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Exploring Digital Literacy Impact: Unveiling the Dynamics of Student Success in Primary School Environments

Murat Tezer*

Prof. Dr., Mathematics Education Department, Near East University, Nicosia, 99138, Northern Cyprus, https://orcid.org/0000-0002-8312-9162

Kıymet Alioğlu Malatyalı

B. A, Ministry of Education. Nicosia, 99010, Northern Cyprus, https://orcid.org/0009-0001-5462-3567

Canan Nurçin Sönmez

B. A, Ministry of Education. Nicosia, 99010, Northern Cyprus, https://orcid.org/0009-0005-6359-965X

Ceren Korkmaz Abiş

B. A, Ministry of Education. Nicosia, 99010, Northern Cyprus, https://orcid.org/0009-0007-5182-5239

Serdal Işıktaş

Assoc. Prof. Dr.,Department of Education Programs and Training, Cyprus University of Health and Social Sciences, Northern Cyprus, https://orcid.org/0000-0001-7678-0494

Seniha Boranhan Marangoz

B. A., Ministry of Education. Nicosia, 99010, Northern Cyprus, https://orcid.org/0009-0007-2926-9184

***Correspondence email:** *murat.tezer@neu.edu.tr.*

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Abstract: The primary aim of this study was to evaluate the relationship between digital literacy and students' perceptions of success in primary school, with a specific focus on fourth and fifth-grade levels. The findings may provide crucial insights to inform educational policies and enhance students' perceptions of success. The research examined this relationship using the relational survey model. Using a population of 6733 students in primary schools in Northern Cyprus, a survey consisting of "Personal information form, Digital Literacy Scale for Primary School Students, and Perception of Success Scale (DLSPSS)" was applied to 400 students by applying a convenient sampling method. The obtained data showed that students' Digital Literacy Levels (DLL) and the academic success perceptions were high. The study revealed that 5th-grade students, aged eleven, exhibited a higher digital literacy level compared to 4th-grade students. However, interestingly, the 5th-grade students' perception of success was found to be lower in comparison. No significant relationships were found between DLL and academic success perceptions. These findings indicate that education policies should focus on improving digital literacy skills and developing individualised strategies to improve students' perceptions of success. The practical significance of this study is that it provides valuable insights for educators, policymakers, and parents in understanding the digital literacy level and academic success perceptions of primary school students. By identifying the higher academic success perceptions among female students, educators can develop strategies to promote similar perceptions among their male counterparts. Additionally, the findings suggest that efforts should be made to enhance the digital literacy level of younger students, particularly 10-year-olds, to improve their academic success perceptions.

Keywords: digital literacy, academic success, education, perception of success, technology, primary school

Introduction

The timeframe of the twenty-first century can be characterised by rapid change and transformation. The swift transformation and progress have resulted in heightened competition. The level of technological progress and the expansion of usage areas increase the value of digital literacy in educational organisations. When digital literacy is examined in the entire field, it is generally observed that studies on this subject focus on teachers and administrators (Kaya, 2020; Talan & Aktürk, 2021). However, the existing literature lacks comprehensive research on scales to determine the digital literacy of students who are studying at primary schools.

Digital Literacy and Perception of Success

Gilster first introduced the term digital literacy in 1997. This term implied that the individual is knowledgeable and skilled in exploring digital resources and using information. According to the author, digital literacy included the elements of 'desire, attitude, and ability' for the individual to perform activities such as researching, analysing, evaluating, generating new ideas, and sharing information using digital technology and communication tools (Djawad et al., 2018).

The definition of digital literacy was given by Iordache et al. in 2017 as the personal skills to define resource targets by using digital technologies, accessing and manage them, ensuring their integration, analysing and synthesizing digital resources after evaluating them, combining new information with old ones, and communicating with other people. They expressed it as having the awareness of using tools and opportunities appropriately and having the attitude and skills towards this.

According to Porat et al. (2018), the ability to find information, to examine its reliability, be effective in communication, and create original content must be included in the digital literacy.

Consistent viewpoints emerge regarding digital literacy when different definitions are explored. Proficiency in utilising digital tools within digital surroundings is a shared characteristic emphasised in these definitions. The individual's ability to evaluate, reorganise, and disseminate information in their mind by using digital content in a useful way stands out as a basic skill required by digitally literate individuals.

