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The Analysis of Sports High School Students' Learning Styles in Terms of Overall Academic Success

Ceyhun Alemdağ [1], Serdar Alemdağ [2], Abdullah Bora Özkara [3]

Abstract

Research findings about which learning style works better are not consistent. However, learning styles are known to be generally associated with learning and to support improvement in some *learning outcomes*. This study aims to determine learning styles of sports high school students and to examine these styles with respect to overall academic success. The study sample consists of 480 sports high school students (152 females, 328 males) who were the students of seven different sports high schools in Turkey. Kolb Learning Style Inventory-3 (LSI-3) was used as the data collection tool. Data was analyzed using χ^2 (Chi-Square) test and one-way analysis of variance. The study found out that the sports high school students mostly had *diverging* (39.5%) learning style, a*ssimilating* (21.5%) and *converging* (21.5%) were of equal rate, and *accommodating* (17.5%) was the least preferred learning style. The study indicated that students with high overall academic success had *converging*, *accommodating*, *assimilating* and *diverging* learning styles, respectively. Although most of the sports high school students had *diverging* learning style, the overall academic success of students with *converging* learning style was higher.

Keywords

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Introduction

Turkish students, have fail to get desired results in some platforms evaluating the students' achievements at the international level (Programme for International Student Assessment / PISA, The Trends in International Mathematics and Science Study / TIMSS, The Progress in International Reading Literacy Study / PIRLS, etc.), for this purpose it is necessary to update the framework of Turkish educational programs in accordance with the universal educational models. Measures taken in this regard include efforts for the renewal and development of primary and secondary school curriculum programs within the context of the *constructivist* approach (Korkmaz, 2012; Ministry of National Education [MEB], 2005, 2006; Özdemir, 2009; Sönmez, 2010). This approach in which knowledge is transferred and restructured emphasizes that not teaching but learning is in the forefront (Abbott & Terence, 1999; Aracı, 2007; Bıkmaz, 2017; Demirhan, İnce, Koca, & Kirazcı, 2010; Fidan & Duman, 2014; Kabapınar, 2012; Kanlı, 2009; Koç, 2006; Kutluca, 2013; Ocak, 2012; Ünder, 2010). With the

[1] Karadeniz Teknik University, School of Physical Education and Sports, Dept. of Physical Education and Sports, Turkey, calemdag@ktu.edu.tr
[2] Karadeniz Teknik University, School of Physical Education and Sports, Dept. of Physical Education and Sports, Turkey, calemdag@ktu.edu.tr
[3] Karadeniz Teknik University, School of Physical Education and Sports, Dept. of Physical Education and Sports, Turkey, boraozkara@ktu.edu.tr

transformation of educational programs towards a constructivist approach, attention has been focused on the understanding of student-centered education and on individual characteristics of students. Adopting a student-centered approach that targets participation and production empowers students to take more responsibility, individually and collectively, for their learning experience (Ciccomascolo & Sullivan, 2013).

Constructivist approach is reflected in physical education as well as other fields (Rovegno, 1998; Rovegno & Bandhauer, 1997); however, the approach to physical education classes in Turkey was recently closer to the traditional education system and adopted a highly-controlling teaching style/heteronomy and an expository teaching strategy contrary to renewed physical education programs (Açıkada, 1992; İnce & Hünük, 2010; İnce & Ok, 2005). The most fundamental element in the implementation of the constructivist approach is teacher and teaching style; however, students and learning styles that are also the basic components of this approach is of critical importance. Accordingly, Blackmore (1996) argues that the first thing to do to contribute to the learning process is to embrace the fact that students have different learning styles.

