Perceived Self-Competence of Youths with Visual Impairment in the Expanded Core Curriculum Skills

Görme Yetersizliği Olan Lise Öğrencilerinin Genişletilmiş Çekirdek Müfredat Becerileri ile İlgili Öz Yeterlilik Düzeyleri

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Abstract
The purpose of this study was to evaluate the perceived self-competence of youths with visual impairment in Turkey in the Expanded Core Curriculum (ECC) areas. To examine how youths with visual impairment perceive their self-competence within the nine ECC areas, an ECC screening tool developed by the Iowa Department of Education was adapted into a five-point Likert-type scale (ranging from 1 = *strongly disagree* to 5 = *strongly agree*). Participants were 118 high school students with visual impairment across Turkey. Statistical analysis procedures included descriptive and nonparametric methods. The descriptive statistics were used to determine how participants perceive their competences in the nine ECC areas. The Mann-Whitney *U* test was used to compare the differences between the mean ranks of self-competence levels within the independent groups. Gender, grade level, and socio-economic level were the variables that evidenced significant differences ($p < .05$) among the participants' self-competence levels in the ECC areas of independent living, career education, orientation and mobility (O&M), recreational and leisure skills. The findings demonstrated that some demographic variables may be considered as possible factors contributing to perceived self-competence of youths with visual impairment. As one of the earliest studies relating to ECC skills of youth with vision impairment in Turkey, practitioners may find value in the construct of Likert-type scale to measure the perceived self-competence of youths with visual impairment in the ECC areas.

Keywords: *Expanded Core Curriculum, self-competence, visual impairment.*

Öz
Bu araştırmanın amacı görme yetersizliği olan lise öğrencilerinin Genişletilmiş Çekirdek Müfredat (GÇM) alanlarındaki öz yeterlilik düzeylerini belirlemektir. Görme yetersizliği olan lise öğrencilerinin GÇM'nin dokuz beceri alanında öz yeterliklerini nasıl algıladıklarını incelemek için ABD'nin Iowa Eyaleti Eğitim Bakanlığı tarafından geliştirilen GÇM tarama aracı 5'li Likert ölçeğine uyarlanmıştır (1=hiç katılmıyorum, …, 5= tamamen katılıyorum). Türkiye genelinde görme yetersizliği olan 118 lise öğrencisi (15 ile 19 yaş arası) çalışmaya katılmıştır. Çalışmanın verileri nicel veri çözümleme tekniklerinden betimleyici analiz ve parametrik olmayan yöntemlerle analiz edilmiştir. Betimsel istatistik katılımcıların GÇM'nin dokuz beceri alanında kendi yeterliliklerini nasıl algıladıklarını belirlemek için kullanılırken, bağımsız gruplar içindeki öz yeterlilik düzeylerinin sıra ortalamaları arasındaki farkları karşılaştırmak için Mann-Whitney *U* testi kullanılmıştır. Katılımcıların cinsiyetleri, sınıf düzeyleri ve sosyo-ekonomik düzeyleri ile GÇM'nin üç alanındaki öz yeterlilik düzeyleri (bağımsız yaşam, kariyer eğitimi, bağımsız hareket ve boş zaman etkinlikleri) arasında anlamlı farklılık bulunmuştur ($p < .05$). Çalışmanın bulguları bazı demografik özelliklerin görme yetersizliği olan öğrencilerin GÇM alanındaki öz yeterliliğini etkileyebileceğini ortaya çıkarmıştır. Türkiye'de görme yetersizliği olan öğrencilerin GÇM becerileri ile ilgili alanda yapılan ilk çalışmalardan biri olan bu araştırmada kullanılan tarama aracını öğretmenler/eğitimciler görme yetersizliği olan öğrencilerin GÇM ile ilgili yeterliliklerini belirlerken kullanabilirler.

