



THE RELATIONSHIP BETWEEN PRIMARY STUDENTS' PERCEPTUAL LEARNING STYLES AND THEIR SELF-PERCEPTIONS OF SUCCESS IN COURSES

Assist. Prof. Dr. Dilek Çağırğan Gülten
Istanbul University
Hasan Ali Yucel Educational Faculty
Department of Primary Education
Istanbul- TURKEY
dilek.cgulten@gmail.com

Ekrem Özkan
Istanbul University
Institute of Social Sciences
Istanbul- TURKEY
ilkmatekrem@gmail.com

Abstract

Individuals' preferences of perceiving information, which are visual, auidal, tactile and kinesthetic, are named as Perceptual Learning Styles (PLS) in the literature. This study, therefore, aims to explore the relationship between primary 4th and 5th grade students' perceptual learning styles and their self-perceptions (I am very successful, quite successful, not very successful) of success in courses. The study was conducted with primary 4th and 5th grade students in İstanbul during the 2011-2012 academic year. The research was designed in the relational analysis model. The SPSS16.0 statistical package was used for the statistical analyses of the research data. Independent group t-test, Kruskal Wallis and Mann Whitney-U tests were used in the analysis of the data depending on the variables. According to the results of the findings, students who found themselves successful in the courses of Turkish, Math, Science and Social Sciences had higher visual, auidal, tactile and kinesthetic scores while those who found themselves successful in English had higher auidal scores. On the other hand, there was not a significant relationship in Visual Arts and Physical Education in terms of statistics.

Key Words: Learning styles, perceptual, primary students, success in courses.

INTRODUCTION

Today's learning activities, which put students at the center, have been restructured to enable students' active participation in the learning programs. In this restructuring, the fact that it is essential to take into account students' individual differences in education has come to the fore. As is known, the fact that students have individual differences in the process of learning has been a matter of discussion for years. Students' individual differences indicate their specific learning preferences and these preferences, which are innate, influence their success in courses (Beydoğan, 2009; Kaf Hasırcı, 2006; Güven and Kürüm, 2006). Learning styles were first defined by Rita Dunn in 1960 as different and specific ways used by individuals as they prepare to learn and recall any information that is new and hard to learn (Boydak, 2001).

The literature dwells upon three types of learning styles, which are visual, auidal and kinesthetic/tactile. Individuals' preferences to perceive information, which are visual, auidal, tactile and kinesthetic, are named as Perceptual Learning Styles (PLS) in the literature and Perceptual Learning styles are based on the process of perceiving information through senses (Uğur, 2008). Perceptual Learning Styles overlap with the perceptual element of the physiological dimensions of the Dunn and Dunn Learning Style model (Otrar, 2007; Şimşek, 2007). Visual learners recall what they see most, auidal learners recall what they hear or say most, and kinesthetic learners want to touch or do (Boydak, 2001). Individuals' learning styles shape according to age,

gender, culture, academic performance level, and preferences in the process of acquiring information (Hughes and More: 1997; Fox and Ronkoeski, 1997; Demir and Usta, 2011).

Learning styles, which are of essence in the process of learning, are known to be a crucial factor in affecting students' learning (Gülten and Gülten, 2004). Studies prove that determining individuals' learning styles encourages their academic performance and enables teachers to develop educational experience appropriate for individuals (Dunn, Beaudry&Klavas, 1989). As suggested by Poyraz, Gülten, and Soytürk (2012), the best way for a student to learn is his/her learning style according to Searson and Dunn (2001). Some research underline the importance of learning styles in determining student success (Brunner and Majewski, 1990; Mathews, 1996; Kılıç, 2002; Bilgin and Durmuş, 2003; Searson and Dunn, 2001; Beydoğan, 2009; Yenice and Saracaloğlu, 2009). Besides, as suggested by Otrar, Gülten and Özkan (2012), level of academic performance is higher in the learning settings designed with the use of educational approaches appropriate for the different learning styles of students (Cengizhan, 2007; Ekici, 2001; Kaf Hasırcı, 2006; Güven, 2003; Güven, 2008).

In the light of this information, this research was planned with the aim of studying the relationship between students' perceptions towards success in courses (I am very successful, I am quite successful, I am not very successful) and perceptual learning styles and identifying the existing situation. The research findings are essential in that they prove the relationship between students' perception of success in their courses and their learning styles. In addition to this, the research is anticipated to pave the way for teachers, students, parents and researchers.

