016, U.S. Department of Education, National Center for Education Statistics. Washington, D.C.: GPO. Retrieved from http://nces.ed.gov/pubs2005/2005016.pdf

Foorman, B. R., Francis, D. J., Fletcher, J. M., Schatschneider, C. and Mehta, P. (1998). "The role of instruction in learning to read: Preventing reading failure at-risk children": Erratum. *Journal of Educational Psychology, 90*, 37–55. doi: 10.1037/0022-0663.90.2.235

Hammond, D., L., & Bransford, J. (2005). *Preparing teachers for a changing world: What teachers should learn and be able to do*. San Francisco: Jossey-Bass

Hyde, J. S. (2005). The Gender similarity hypothesis. *American Psychologist, 60* (6), 581–592. doi: 10.1037/0003-066X.60.6.581

Karatay, H. (2007). *İlköğretim Türkçe öğretmeni adaylarının okuduğunu anlama becerileri üzerine alan araştırması*. [Field research on reading comprehension skill of primary school Turkish prospective teachers] Unpublished doctoral dissertation, Gazi University, Ankara Turkey.

Kutlu, O.,Yalcin, O. ve Bilican, S. (2011). The factors that predict reading and listening comprehension skills of elementary level 5thgrade Turkish students in G. Leyla Uzun and Ümit Bozkurt, (Eds), Theorical and applied researches on Turkish language teaching (pp. 381-396) Essen: Die Blau Eule, Germany.

Kutlu, O., Yıldırım, O. ve Bilican, S., (2010). The investigation of 5th grade Turkish students'comprehension scores according to different variables. Word Academy of Science, Engineering and Technology, 4(6), 1102-1106 Retrieved from: http://waset.org/publications/8732/the-investigationof- 5th-grade-turkish-students-comprehension-scores-according-to-different-variables

Koth, C. W., Bradshaw, C. P. & Leaf, P. J. (2008). A multilevel study of predictors of student perceptions of school climate: the effect of classroom-level factors. *Journal of Educational Psychology, 100* (1), 96-104. doi: 10.1037/0022-0663.100.1.96

Kotte, D., Liez, P. & Lopez, M. M. (2005). Factors influencing reading achievement in Germany and Spain: evidence from PISA 2000, *International Education Journal, 6* (1), 113-124.

Krassel, K. F. & Heinesen, E. (2014) Class-size effects in secondary school. *Education Economics, 22* (4), 412-426 doi: 10.1080/09645292.2014.902428

Linnakylä, P., Malin, A. and Taube, K. (2004) Factors behind low reading literacy achievement. *Scandinavian Journal of Educational Research, 48* (3), 231-249. doi: 10.1080/0031383041000169571 8 doi:https://doi.org/10.1080/00313830410001695718

Lee, V. E. & Loeb, L. (2000). School size in Chicago elementary schools: Effects on teachers' attitudes and students' achievement. *American Educational Research Journal, 37* (1), 3-31.

Lee, V. E., & Smith, J. B. (1997). High school size: Which works best and for whom? *Educational Evaluation and Policy Analysis, 19* (3), 205-227.

Ma, X. (2001). Health outcomes of elementary school students in new Brunswick: The education perspective. *Evaluation Review, 24* (5), 435– 456. doi: 10.1177/0193841X0002400501

Ma. X. & Williams, J. D. (2004). School disciplinary climate: Characteristics and effects on eighth grade achievement. *Alberta Journal of Educational Research, 2* (50), 169-188.

Ota, K. R., and DuPaul, G. J. (2002). Task engagement and mathematics performance in children with attention deficit hyperactivity disorder: Effects of supplemental computer instruction. *School Psychology Quarterly, 17* (3), 242–257.

Moje, E.B. (2002). But where are the youth? Integrating youth culture into literacy theory. *Educational Theory, 52* (1), 97–120. doi: 10.1111/j.1741-5446.2002.00097.x

Organization for Economic Cooperation and Development. (OECD). (2010). *PISA 2009 results: what students know and can do. performance in reading, mathematics and science (Volume I).* Paris.

Organization for Economic Cooperation and Development. (OECD). (2012). *PISA 2009 technical report*, PISA, OECD Publishing.

Perie, M., Grigg, W., & Donahue, P. (2005). *The nation's report card: reading, 2005*. Washington, DC: National Center for Educational Statistics. Retrieved August 06, 2010, from http://www.eric.ed.gov/PDFS/ED486463.pdf

Progress in International Reading Literacy Study (PIRLS) (2003). *PIRLS international report.* US: International association for the evaluation of educational achievement (IEA). Retrieved December 06, 2010, from http://timssandpirls.bc.edu/pirls2001i/PIRLS2001_Pubs_IR.html

Schneider, B., Wyse, A. E. & Keesler, V. (2007). Is small really better? Testing some assumptions about high school size. In T. Loveless and F. M. Hess (Eds.), *Brookings papers on education policy 2006/2007* (pp. 15–47). Washington, DC: Brookings Institution Press.

Song, H., & Kang, T. (2012). Evaluating the impacts of ICT use: A multi-level analysis with hierarchical linear modeling. *Turkish Online Journal of Educational Technology* - TOJET, *11*(4), 132-140.

Weiss, E.M., Kemmlera, G., Deisenhammerb, E.A., W. Fleischhackera, W.W. & Delazer, M. (2003). Sex differences in cognitive functions. *Personality and Individual Differences, 35*(4), 863–875. doi: 10.3724/SP.J.1041.2009.01081. 1081