According to Good's (1973) perspective, academic success reflects the level of comprehension a student has in their school lessons, their ability to apply their learning effectively, and their proficiency in utilising the required knowledge and skills. A student's grades, exam performance, and other assessment tools are methods used to measure academic success. The perception of academic success refers to the point the student evaluates his success. The student's self-confidence, self-evaluation, and belief in achieving their goals are factors that affect the perception of academic success. Based on this perspective, examining the digital literacy and academic success perceptions of primary school students is important evaluating students' digital skills and success. These studies can provide insights into the correlation between students' digital literacy skills and their academic achievements.

In competitive educational environments, academic success is considered a key indicator of a student's knowledge and has emerged as a primary objective of the learning process. Mansor and Othman (2011) reveal the importance of academic success, stating that academic success represents the most effective way to measure a person's general abilities and skills.

Today's students find themselves in a technologically rich environment that includes TVs, computers tablets, and smartphones equipped with screens (Nobre et al., 2021). The prevalence of digital tools is not limited to daily life but has permeated various aspects of learning activities. Students now interact with digital tools both inside and outside of school, marking a significant shift in technology-facilitated learning and teaching methodologies (Mikre, 2011). The transition from the physical world to the digital world is also evident in education, where digital media replace traditional media and digital materials replace printed sources. While the advent of e-books has replaced traditional books, screens have also replaced notebooks and pens. This situation, which states that an educated person should also be digitally literate, shows the importance and the seriousness of the job.

Digitally literate individual also has a very important position during their education. Digital literacy at the primary school level can provide students with important skills they can use throughout their lives. Digital literacy supports primary school students' learning by effectively using digital tools, provides them with the ability to critically evaluate information in the digital environment, and increases their ability to be compatible with the technology necessary for their future education and business life (Tolentino et al., 2019). Additional research also suggests that solely emphasising digital literacy may not be enough to enhance students' academic achievements. In addition, institutions and institutes conducting academic research should not only provide students with adequate access to technology but also provide meaningful opportunities for them to actively use technology (Selwyn, 2004).

The significant progress of technology has made digitalisation an essential aspect of our daily lives (Küslü, 2022). Digital literacy skills have become a basic requirement for accessing information and communication today (Altun & Alpan, 2021). Digital literacy includes individuals' skills in searching, evaluating, creating, and sharing information in digital environments (Ogelman et al., 2022). Primary school children are in a great learning process in terms of exposure and digital technology use (Duran

& Özen, 2018). Elementary school children may often be less experienced in accessing technology. However, today many schools and families provide children with access to technology from an early age. This enables children to meet and use digital technology at an earlier age (Yamaç, 2019).

At the same time, primary school children's perception of success is also an issue that comes to the fore. The perception of success reflects the students' beliefs about their abilities and academic success (Ulubey, 2015). Studies investigating the academic success perceptions of primary school students as digitally literate individuals are extremely limited.

This article aims to evaluate the effect of digital literacy on the students' perceptions of success relationships. The findings from this study can provide important information to educators, students, and their families in order to support educational policies to improve digital literacy skills and increase students' perceptions of success. Additionally, it has the potential to enhance comprehension on the impact of incorporating digital technology into education and its effect on children's learning outcome.

Understanding the relationship between primary school students' digital literacy levels and their perceptions of academic success requires education policies to allocate more resources to digital literacy education. Due to limited research in the field, there is an opportunity to enhance students' digital literacy levels and their perceptions of academic success through further investigation. This information can help educators developing more effective strategies for students. At the same time, the research results may help emphasising the issue of digital literacy more in teacher education programs. Teachers require appropriate training and resources to effectively cultivate students' digital literacy skills. More importantly, digital literacy is a skill that is becoming increasingly important today. This research has the potential to explore the digital literacy levels and academic achievement perceptions of primary school students, thereby enabling them to acquire the necessary skills for future work and life.

Research Aim and Research Questions

The most general purpose of this research was to evaluate the effect of digital literacy on the students' perceptions of success relationships at primary school 4th and 5th-grade level. In line with the general purpose of the research, answers to the following sub-problems were also sought;

1. What is the DLL of primary school students?
2. Is there a significant difference in the DLL of primary school students among gender, age, and grade variables?
3. What are primary school students' perceptions of success?
4. Do primary school students' perceptions of success significantly differ according to gender, age, and grade variables?
5. Is there a significant correlation between the DLL of primary school students and their perception of success differ significantly?