Aim of the research

This research aims to investigate the relationship between primary fourth and fifth grade students' perceptual learning styles and their perceptions towards success in courses (I am very successful, I am quite successful, I am not very successful). In accordance with this aim, whether students' perceptions towards success in Turkish, Mathematics, Science and Technology, Social Studies, Music, Visual Arts and Physical Education differ or not with respect to perceptual learning styles was investigated.

METHOD

In this research, survey (descriptive-survey) model was used. Survey model aims to describe the existing situation as it stands in the past or currently (Karasar, 2005).

Participants

The research was conducted with primary fourth and fifth grade students in İstanbul during the 2011-2012 academic year. The research participants involve 178 students (84 fourth grade and 94 fifth grade students) chosen randomly.

Data Collection Tools

The research data was collected with the AOS-I scale and demographic information form developed by Otrar, Gülten and Özkan (2012). The AOS-I scale is made up of 36 items designed in 5-point Likert type. These 36 items include 4 sub-factors. Items 28 and 33 are inverse. The items composing these factors are given in Table 1.

Table 1: AOS-I Scale Factors

Sub Factor	Items
Visual	1, 5, 8, 17, 23, 27, 30, 33
Audial	2, 6, 12, 14, 18, 20, 24, 28, 31, 34
Tactile	3, 9, 10, 13, 15, 19, 21, 25
Kinesthetic	4, 7, 11, 16, 22, 26, 29, 32, 35, 36

Data Analysis

Research data has been analyzed with SPSS 16.00 package program. In the analysis of the data, Independent Group t-Test, Kruskal Wallis Test, Mann Whitney-U Test were used. The significance levels for the statistical analyses are accepted as $p < .05$.

FINDINGS

Table 2: The Results of the Kruskal Wallis Tests Conducted to Identify Whether Learning Style Scores Differ or Not According to Students' Perception Towards Turkish

Scores	Groups	N	Mean Rank	Chi-Square	Sd	p
<i>Visual Scores</i>	I am very successful	89	104,42	18,655	2	0,000
	I am quite successful	77	78,68			
	I am not very successful	12	48,29			
	Total	178				
<i>Audial Scores</i>	I am very successful	89	104,79	17,549	2	0,000
	I am quite successful	77	77,09			
	I am not very successful	12	55,75			
	Total	178				
<i>Tactual Scores</i>	I am very successful	89	104,80	17,423	2	0,000
	I am quite successful	77	76,95			
	I am not very successful	12	56,54			
	Total	178				
<i>Kinesthetic Scores</i>	I am very successful	89	103,60	16,065	2	0,000
	I am quite successful	77	78,92			
	I am not very successful	12	52,79			
	Total	178				

There was a significant statistical difference according to the results of the Kruskal Wallis Tests, which were conducted in order to find out whether learning style scores differ or not with respect to students' perception towards Turkish. Mann Whitney-U and T-test were carried out to find out between which groups the difference was. According to the results of the T-test, which was conducted with the groups of "I am very successful" and "I am quite successful", a significant statistical difference was discovered in visual ($t=3,398$, $p < .05$), audial ($t=3,528$, $p < .05$), tactile ($t=3,505$, $p < .05$) and kinesthetic ($t=2,999$, $p < .05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am quite successful". According to the results of the Mann Whitney-U test, which was carried out between the groups of "I am very successful" and "I am not very successful", a significant statistical difference was found out in visual ($z = -3,496$, $p < .05$), audial ($z = -2,950$, $p < .05$), tactile ($z = -2,918$, $p < .05$) and kinesthetic ($z = -3,104$, $p < .05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am not very successful". According to the results of the Mann Whitney-U test, which was carried out between the groups of "I am quite successful" and "I am not very successful", there was not a statistically significant difference in visual ($z = -1,958$, $p > .05$), audial ($z = -1,506$, $p > .05$), tactile ($z = -1,428$, $p > .05$) and kinesthetic ($z = -1,751$, $p > .05$) scores.