Anahtar Sözcükler: *Genişletilmiş Çekirdek Müfredat, öz yeterlilik, görme yetersizliği.*

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Introduction

The literature widely acknowledged that children and youths with visual impairment (i.e., who are blind and have low vision) need to learn additional skills within the scope of the Expanded Core Curriculum (ECC) (i.e. orientation and mobility, assistive technology, recreation and leisure, self-determination, independent living skills, social interaction skills, compensatory skills, career education, sensory efficiency) to access the general education curriculum (Hatlen, 1996; Lewis & Allman, 2014; Sapp & Hatlen, 2010). Several studies have highlighted the value to students with vision impairment of acquiring skills in the ECC content areas, which include compensatory access, independent living, orientation and mobility (O&M), assistive technology, recreational and leisure, sensory efficiency, social interaction, career education, and self-determination skills. For example, teaching independent living and self-determination skills were found to be strong predictors for attending a postsecondary institution or finding employment by individuals with visual impairment (Wolffe & Kelly, 2011). Similarly, a study by Douglas and Hewett (2014), which involved interviews with 70 youths with visual impairment in the UK, suggested that teaching ECC skills can maximize the independence and readiness for employment. As another example, McDonnall and Crudden (2009) investigated factors affecting successful employment and their relation to ECC areas. Self-determination skills and ability to use assistive technology were found to be significantly associated with employment for transition-age youths with visual impairment.

In fact, receiving education in the ECC content areas may not only increase the level of independence and readiness of individuals with visual impairment for employment but also make a considerable impact on their perceived self-competence. As Valiente and their colleagues (2008) stated, children with high perceived self-competence tend to exert more effort and feel more intrinsically motivated towards their goals. In this context, it may well be argued that high perceived self-competence in the ECC content areas can help children and youths with visual impairment to identify their strengths and weaknesses and reach their full potential in adulthood.

However, the relevant literature illustrated that no single study has examined the perceived self-competence of youths with visual impairment in *all* ECC content areas, while only a limited number of studies have investigated the self-competence of children and youths with visual impairment in relation to the ECC skills (e.g., Robinson & Lieberman, 2004; Shapiro et al. 2005; Zhou et al. 2013). Therefore, this study aimed to contribute to the literature by reporting the perceived self-competence of youths with visual impairment in nine ECC content areas in Turkey. It was also considered that investigating how youths with visual impairment perceive their competence within the ECC content areas would provide valuable insights for the Turkish context. Since the ECC is not formally recognized and included in the Turkish education system (Islek, 2017, p. 52), it was assumed that this study may provide useful insights for implementing the ECC in Turkey by emphasizing the ECC content areas that need more attention.

Considering the highlighted positive outcomes of having the ECC skills of youths with visual impairment in the literature (e.g., McDonnall &Crudden, 2009; Douglas & Hewett, 2014; Wolffe & Kelly, 2011), perhaps the most critical time for feeling self-competent in the ECC skills is at high school level because youths with visual impairment will be looking for employment opportunities or considering pursuit of an undergraduate education at postsecondary institutions after graduation. Therefore, high school students with visual impairment (aged 15-19) were targeted to be participants in the study. Accordingly, the following research questions were investigated:

1. How do high school students with visual impairment in Turkey rate their self-competence levels (i.e., their views about their skills) in the ECC content areas?
2. Do perceived self-competence levels of the participants differ based on their demographic characteristics, including gender, grade level, parents' education levels, school category (i.e., general education and special education), and school type (i.e., private and public)?