Materials and Methods

In this study, a quantitative research phenomenon was used, considering the relational screening model as a model. A research model used to reveal the existence, direction, and size of relationships between multiple variables is called a relational survey. The primary objective is to determine if these variables undergo simultaneous changes and the magnitude of their mutual influence (Karasar, 2016).

Population and Sample

For this study, the research sample consisted of students currently studying in the 4th and 5th grades at primary schools in Northern Cyprus. These students were selected based on the target population. The research employed a convenient sampling method to select participants, and the sample size was determined using the unknown sampling method of the population. To achieve a 95% confidence interval and a 5% margin of error, it was determined that a minimum of 384 students should be interviewed. To ensure thoroughness, the survey was conducted with a slightly larger sample of 400 students. The gender, age, and grade distribution of the students included in the research are shown in Table 1.

Table 1

Socio-demographic Characteristics of Students

Variable	N	Percentage (%)
Gender		
Female	208	52.00
Male	192	48.00
Age		
10	199	49.75
11	201	50.25
Grade		
4th Grade	196	49.00
5th grade	204	51.00
Total	400	100.00

According to Table 1, 52.0% of the students were female, 48.0% were male, 49.75% were 10 years old, 50.25% are 11 years old, and 49.0% were in the 4th grade. It was determined that 51.0% of them were studying in the 5th grade.

Data Collection Tools

Data for the research study were collected using a survey form. The survey form has 3 sections: personal information, DLSPSS, and Perception of Success Scale for Primary School Students.

Personal Information Form. The first part of the survey included 3 questions to determine the gender, age, and grades of the students.

DLSPSS*:* It was developed by Şahin et al. in 2022, and was used to determine the digital literacy of students. The scale consisted of 16 questions and the answers given to the scale were scored as Disagree = 1, Undecided = 2, and Agree = 3. The scale has three sub-dimensions: “Purpose of use”, “technical knowledge”, “privacy, and security knowledge”. In general, a participant could get a minimum of 16 and a maximum of 48 points from the total of the items on the scale. If the individual received high scores on both the overall scale and its sub-dimensions, it can be concluded that they possess strong digital literacy skills. The reliability analysis test was performed for the scale and the Cronbach Alpha coefficient was found to be 0.84 (Şahin et al., 2022).

Perception of Success Scale for Primary School Students. The scale was developed by Kara and Şahin in 2019 and was applied to determine students' perceptions of success. The Perception of Success

Scale for Primary School Students was developed as a five-point Likert type consisting of 24 items. The items on the scale were scored as 5-point Likert type from 1: strongly disagree to 5: strongly agree. The scale has three subscales: “Cognitive”, “affective”, and “behavioural”, and a total score. High scores obtained from the overall Success Perception Scale for Primary School Students and its cognitive, affective, and behavioural subscales indicate that the student's perception of success is high. Reliability analysis test was performed for the scale and Cronbach Alpha coefficient was found to be 0.86 (Kara & Şahin, 2019).

Collection of Data

The survey form prepared to collect research data was applied to students using a face-to-face interview technique. Before the application, for the survey form, the necessary form was obtained from the Northern Cyprus “Ministry of National Education”, and the relevant permission document was submitted to the school principals. Before the application, a verbal notification was made to the students with the permission of the classroom teacher, and the survey forms were distributed and administered during the lesson. The average application time of the survey was 20 minutes.

Data Analysis

In the research, the data obtained from the survey forms were entered into SPSS 25.0 software and analysed in this software.

Cronbach's alpha test was conducted for the internal consistency of the answers given by primary school students to the DLSPSS and the Perception of Success Scale for Primary School Students was used in the research, and the alpha value was calculated as 0.72 for the DLSPSS and 0.88 for the Perception of Success Scale for Primary School Students.

The frequency analysis was evaluated for the distribution of primary school students according to gender, age, and grade, and the mean, standard deviation, minimum, and maximum values of the DLSPSS and the Perception of Success Scale for Primary School Students scores were shown.

To compare the scores of the DLSPSS and the Perception of Success Scale for Primary School Students according to gender, age, and grade of primary school students, the data's compatibility with normal distribution was examined by looking at the results of the Kolmogorov and Smirnov test and the skewness-kurtosis coefficients. Consequently, it was concluded that the data followed a normal distribution ($p<0.05$). In this context, a t-test was applied to compare the scores of the DLSPSS and the Perception of Success Scale for Primary School Students according to gender, age, and grade of primary school students. The correlations between the scores of the DLSPSS and the Perception of Success Scale for Primary School Students were determined by applying the Pearson test.