Table 3: The Results of the Kruskal Wallis Tests Conducted to Identify Whether Learning Style Scores Differ or Not According to Students' Perception Towards Science and Technology

Scores	Groups	N	Mean Rank	Chi-Square	Sd	p
<i>Visual Scores</i>	I am very successful	96	105,16	25,573	2	0,000
	I am quite successful	73	76,12			
	I am not very successful	9	30,94			
	Total	178				

<i>Audial Scores</i>	I am very successful	96	107,44	27,725	2	0,000
	I am quite successful	73	71,52			
	I am not very successful	9	43,94			
	Total	178				
<i>Tactual Scores</i>	I am very successful	96	102,41	17,120	2	0,000
	I am quite successful	73	78,36			
	I am not very successful	9	42,17			
	Total	178				
<i>Kinesthetic Scores</i>	I am very successful	96	104,03	18,728	2	0,000
	I am quite successful	73	75,38			
	I am not very successful	9	49,06			
	Total	178				

There was a significant statistical difference according to the results of the Kruskal Wallis Tests, which were conducted in order to find out whether learning style scores differ or not with respect to students' perception towards Science and Technology. Mann Whitney-U and T-test were carried out to find out between which groups the difference was. According to the result of the T-test, which was conducted between the groups of "I am very successful" and "I am quite successful", a statistically significant difference was discovered in visual ($t=3,777$, $p<.05$), audial ($t=4,249$, $p<.05$), tactile ($t=3,132$, $p<.05$) and kinesthetic ($t=3,793$, $p<.05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am quite successful". According to the results of the Mann Whitney-U test, which was carried out between the groups of "I am very successful" and "I am not very successful", a statistically significant difference was found out in visual ($z= -3,935$, $p<.05$), audial ($z= -3,178$, $p<.05$), tactile ($z= -3,218$, $p<.05$) and kinesthetic ($z= -2,864$, $p<.05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am not very successful". According to the results of the Mann Whitney-U test, which was carried out between the groups of "I am quite successful" and "I am not very successful", there was a statistically significant difference in visual ($z= -2,745$, $p<.05$), audial ($z= -1,987$, $p<.05$) and tactile ($z= -2,172$, $p<.05$) scores. Those who answered, "I am quite successful" had higher scores than those who answered, "I am not very successful". There was not a significant difference in kinesthetic ($z= -1,702$, $p>.05$) scores.

Table 4: The Results of the Kruskal Wallis Tests Conducted to Identify Whether Learning Style Scores Differ or Not According to Students' Perception Towards Social Studies

Scores	Groups	N	Mean Rank	Chi-Square	Sd	p
<i>Visual Scores</i>	I am very successful	92	101,32	12,737	2	0,002
	I am quite successful	76	80,14			
	I am not very successful	10	51,95			
	Total	178				
<i>Audial Scores</i>	I am very successful	92	104,65	23,289	2	0,000
	I am quite successful	76	78,51			
	I am not very successful	10	33,65			
	Total	178				
<i>Tactual Scores</i>	I am very successful	92	100,37	9,218	2	0,010
	I am quite successful	76	79,55			
	I am not very successful	10	65,10			
	Total	178				
<i>Kinesthetic Scores</i>	I am very successful	92	96,79	6,050	2	0,049
	I am quite successful	76	84,70			
	I am not very successful	10	58,90			
	Total	178				

According to the results of the Kruskal Wallis Tests conducted to identify whether learning style scores differ or not according to students' perception towards Social Studies, there was a statistically significant difference. Mann Whitney-U and T-test were carried out to find out between which groups the difference was. According to the result of the T-test, which was conducted between the groups of "I am very successful" and "I am quite successful", a statistically significant difference was discovered in visual ($t=2,667, p<.05$), audial ($t=2,953, p<.05$) and tactile ($t=2,832, p<.05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am quite successful". There was not a statistically significant difference in kinesthetic ($t=1,590, p>.05$) scores. According to the results of the Mann Whitney-U test, which was carried out between the groups of "I am very successful" and "I am not very successful", a statistically significant difference was found out in visual ($z= -2,800, p<.05$), audial ($z= -3,794, p<.05$), and kinesthetic ($z= -2,194, p<.05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am not very successful". However, there was not a statistically significant difference in tactile ($z= -1,870, p>.05$) scores. According to the results of the Mann Whitney-U test, which was carried out among the groups of "I am quite successful" and "I am not very successful", there was a statistically significant difference in audial ($z= -3,009, p<.05$) scores. Those who answered, "I am quite successful" had higher scores than those who answered, "I am not very successful". There was not a significant difference in visual ($z= -1,724, p>.05$), tactile ($z= -1,060, p>.05$) and kinesthetic ($z= -1,505, p>.05$) scores.