In the literature, studies on learning styles in the field of physical education were conducted in higher education (Alemdağ & Öncü, 2015; Çelik & Şahin, 2011; Ristori, Eberman, Tripp, & Kaminsky, 2011; Yalız & Erişti, 2010) and student-athletes (Alemdağ, Kalkavan, Alemdağ, & Özkara, 2016). Considering studies on learning styles of students in the secondary education (high school) in Turkey, they mainly cover Science High Schools, Social Sciences High School, Anatolian High Schools, Vocational-Technical Anatolian High Schools and Anatolian Teacher High Schools (Bayraktar & Otrar, 2007; Beydoğan, 2009; Çakır & Akbaş, 2013; Ergür, 2010; Mutlu, 2006; Oral, 2003; Özkan, Sungur, & Tekkaya, 2004; Özsoy, Yağdıran, & Öztürk, 2004; Peker & Aydın, 2003). Studies on Sports High Schools (Alemdağ et al., 2016) are quite limited.

One of the purposes of the establishment of sports high schools in our country is to educate students in the field of physical education and sports in the direction of their interests and abilities and to help them be trained to become successful sportsmen (MEB, 2009). Considering related studies, researchers mostly focus on the opinions and expectations of sports school students (Altındaş, 2009; Canal, 2008; Çoban, 2006; Görmez, Koçak, & Hürmeriç Altunsöz, 2016; Karapınar, 2007; Nar, 2007) and their physical activity or motoric characteristics (Aysan, Gökhan, & Aktaş, 2015; Kılıçaslan, 2015); however, studies on education are neglected. Although students are selected by an ability test and are mostly preferred by athletes, sports high schools should not be left behind until they reach certain standards of teaching and learning.

Previous studies on learning styles (Birrell, Phillips, & Stottc, 1985; Burns, Johnson, & Gable, 1998; Fan, Xiao, & Su, 2015; Gökalp, 2013; Hein & Budny, 2000; Horton & Oakland, 1997; Komarraju, Karau, Schmeck, & Avdic, 2011; Reynolds & Gerstein, 1992; Uzuntiryaki, 2007; Yazıcılar & Güven, 2009) show that higher academic success is achieved in programs tailored to learners' learning characteristics. From this point of view, this study seems to be of importance in determining learning characteristics of sport high school students, guiding educators, and enabling education policy-makers to take some measures in the learning environment. Accordingly, this research aims firstly to determine learning styles of sports high school students according to the Kolb's Learning Style Model and secondly to examine their learning styles with respect to their overall academic success.

Method

In the study, the status and characteristics of the group were described by cross-sectional survey (Fraenkel & Wallen, 2008). Some spesific caracteristics of sample was considered and the sample group was determined to ensure that it was representative of the universe of research (Cohen, Manion, & Morrison, 2000; Salant & Dillman, 1994). Therefore, stratified sampling and cluster sampling methods were used together (Ekiz, 2009). Data was collected from seven different sports high schools from each of seven geographical regions in Turkey (Trabzon Sports High School, Hatay Sports High School, Buca Atatürk Sports High School, Istanbul Prof. Faik Somer Sports High School, Eskişehir Educational Sports High School, Van Sports High School and Şanlıurfa Sports High School), and from each grade level (9-10-11 and 12th grades) in these high schools. The research was conducted in the second semester of the 2014-2015 academic year after necessary permits were obtained (Ministry of National Education, General Directorate of Secondary Education). School administrators and teachers who would carry out the implementation were informed about the research with the process form prepared by the researchers before implementation. Data was collected through a questionnaire technique "commonly used especially for survey" before or after class hours (Erkuş, 2009).

Sample

The study group consisted of 480 sports high school students, 152 of whom (31.7%) are female and 328 of whom are (68.3%) male. 188 (39.2%) of the students are in the 9th grade, 106 (22.1%) are in the 10th grade, 97 (20.2%) are in the 11th grade and 89 (18.5%) are in the 12th grade.