Results

In Table 2, the student's scores on the DLSPSS and the Perception of Success Scale for Primary School Students are demonstrated, and the students scored 33.93±5.15 points from the total DLSPSS. and these are the sub-dimensions of the scale.

It received 14.32±2.43 points for the “Purpose of use”, 10.89±2.56 points for “Technical knowledge”, and 8.73±2.03 points for “privacy and security knowledge”. Students scored 92.75±14.63 points in the total of the Perception of Success Scale for Primary School Students, 29.47±5.61 points in the “cognitive” sub-dimension, 32.76±5.18 points in the “affective” sub-dimension and it received 30.52±5.98 points in the “behavioural” sub-dimension.

Table 2

Students' Scores on the DLSPSS *and the Perception of Success Scale for Primary School Students*

	n	$\bar{x}$	s	min	max
Purpose of use	400	14.32	2.43	7	21
Technical knowledge	400	10.89	2.56	5	15
Privacy and security knowledge	400	8.73	2.03	4	12
Digital Literacy Scale	400	33.93	5.15	16	48
Cognitive	400	29.47	5.61	11th	40
Affective	400	32.76	5.18	8	40
Behavioural	400	30.52	5.98	11th	40
Perception of Success Scale	400	92.75	14.63	42	120

Table 3

Comparison of Students' DLSPSS and Perception of Success Scale for Primary School Students Scores by Gender

	Gender	n	$\bar{x}$	s	t	p
Purpose of use	Female	208	14.058	2.352	-2.215	0.027*
	Male	192	14.594	2.488		
Technical knowledge	Female	208	10.784	2.670	-0.823	0.411
	Male	192	10.995	2.442		
Privacy and Security Knowledge	Female	208	8.639	2.007	-0.928	0.354
	Male	192	8.828	2.058		
Digital Literacy Scale	Female	208	33.481	5.169	-1.822	0.069
	Male	192	34.417	5.093		
Cognitive	Female	208	30.014	5.456	2.020	0.044*
	Male	192	28.885	5.719		
Affective	Female	208	33.399	4.798	2.585	0.010*
	Male	192	32.068	5.496		
Behavioural	Female	208	30.793	5.871	0.960	0.338
	Male	192	30.219	6.098		
Perception of Success Scale	Female	208	94.207	13.983	2.082	0.038*
	Male	192	91.172	15.174		

**p<0.05*

Table 3. includes the findings concerning the comparison of students' scores on the DLSPSS and the Perception of Success Scale for Primary School Students according to gender.

There is no significant difference between the scores that students received from the total DLSPSS and the "technical knowledge", and "privacy and security knowledge" sub-dimensions according to gender (p>0.05). The difference between the scores that students received from the "purpose of use" of

the DLSPSS differs according to gender (p<0.05). Male students scored higher than the "purpose of use" on the DLSPSS. A significant difference was found between the scores that students receive from the "total", "cognitive", and "affective" sub-dimensions of the Perception of Success Scale for Primary School Students according to gender (p<0.05). Female students have higher scores in the cognitive and behavioural subscales than the total of the Perception of Success Scale for Primary School Students.

Table 4 includes independent t-test findings to compare students' scores on the DLSPSS and the Perception of Success Scale for Primary School Students by age.

Table 4

Comparison of Students' DLSPSS and Perception of Success Scale for Primary School Students Scores by Age

	Age	**n**	$\bar{x}$	**s**	**t**	**p**
Purpose of use	10 years	199	14.37	2.57	0.424	0.672
	11 years old	201	14.26	2.29		
Technical knowledge	10 years	199	10.46	2.67	-3.365	0.001*
	11 years old	201	11.31	2.38		
Privacy and Security knowledge	10 years	199	8.41	2.07	-3.149	0.002*
	11 years old	201	9.04	1.95		
Digital Literacy Scale	10 years	199	33.24	5.58	-2.703	0.007*
	11 years old	201	34.62	4.59		
Cognitive	10 years	199	30.22	5.76	2.678	0.008*
	11 years old	201	28.73	5.36		
Affective	10 years	199	32.94	5.47	0.690	0.491
	11 years old	201	32.58	4.89		
Behavioural	10 years	199	31.92	5.82	4.792	0.000*
	11 years old	201	29.13	5.82		
Perception of Success Scale	10 years	199	95.08	15,14	3.207	0.001*
	11 years old	201	90.44	13.75		

**p<0.05*

A significant difference was found between the scores obtained by the students from the total DLSPSS, "technical knowledge", and "privacy and security knowledge" sub-dimensions according to age (p <0.05). The scores of 11-year-olds in the total DLSPSS and in the" technical knowledge", as well as "privacy and security knowledge" sub-dimensions are higher.