Table 5: The Results of the Kruskal Wallis Tests Conducted to Identify Whether Learning Style Scores Differ or Not According to Students' Perception Towards Music

Scores	Groups	N	Mean Rank	Chi-Square	Sd	p
<i>Visual Scores</i>	I am very successful	138	95,71	9,281	2	0,010
	I am quite successful	31	65,66			
	I am not very successful	9	76,39			
	Total	178				
<i>Audial Scores</i>	I am very successful	138	93,79	4,616	2	0,099
	I am quite successful	31	77,19			
	I am not very successful	9	66,06			
	Total	178				
<i>Tactical Scores</i>	I am very successful	138	92,41	2,789	2	0,248
	I am quite successful	31	83,45			
	I am not very successful	9	65,78			
	Total	178				
<i>Kinesthetic Scores</i>	I am very successful	138	94,26	9,750	2	0,008
	I am quite successful	31	82,35			
	I am not very successful	9	41,11			
	Total	178				

According to the results of the Kruskal Wallis Tests conducted to identify whether learning style scores differ or not according to students' perception towards Music, there was not a statistically significant difference in audial and tactile scores whereas there was a statistically significant difference in visual and kinesthetic scores. Mann Whitney-U and T-test were carried out to find out between which groups the difference was. According to the result of the T-test, which was conducted between the groups of "I am very successful" and "I am quite successful", a statistically significant difference was discovered in visual ($t=2,814, p<.05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am quite successful". There was not a statistically significant difference in kinesthetic ($t=1,256, p>.05$) scores. According to the results of the Mann Whitney-U test, which was carried out between the groups of "I am very successful" and "I am not very successful", a statistically significant difference was found out in kinesthetic ($z= -2,972, p<.05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am not very

successful". There was not a statistically significant difference in visual ($z = -1,164, p > .05$) scores. According to the results of the Mann Whitney-U test, which was carried out between the groups of "I am quite successful" and "I am not very successful", there was a statistically significant difference in kinesthetic ($z = -2,226, p < .05$) scores. Those who answered, "I am quite successful" had higher scores than those who answered, "I am not very successful". There was not a statistically significant difference in visual ($z = -.831, p > .05$) scores.

Table 6: The Results of the ANOVA Test Conducted to Identify Whether Learning Style Scores Differ or Not According to Students' Perception Towards Mathematics

Scores	Values of N, SS ve \bar{x}				ANOVA Results					
	Groups	N	\bar{x}	SH _x	Var. K.	K.T.	Sd	K.O.	F	p
<i>Visual Scores</i>	I am very successful	56	4,299	0,449	Among groups	1,777	2	0,889	3,171	0,044
	I am quite successful	92	4,130	0,546	Within groups	49,041	175	0,280		
	I am not very successful	30	4,0167	0,609	Total	50,818	177			
		178	4,164	0,535						
<i>Audial Scores</i>	I am very successful	56	4,319	0,397	Among groups	3,669	2	1,835	7,178	0,001
	I am quite successful	92	4,094	0,533	Within groups	44,725	175	0,256		
	I am not very successful	30	3,903	0,589	Total	48,394	177			
		178	4,133	0,522						
<i>Tactual Scores</i>	I am very successful	56	4,111	0,803	Among groups	1,260	2	0,630	1,866	0,158
	I am quite successful	92	4,070	0,558	Within groups	59,091	175	0,338		
	I am not very successful	30	3,866	0,122	Total	60,351	177			
		178	4,049	0,043						
<i>Kinesthetic Scores</i>	I am very successful	56	4,155	0,491	Among groups	2,297	2	1,149	3,555	0,031
	I am quite successful	92	4,019	0,531	Within groups	56,538	175	0,323		
	I am not very successful	30	3,813	0,777	Total	58,835	177			
		178	4,027	0,576						