Method

Procedures

This study utilized a quantitative research design to seek responses to the research questions through a survey method which helps researchers to gather numerical data representing population's attitudes or opinions about a specific topic (Creswell & Creswell, 2018). A purposive sampling strategy (Cohen et al., 2017) was used to recruit high school students with visual impairment. To be included in this study, participants had to meet these following criteria: (a) identified with a visual impairment and (b) enrolled in a public or private high school in Turkey. High school students who were registered as visually impaired were identified through the Ministry of National Education, a government entity responsible for the supervision of public and private educational system in Turkey. Then, ethics clearance and permission to access the student population were obtained from the Ethical Board of Educational Research and Development Directorate of the Ministry of National Education in Ankara, Turkey. Following the ethical clearance, 231 school principals who had at least one enrolled student with visual impairment in their high school were contacted through email. The school principals were asked to send the parental consent form, which included information about the study, to the parents of those students. The school principals were contacted again to send the survey link and the cover letter (which included the purpose of the study and a statement concerning informed consent of the participants) electronically via survey software Qualtrics.com to students whose parents signed the consent form. Prior to sending the survey link, the school principals were also reminded to provide an assistant, a screen reader, or a different interface to ensure the access of those students. A total of 142 students responded to the survey but only 118 of them completed.

Participants

Participants in this study included 118 high school students, of whom 73 were females and 45 were males. Nearly half of the participants reported that they were in the final year of their high school education (i.e., grade 12). Only fourteen percent of participants reported that they were in preparation class of high school education (see Table 1).

A majority of the participants were enrolled in general education schools alongside their sighted peers. Only fifteen percent of the participants attended special education schools designed for students with visual impairment, which can be considered as either public or private schools. Participants were asked to report whether they were enrolled in public or private schools. Overall, sixty-one percent of the participants indicated that they attended public schools, and thirty-nine percent attended private schools. Additionally, they were asked to report the condition of their visual impairment (i.e., totally blind and low vision). Only twenty-two percent of the participants reported that they identified themselves as totally blind individuals. Most participants indicated that they described themselves as individuals with low vision. Regarding parents' education

levels, among the participants' mothers, almost half of them had earned a degree from an elementary school. When compared to the mothers' education level, the fathers were more evenly distributed and at least half of them had completed a degree in high school or above (see Table 1).

Table 1. Demographic Characteristics of the Participants (n = 118)

Variable	F	%
Gender		
Female	73	62
Male	45	38
Grade level		
Preparation class	16	14
Grade 9	13	11
Grade 10	21	18
Grade 11	20	17
Grade 12	48	41
School category		
Special education	17	15
General education	101	85
School type		
Public	60	51
Private	58	49
Father education level		
No formal schooling	3	3
Elementary school	31	26
Middle school	23	19
High school	32	27
College	24	20
Graduate School	5	4
Mother education level		
No formal schooling	11	9
Elementary school	50	42
Middle school	18	15
High school	26	22
College	12	10
Graduate School	1	1
Level of visual functioning		
Totally blind	26	22
Low vision	92	78

Instrumentation

A five-point Likert-type scale was created to collect the opinions of high school students with visual impairment regarding their competencies in the ECC content areas. The Likert-type scale was adapted from an ECC screening tool of the Iowa Department of Education for children with visual impairment (Sapp & Iowa ECC Resource Team, 2006). Dr. Sapp's permission was received through email to use the screening tool for research purposes. The tool was translated into Turkish by two of the authors separately. Then, they compared their translations in order to select the most convenient explanations of each item of the tool. The items in the screening tool were then transformed into a five-point Likert-type scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Statements such as "I am good at eating/food management" and "I am able to use public transport" were included. At this stage, an expert review was obtained from a specialist working in the area of visual impairment education. He examined the translation of each statement and adjusted some of the items to the Turkish education context. His assessment of the

Likert-type scale strengthened the face and content validity of the instrument (Ruel et al. 2016).

The final survey consisted of six demographic questions and 97 Likert-type scale questions. Then, the Likert-type questions were reduced to 75 considering their compatibility with students both who are totally blind and have low vision. The demographic questions included gender, grade level, school category (i.e., general education and special education school), school type (i.e., private and public school), parents' education levels, and level of visual functioning (i.e., totally blind and low vision). The total number of questions for ECC content areas ranged from 8 to 12: compensatory access (8); career education (8); independent living (8); O&M (8); recreational and leisure (8); self-determination (11); social interaction (6); technology (6); and sensory efficiency (12). Prior to data collection, the Likert-type scale was pilot tested by a person with visual impairment via Job Access with Speech screen reader software. The pilot test provided an opportunity to make the wording more precise and optimize the accessibility of the survey in terms of text, color, contrast, and design.