Similarly, a significant difference was found between the scores that students received from the total score of the Perception of Success Scale for Primary School Students and the "cognitive" and "behavioural" sub-dimensions of the scale according to age (p<0.05). The scores of 10-year-old students in the total score of the Perception of Success Scale for Primary School Students are higher than in the "cognitive" and "behavioural" sub-dimensions of the scale.

Table 5

Comparison of DLSPSS and Perception of Success Scale for Primary School Students Scores According to Students' Grades

	Class	n	$\bar{x}$	s	t	p
Purpose of use	4th Grade	196	14.34	2.59	0.216	0.829
	5th grade	204	14.29	2.27		
Technical knowledge	4th Grade	196	10.44	2.68	-3.461	0.001*
	5th grade	204	11.31	2.37		
Privacy and Security knowledge	4th Grade	196	8.39	2.09	-3.344	0.001*
	5th grade	204	9.06	1.92		
Digital Literacy Scale	4th Grade	196	33.17	5.60	-2.928	0.004*
	5th grade	204	34.66	4.57		
Cognitive	4th Grade	196	30,31	5.71	2.943	0.003*
	5th grade	204	28.67	5.40		
Affective	4th Grade	196	32.97	5.49	0.811	0.418
	5th grade	204	32.55	4.87		
Behavioural	4th Grade	196	31.97	5.84	4.913	0.000*
	5th grade	204	29,12	5.79		
Perception of Success Scale	4th Grade	196	95.26	15.10	3.402	0.001*
	5th grade	204	90.34	13.77		

**p<0.05*

Table 5 includes independent t-test findings to compare students' scores on the DLSPSS and the Perception of Success Scale for Primary School Students by grade.

A significant difference was found between the scores that students received from the total DLSPSS, “technical knowledge”, and “privacy and security knowledge” sub-dimensions according to grade (p <0.05). The scores of 5th-grade students in the total DLSPSS and in the sub-dimensions of “technical knowledge”, and “privacy and security knowledge” are higher.

There is a significant difference between the scores that students received from the total of the Perception of Success Scale for Primary School Students and the “cognitive”, and “behavioural” sub-dimensions of the scale according to grade (p <0.05). The scores of 4th-grade students in the total of the Perception of Success Scale for Primary School Students and in the “cognitive”, and “behavioural” sub-dimensions of the scale are higher.

Table 6 includes the Pearson test findings for the correlations between students' scores on the DLSPSS and the Perception of Success Scale for Primary School Students.

Looking at Table 6, no significant relationship was statistically found between the students ' scores on the DLSPSS and the Perception of Success Scale for Primary School Students (p>0.05).

Table 6

Correlation of Students' Scores on the DLSPSS and the Perception of Success Scale/scores for Primary School Students

		Purpose of use	Technical knowledge	Privacy and Security Knowledge	**Digital Literacy Scale**	cognitive	affective	Behavioural	**Perception of Success Scale**
Purpose of use	r	1							
	p								
	N	400							
Technical knowledge	r	0.293	1						
	p	0.000*							
	N	400	400						
Privacy and Security Knowledge	r	0.230	0.383	1					
	p	0.000*	0.000*						
	N	400	400	400					
Digital Literacy Scale	r	0.709	0.787	0.694	1				
	p	0.000*	0.000*	0.000*					
	N	400	400	400	400				
Cognitive	r	0.018	-0.044	0.056	0.009	1			
	p	0.718	0.376	0.261	0.862				
	N	400	400	400	400	400			
Affective	r	0.029	0.053	0.083	0.073	0.614	1		
	p	0.562	0.290	0.096	0.145	0.000*			
	N	400	400	400	400	400	400		
Behavioural	r	0.009	-0.067	-0.012	-0.034	0.690	0.613	1	
	p	0.851	0.179	0.814	0.502	0.000*	0.000*		
	N	400	400	400	400	400	400	400	
Perception of Success Scale	r	0.021	-0.026	0.046	0.015	0.883	0.840	0.890	1
	p	0.674	0.608	0.356	0.758	0.000*	0.000*	0.000*	
	N	400	400	400	400	400	400	400	400