According to the results of the ANOVA Test conducted to identify whether learning style scores differ or not according to students' perception towards Mathematics, there was a statistically significant difference in visual, audial and kinesthetic scores, but there was not a statistically significant difference in tactile scores. A Post-hoc was conducted to identify between which groups the difference was. According to the results of the Post-hoc, there was a statistically significant difference in audial scores (Mean Difference=,225 , $p < .05$) between the groups of "I am very successful" and "I am quite successful". Those who answered, "I am very successful" had higher scores than those who answered, "I am quite successful". There was not a statistically significant difference in visual (Mean Difference=,168, $p > .05$) and kinesthetic (Mean Difference=,135, $p > .05$) scores. According to the results of the Post-hoc, a statistically significant difference was discovered between the groups of "I am very successful" and "I am not very successful" in visual (Mean Difference=,282 , $p < .05$), audial (Mean Difference=,416 , $p < .05$) and kinesthetic (Mean Difference=,342 , $p < .05$) scores. Those who answered, "I am very successful" had higher scores than those who answered, "I am not very successful". According to the

results of the Post-hoc, there was not a statistically significant difference between the groups of “I am quite successful” and “I am not very successful” in visual (Mean Difference=,113 , $p>.05$), audial (Mean Difference=,191 , $p>.05$) and kinesthetic (Mean Difference=,206 , $p>.05$) scores.

Table 7: The Results of the ANOVA Test Conducted to Identify Whether Learning Style Scores Differ or Not According to Students’ Perception Towards English

Scores	Values of N, SS and \bar{x}				ANOVA Results					
	Groups	N	\bar{x}	SH _x	Var. K.	K.T.	Sd	K.O.	F	p
<i>Visual Scores</i>	I am very successful	75	4,230	0,507	Among Groups	1,300	2	0,650	2,297	0,104
	I am quite successful	62	4,185	0,553	Within Groups	49,518	175	0,283		
	I am not very successful	41	4,012	0,541	Total	50,818	177			
		178	4,164	0,535						
<i>Audial Scores</i>	I am very successful	75	4,242	0,437	Among Groups	2,446	2	1,223	4,657	0,011
	I am quite successful	62	4,129	0,475	Within Groups	45,949	175	0,263		
	I am not very successful	41	3,939	0,670	Total	48,394	177			
		178	4,133	0,522						
<i>Tactual Scores</i>	I am very successful	75	4,148	0,555	Among Groups	1,409	2	0,705	2,092	0,127
	I am quite successful	62	3,947	0,524	Within Groups	58,942	175	0,337		
	I am not very successful	41	4,021	0,695	Total	60,351	177			
		178	4,049	0,583						
<i>Kinesthetic Scores</i>	I am very successful	75	4,133	0,058	Among Groups	1,939	2	0,969	2,982	0,053
	I am quite successful	62	4,006	0,506	Within Groups	56,896	175	0,325		
	I am not very successful	41	3,865	0,740	Total	58,835	177			
		178	4,027	0,576						

According to the results of the ANOVA Test conducted to identify whether learning style scores differ or not according to students’ perception towards English, there was a statistically significant difference in audial scores, but there was not a statistically significant difference in visual, tactile and kinesthetic scores. A Post-hoc was conducted to identify between which groups the difference was. As a result of the Post-hoc conducted in audial scores, there was not a statistically significant difference (Mean Difference=,113 , $p>.05$) between the groups of “I am very successful” and “I am quite successful”. A statistically significant difference (Mean Difference=,303 , $p<.05$) was discovered between the groups of “I am very successful” and “I am not very successful”. Those who answered, “I am very successful” had higher scores than those who answered, “I am not very successful”. There was not a statistically significant difference (Mean Difference=,190 , $p>.05$) between the groups of “I am quite successful” and “I am not very successful”.



Besides, according to the results of the Kruskal Wallis Tests conducted to identify whether learning style scores differ or not according to students' perception towards Visual Arts and Physical Education, there was not a statistically significant difference.