Instruments

In this study *The Kolb Learning Style Inventory-3 (KLSI-3)* was developed by Kolb (1999) was used as the data collection tool (first version was developed by Kolb, Rubin, & McIntyre in 1971). In this inventory four learning styles are defined by Kolb (1999) to determine individuals' learning styles. This inventory was adapted in Turkish by Evin Gencel (2007). The inventory consists of 12 forced-choice items with 4 options. The four options in each item are scored from 1 to 4. Points given to the options result in a score ranging from 12 ≥ to ≤ 48 points. The Cronbach Alpha consistency coefficients of the learning style components were found to vary from .71 to .80 (n=320) in Evin Gencel's study. Internal consistency coefficient (Cronbach Alpha) of learning styles components are between .76 and .85 (concrete experience .80; reflective observation .76; abstract conceptualization .83; active experimentation .79; abstract conceptualization-concrete experience .85; active experimentation-reflective observation .82) in this study (n=480). The *overall academic success* of the participants was determined based on their grade point average at the end of the first semester.

Statistical Analysis

Data was analyzed by SPSS 22 statistical software using χ^2 (Chi-Square) test, one-way analysis of variance (ANOVA) and the Tukey's multiple comparison test.

Results

According to the research results 190 (39.5%) of the participants had diverging learning style, 103 (21.5%) assimilating learning style, 103 (21.5%) converging learning style and 84 (17.5%) accommodating learning style. The one sample χ2 test result was showed that the difference between learning styles was statistically significant $\chi^2(3) = 56.45$, $p < .01$. As a result, sports high school students had mainly diverging learning style which was followed by assimilating and converging learning styles in equal rates while the least preferred learning style was accommodating (Table 1).

Table 1. Learning Styles of Sports High School Students

Learning Styles	n	%
Diverging	190	39.5
Assimilating	103	21.5
Converging	103	21.5
Accommodating	84	17.5
Total	480	100

$\chi^2 = 56.45$, $df = 3$, $p = .00$

Table 2 shows the descriptive statistics for the overall academic success of sports high school students and Table 3 shows the results of ANOVA for their learning styles. Analysis of variance showed that the effect of learning styles on overall academic success was significant F (3, 476) = 3.36, $p = .02$. In other words, the overall academic success of sports high school students varies by their learning style. According to the results of the Tukey HSD test conducted to test between which groups the overall academic success of students differs, the general academic average (M = 69.2) of the students with converging learning style was higher that (M = 64.69) of the students with diverging learning style.

Table 2. Means and Standard Deviations on the Measure of Overall Academic Success as a Function of Learning Styles in Sports High School Students

Learning Styles		Overall Academic Success Score	
	n	M	SD
Diverging	190	64.69	12.65
Assimilating	103	65.70	12.02
Converging	103	69.20	10.27
Accommodating	84	66.12	10.77

Note. The maximum score is 100.

Table 3. One-way Analysis of Variance of Overall Academic Success by Learning Styles

Source	*df*	SS	MS	F	p
Between Groups	3	1383.76	461.25	3.36	.02*
Within Groups	476	65349.49	137.29		
Total	479	66733.25			

*$p < .05$.

Discussion

Regarding the first purpose of the study, it was determined that the proportion of students with a diverging learning style in sports high schools was high in this study. Students with accommodating learning style had the lowest rate. Considering the literature related to the learning styles in physical education, studies on learning styles of students in higher education (Alemdağ & Öncü, 2015; Çelik & Şahin, 2011; Ristori et al., 2011; Yalız & Erişti, 2010) and of students athletes (Alemdağ et al., 2016) showed that students' learning styles mainly included assimilating and diverging learning styles while accommodating learning style is the least preferred one. Previous studies on mountaineers (Bektaş, 2013) and on academics working in a sports college (Çağlayan, 2011) also indicated that accommodating was the least preferred learning style in the groups. The fact that the sample groups consisted of sportsmen may be related to the similarity of the results in these studies. As the percentage of students with diverging learning style is higher in sports high schools, it seems useful to know the characteristics of this learning style. Thus, when theoretically considered, individuals with diverging modified learning style are good at seeing concrete situations in many different ways and they have a broad cultural interest, like to collect information and perform better in situations such as "brainstorming" which requires producing ideas. It should also be noted that they like to work in groups in formal education settings, to listen open-mindedly, and to receive personal feedback (Kolb & Kolb, 2005). Students in sport high schools should be given more care especially for practice lesson due to their physical and mental predispositions. Based on the general features of diverging learning style, it will be more appropriate to focus on group work during the practice lessons. Their active participation to the group work is also important for their social and emotional development. In addition to group work, giving constant feedback during sporting applications will be appropriate for students with diverging learning style. This will make it easier to apply sporting skills and remember these skills later.