Data Analysis

Data was exported from Qualtrics.com to use in the SPSS statistical software for analysis. The statistical analysis process consisted of descriptive and nonparametric methods. Median values of each item were calculated and then averaged to create a composite score for each ECC content area. The composite scores reduced the potential for information overload and allowed the presentation of the data more concisely. The composite scores became the outcome of this study. The Mann-Whitney *U* test was used to compare the findings based on gender, grade level, parents' education levels, school type, and school category. This test was used as a nonparametric alternative to the independent *t*-test (McKnight & Najab, 2010). The alpha value was set a priori at .05. During data analysis, whenever a statistical significance was found between the comparisons of two groups, the results were reported in relation to the research questions. Cronbach's and split-half reliability statistics were used to quantify the similarity of responses between items to represent an outcome construct for measuring the internal consistency and reliability (Portney & Watkins, 2009). Participants' 118 responses for 75 questions showed a Cronbach's alpha of .97 and a split-half Spearman-Brown coefficient of .87 score which indicated strong internal construct reliability.

Results

Research Question 1

The participants were asked to rate their self-competence levels in the nine ECC content areas. Descriptive statistics were used to determine participants' levels of self-competences in each ECC area. The results illustrated that participants seemed to rate their self-competences slightly lower in the areas of compensatory access (*Mdn* = 4.00; *SD* = .71) and technology skills (*Mdn* = 4.00; *SD* = .67) compared to the other areas, including career education (*Mdn* = 5.00; *SD* = 1.13), independent living (*Mdn* = 5.00; *SD* = 1.29), O&M (*Mdn* = 5.00; *SD* = 1.17), recreational & leisure skills (*Mdn* = 5.00; *SD* = 1.14), self-determination (*Mdn* = 5.00; *SD* = .93), social interaction (*Mdn* = 5.00; *SD* = .95), and sensory-efficiency skills (*Mdn* = 5.00; *SD* = .87). Since the self-competence level of participants was slightly lower compared to the other areas, further analysis was conducted to investigate item contents in these two areas.

Descriptive statistics illustrated the specific items that participants rated slightly lower in the compensatory access and technologic skills. As seen in Table 2, less than half of participants rated their self-competence at a high or very high level in scientific notation and use of charts, graphs, and maps relating to the compensatory access skills. Descriptive statics also showed that participants rated their competences slightly lower in relation to technology skills. For example, nearly half of them rated their self-competence at a high or very high level in the use/management of electronic texts (see Table 2).

Table 2. Participants' Lowest Ratings for ECC Skills (N = 118)

ECC areas					Responses rated 4 or 5	
	Item Contents	Mean	Median	SD	n	%
Compensatory access	Communication & type	3.35	4.00	.90	62	53
	Calculator	3.77	4.00	1.14	69	59
	Abacus	3.70	4.00	1.10	72	61
	Listening skills	3.80	4.00	.64	95	81
	Study & reference	3.56	4.00	.85	74	63
	Use of charts, graphs, and maps	3.32	3.00	1.21	53	45
	Scientific notation	3.27	3.00	1.08	49	42
	Music notation	4.03	5.00	1.27	76	64
Technology	Computer	3.56	4.00	.79	73	62
	Keyboarding	3.49	4.00	.91	72	61
	Use of assistive technology (e.g., screen reader, screen enlargement, voice output technology)	3.54	4.00	1.09	73	62
	Managing/securing equipment	3.62	4.00	.73	80	68
	Use/management of electronic texts	3.37	4.00	.95	60	51
	Use of mobile apps	3.65	4.00	1.04	78	66