DISCUSSION AND CONCLUSION

According to the research findings, the students who deemed themselves "very successful" in the courses of Turkish and Science&Technology had higher visual, auidial, tactile and kinesthetic scores than those who deemed themselves "quite successful" or "not very successful". There was not a significant difference between students who deemed themselves "quite successful" and those who deemed themselves "not very successful" in Turkish in terms of perceptual style scores. However, a significant difference was discovered in favor of those who deemed themselves "quite successful" in Science in terms of visual, auidial and tactile scores. According to the research conducted by Arslan and Babadoğan (2005), a significant difference was discovered between primary 7th and 8th grade students' learning styles and mean scores in Turkish. According to the results of the research conducted by Eskici (2008) with primary students, there was not a significant relationship between students' academic success in Science and Technology and kinesthetic and auidial learning styles. However, students who favor visual learning style had higher academic success in Science and Technology. According to the results of the research by Azizoğlu and Çetin (2009), which investigates the relationship between primary students' learning styles and their motivation and attitude towards Science and Technology, a significant difference was identified between the motivation levels of students with different learning styles.

There was a significant statistical difference in visual, auidial and kinesthetic scores in Mathematics. According to the results of statistical analyses carried out between the students who deemed themselves "very successful" and those who deemed themselves "quite successful" in Mathematics, a significant difference was observed in auidial scores in favor of the students who deemed themselves "very successful". There was not a significant statistical difference between the perceptual learning styles of those who deemed themselves "quite successful" and "not very successful" in Mathematics. A significant relationship was discovered between second level primary students' learning styles and math success according to the research conducted by Arslan and Babadoğan (2005), Yenilmez and Çakır (2005). According to the research conducted with 7th grade students by Poyraz, Gülten and Soytürk (2012), there was a difference in Math success in favor of students with visual learning style. However, this finding was interpreted as that the relationship between learning at school and learning styles is not taken into account much, which was also suggested in the research by Gülten and Gülten (2004). In this context, although some significant relationship was discovered between learning styles and success in courses, it is not possible to mention a significant relationship between success in courses and each type of perceptual learning style. Therefore, moving from the fact that when they are allowed to learn using their strengths, tactile/kinesthetic students can learn as well as visual and auidial students (Boydak, 2001), it is necessary to make some arrangements in educational activities.

Students who deemed themselves "very successful" in Social Studies had higher visual, auidial and tactile scores than those who deemed themselves "quite successful". On the other hand, students who deemed themselves "very successful" in Social Studies had higher visual, auidial and kinesthetic scores than those who deemed themselves "not very successful". Students who deemed themselves "quite successful" had higher auidial scores than those who deemed themselves "not very successful". Therefore, students who are "quite successful" in Social Studies had similar visual, tactile and kinesthetic scores. According to the research conducted with primary 5th grade students by Güven (2008), students who had higher visual scores had the best grades in Social Studies in their report cards. Students who had high visual scores had better grades than those who had the highest auidial and kinesthetic scores in terms of report card grades. Şeker and Yılmaz (2011) discovered that students were not successful in Social Studies when individual differences were not taken into consideration. Students had better success in Social Studies when learning styles were considered and students' active participation was ensured. In the light of these findings, it is evident that students' success will be affected positively if students' perceptual learning styles are taken into account.



Students who deemed themselves successful in English had high auidal scores. A significant statistical difference was identified in visual and kinesthetic scores in Music. According to a research conducted to investigate the learning styles of adult learners who learn English as a second language, it was discovered that beginner-intermediate learners prefer auidal learning style more than advanced learners do (Lincoln and Rademacher, 2006; cited in Biçer, 2010). This can be interpreted as something expected due to the nature of English courses. The fact that there is a difference between visual and kinesthetic scores in Music makes sense due to the nature of Music courses. However, their auidal scores were expected to have been higher. There was not a statically significant relationship among the visual, auidal, tactile and kinesthetic scores of the students in the sampling in Visual Arts and Physical Education.

According to the research findings, as suggested by Uğur (2008), every student has a different learning style and not every student can be expected to benefit from classroom activities. Several studies suggest that taking students' perceptual learning styles into account increases students' success. In this context, it can be concluded that structuring education in the above-mentioned courses by taking students' perceptual learning styles into account will increase their success. In the light of this data, the following is suggested for further research and researchers:

- This research is restricted with 178 students in İstanbul. It can be expanded with a larger sampling and can be elaborated with qualitative data.
- The relationship between perceptual learning styles mentioned in the research and course success can be evaluated qualitatively in terms of each course.
- The courses mentioned in the research can be supported with a type of education that matches perceptual learning styles and further research can be suggested to identify the stituation in the absence of the support of perceptual learning styles.
- Teachers and teacher candidates who will carry out a type of education in accordance with the learning styles should be given a detailed inservice and preservice training.

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