In relation to the second purpose of the study, the overall academic success of students was examined in terms of learning styles. Although there is a relationship between academic success and learning styles in some studies (Atkinson, 1998; Avsec & Szewczyk-Zakrzewska, 2017; Freiberg-Hoffmann, Stover, & Donis, 2017; Hernández-Torrano, Ali, & Chan, 2017; Ross, Drysdale, & Schulz, 2001; Sapancı, 2014; Yılmazel, Büyükkayacı Duman, & Başçı, 2015), the purpose of the present study to examine academic success in not to reveal which learning style or cognitive style is more useful but rather to make a prediction about the relationship between the teacher and the learner. As it is stated in the literature, higher academic success is achieved in programs designed based on learning styles (Birrell et al., 1985; Burns et al., 1998; Fan et al., 2015; Gökalp, 2013; Hein & Budny, 2000; Horton & Oakland, 1997; Komarraju et al., 2011; Özgen & Alkan, 2014; Reynolds & Gerstein, 1992; Uzuntiryaki, 2007; Yazıcılar & Güven, 2009). In this study, the average of general academic grade point of the students with converging learning style are higher than the students with other learning style. Even though students' dominant learning style is diverging, the higher academic averages of the students with converging learning style may mean that the program is conducted without considering learning styles. It would be more appropriate if the research findings were interpreted as follows: learners with converging learning style do not achieve higher academic success; however, teachers give classes more in accordance with the learning characteristics of students with converging learning styles. Given the data from the seven geographical regions in Turkey, the premises seem to strongly support the research result.

Conclusion

To sum up, this study has two important results. Firstly, most of the students studying in sport high schools in Turkey have diverging learning style. Secondly and the most important one is that although the dominant learning style of the students is seen as diverging learning style, it has been found out that general academic success levels are lower than academic success of students who have other learning styles. Students with converging learning style have the highest overall academic success.

One of the most important actors in the implementation of the new approach (constructivist approach) is teachers; however, the main role belongs to students and the first thing to do is to know the learning characteristics of students. It is possible for this new approach to completely yield its outcomes only when teachers know their students well and act in accordance with their learning characteristics.

Suggestions

Although students with diverging learning style in sports high schools are more dominant, the overall academic success of such students is lower. Accordingly, it seems appropriate not to neglecting students with diverging learning style in sports high schools and to care to give courses in accordance with their learning characteristics. However, although the number of students with a particular learning style is high, the presence of students with different learning characteristics should not be overlooked since each student can have more or less the characteristics of other learning styles. Academic success will occur naturally in learning settings designed based on students' learning characteristics. It is a priority for the research results to be communicated to the teachers through in-service training and to raise the awareness of the teachers.

Further studies may examine whether classes in sports high schools are really given in accordance with the learning characteristics of students who have mainly *converging* learning style as expected in this study. A qualitative approach may be appropriate for such studies. If this can be determined, more appropriate measures can be taken with respect to the education of sports high school students. The fact that learning styles are examined solely in terms of academic success seems to be a limitation this study. Therefore, further studies can be planned to deal with variables thought to be related to the learning styles of sports high school students. It would also be appropriate to design longitudinal studies on similar groups for researchers who think that learning styles are related to *process*.

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