Note. ECC = Expanded Core Curriculum

Research Question 2

The second research question targeted the differences in self-competence based on gender, grade level, parents' education levels, school category (i.e., general and special education school), and school type (i.e., private and public school). As illustrated in Table 2, the female participants reported higher levels of self-competence compared to the male participants in the areas of career education (z = -2.278, p < .05) and independent living skills (z = -2.015, p < .05). In the career education area, the mean rank for female students was 64.14 and for male students was 51.97. Similarly, in the independent living skills area, the mean rank for female participants was 63.69 and for male participants was 52.70.

Considering that skills, knowledge, and attitudes relating to the ECC develop gradually over time (Lewis & Allman, 2014), self-competences of participants who are in the final grade of high school education were considered to be different than other participants who are in lower grades. Therefore, in order to determine differences in self-competence based on grade level, the level of self-competences of participants who are in grade 12 and participants who are in lower grades (i.e., preparation class, grade 9, 10, and 11) were compared. Participants who are in grade 12 reported significantly higher levels of self-competence compared to other participants in the areas of O&M (z = -3.294, p < .05) and recreation, and leisure skills (z = -1.998, p < .05). The mean rank for grade 12 students was 71.04, and for those who are in below grade levels was 51.59 in O&M skills.

Likewise, the mean rank for grade 12 students was 66.05 and for other participants was 55.01 in the recreation and leisure skills area.

Also, the differences between the self-competence levels of participants who attended private schools and public schools were analyzed. The high school students with visual impairment who attended private schools (mean rank = 65.97) reported a higher level of self-competence than those who attended public schools (mean rank = 52.81) in the area of independent living skills (See Table 3).

Table 3. Results of the Mann-Whitney Statistical Test (N = 118)

Variable	ECC areas	Statistical test			
		Mann-Whitney *U*	Wilcoxon *W*	*z*	Assumption significance (two tailed)
Gender	Career education	1303.5	2338.5	-2.278	.023
	Independent living	1336.5	2371.5	-2.015	.044
Grade level	Recreation & leisure	1365.5	3850.5	-1.998	.046
	Orientation & mobility	1126.0	3611.0	-3.294	.001
School type	Independent living	1352.0	3063.0	-2.483	.013

Note. Only statistically significant values ($p < .05$) are presented on this table. ECC = Expanded Core Curriculum

It was also investigated whether there were differences between parents' education levels and the participants' self-competence in nine of the ECC areas, but no significant difference ($p > .05$) was found in this context. Similarly, further analysis between groups of high school students based on school category did not reveal any significance regarding mean ranks in the ECC areas.

Discussion

This study investigated the perceived self-competence of high school students with visual impairment in the ECC content areas in Turkey. The results shed some light on several questions both at local and international levels. First, the findings of rated ECC areas among youths with visual impairment provided useful insights for the Turkish context. For example, the participants rated their self-competence scores slightly lower in the areas of compensatory access and technology skills compared to the other ECC content areas. The low scores in these areas may be considered as a lack of appropriate formal instruction in the ECC areas in Turkey. Thus, a study by Akbayrak (2019) indicated that teachers working with students with visual impairment mostly conceptualized their roles as providing access to curriculum rather than developing independence of students in Turkey. Considering the ECC is not formally recognized and included in Turkey (Islek, 2017), it may well be argued that students with visual impairment is required to be provided with opportunities to develop and promote their ECC skills in schools.

Similarly, the low scores in technology skills suggest a lack of fundamental skills of students with visual impairment to access online information through assistive technology devices designed for individuals with visual impairment. This finding may be related to a lack of systematic training in assistive technology skills for children and youths with visual impairment, as indicated in the study of Akbayrak and Douglas (2022), in which they examined the roles of teachers working with students with visual impairment in Turkey. Given that Zhou et al. (2013) found that youths with visual impairment who self-reported lower competence in assistive technology skills were less likely to be employed, the results reported here the need for implementing systematic

training to develop assistive technology skills for children and youths with visual impairment in Turkey.

The study also provided valuable insights into the perceptions of students with visual impairment that are applicable more broadly than the Turkish context. The findings indicated the influence of some demographic characteristics of youths with visual impairment on their perceived self-competence. For instance, the female students reported higher self-competence in career education and independent living skills compared to the male students. The female participants seemed to believe that they can identify educational service options, explore options for career programming, and they can manage dressing, personal hygiene, and time concepts better than male participants. Similar to the current findings, gender was considered as an important variable in the study of Wei and Marder (2012), in which they found higher self-esteem and self-concept scores in female students with visual impairment than male students with visual impairment in these two areas. As well as gender, the findings illustrated that the grade level of students with visual impairment may influence their self-competences. The participants in this study who were in the final year of their high school education reported that they felt more competent in O&M and recreational and leisure skills compared to the participants who were in lower grade levels. As Shapiro et al. (2005) stated, the perceived competence of children with visual impairment on differentiation and judgment of their performance tends to improve with age. Therefore, it may well be argued that as youths with visual impairment get older, they feel more competent about their ECC skills.

Assuming that parents of youths who enrolled in private schools may have upper income level compared to youths who enrolled in public schools, the results indicated that socio-economic level may be considered as a variable that impacts the self-competence level of youths with visual impairment. This was because the participants who enrolled in private schools reported higher self-competence on average in all areas of the ECC than those enrolled in public schools. In particular, the results showed significant differences in self-competence scores in the independent living skills area, such as dressing, food management, personal hygiene, and time concepts in these two groups. Therefore, the findings suggest that socio-economic background may influence perceived self-competence scores of students with visual impairment in the ECC areas. The findings of Kotb et al. (2011) suggested a similar influence. They found that children with visual impairment from higher socio-economic backgrounds had a higher quality of life and self-esteem than their peers with visual impairment from lower socio-economic backgrounds. Consequently, the findings provided insights into possible variables, including gender, grade level, and socio-economic level that may influence on the self-competence of youths with visual impairment. However, there are so many factors not discussed yet such as students' willingness to learn ECC skills, teacher training in the ECC skills, which might have an impact on the students' perceived self-competence. Thus, the results of this study should be interpreted cautiously.

Limitations

The findings provided evidence of how high school students with visual impairment in Turkey perceive their competence in the ECC areas. Therefore, investigating the perceived self-competence of youths with visual impairment in other countries may produce different results. Furthermore, this study used the method of self-report for data collection through utilizing the Likert-type scale. Some individuals may like to avoid extreme poles at each end of the continuum of the rating scales (Cohen et al., 2017), which

could lead to the possibility of a measuring bias in perceived self-competence levels. For this reason, the reported level of self-competence of the participants may not indicate the "true" level of their competence in the ECC areas.

This study also has some limitations in terms of the representativeness of the participants. The number of participants with total blindness (n = 26) were considerably lower compared to the participants with low vision (n = 92). This study, therefore, presented a limitation in the level of visual functioning ratio, which may impact the generalizability of the findings to the larger society.

Implications

Collecting and analyzing data in a relatively unexplored area may be potentially beneficial for developing effective self-reporting assessment tools for individuals with visual impairment. Since there is no study found in the literature investigating perceived self-competence of youths with visual impairment in all the ECC areas, this study offered a methodological approach for researchers and practitioners who wish to evaluate how youths with visual impairment perceive themselves in relation to the ECC skills.

The results of the study also revealed that youths with visual impairment in Turkey perceive themselves lower self-competent in some of the ECC areas, including compensatory access and technology skills. Future research may investigate the reasons for low perceived skills in those areas among youths with visual impairment and reveal the strategies that teachers would use to impact the ECC skills.

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