**p<0.05*

Discussion

In this study, students received 33.93±5.15 points from the total DLSPSS and 92.75±14.63 points from the total Perception of Success Scale for Primary School Students. This generally shows that students' digital literacy and perception of success are high. In the findings of Öztürk's (2020) research, it was observed that the students' DLL were high. In his study examining the DLL of secondary school 5th grade students, Kaya (2020) similarly found that the digital literacy of the students was at a high level. In another study conducted by Erten (2019), in parallel with other similar studies, it was concluded that students showed positive attitudes toward digital technologies. These findings show that the young generation's competence and positive attitudes towards digital literacy are at a significant

level. In the research conducted by Akyurt (2019) on fourth-grade primary school students, it was determined that the students' academic success perceptions were at a high level. Likewise, in Deringöl's (2018) research on third and fourth-grade primary school students, it was determined that the students generally exhibited moderate and very high levels of academic success. These findings show that these student groups have a positive perception of their academic success. This finding shows that students' digital literacy level and perception of success are high. By conducting a comprehensive analysis of these findings, it is possible gaining a deeper understanding of the influence of digital literacy skills on individuals' perceptions of success and attitudes. This will enable pinpointing effective strategies for enhancing digital literacy skills.

The study revealed no noteworthy disparity in the total scores achieved by male and female students on the DLSPSS, regardless of gender. Additionally, there was no significant discrepancy observed in the scores related to technical knowledge, privacy, and security. Pala and Başıbüyük (2020) and Tatlı (2018) similarly stated that gender is not an important variable in being digitally literate. However, another researcher by Kocadağ (2012) stated that there was a gender disparity in digital literacy levels, with men tending to have higher levels of digital literacy compared to women. This situation can also be interpreted as male and female students being equal in terms of technology use. In conclusion, the results of this research show that gender does not have a significant effect on digital literacy skills. However, more research is needed to examine these results more deeply and understand the impact of gender on digital literacy by taking into account different variables. There are significant differences between the total scores obtained by the students from the Perception of Success Scale for Primary School Students and the scores they received from the cognitive and behavioural subscales based on gender. Female students received higher scores in total, cognitive and behavioural subscales of this scale. This shows that female students' perception of success is generally stronger and, as stated in Öndeş's (2022) study, their academic success is higher than male students.

There were significant differences between the total score obtained from the DLSPSS and the scores obtained from the sub-dimensions of technical knowledge, privacy, and security knowledge according to the students' ages. Particularly, it was observed that the total score of 11-year-old students from the DLSPSS and the scores they received from the sub-dimensions of technical knowledge, privacy, and security knowledge were higher. In their study on primary school students, Demircan et al. (2023) found that DLL increased with increasing age. Ünlü (2022) found that individuals who started using social networks and the internet at an earlier age had higher digital literacy. These findings show that age may be an effective factor in the level of digital literacy.

Significant differences were detected between the students' total scores from the Perception of Success Scale for Primary School Students and their scores from the cognitive and behavioural sub-dimensions of the scale, depending on their age. In this context, the total score obtained by 10-year-old students from the Perception of Success Scale for Primary School Students was determined to be higher than the scores they received from the cognitive and behavioural sub-dimensions of the scale. According to this finding, the results of this research show that students' ages may have an impact on their perception of success and digital literacy skills. By conducting a thorough analysis of these findings, it becomes crucial to gain a deeper comprehension of how age influences both digital literacy abilities and perceptions of achievement. It is imperative to then devise educational programs that cater to specific age groups accordingly.

In this research, significant differences were determined between the total score obtained by the students from the DLSPSS and the scores they received from the sub-dimensions of technical knowledge, privacy, and security knowledge, according to their grade level. Particularly, the findings obtained from

the DLSPSS and the averages obtained for the technical knowledge, privacy, and security knowledge dimensions of students in the 5th grade were found to be higher. In the study of Dönmez (2019), it was stated that as the grade level of students increases, their digital literacy increases. However, in another study by Demircan et al. (2023), it was found that there were no differences in the digital literacy of primary school students according to grade level.

In this study, no statistically significant relationship was observed between the student's scores on the DLSPSS and the Perception of Success Scale for Primary School Students. In a study conducted by Öndeş (2022), no significant relationship between digital literacy, technology use, and academic success among fourth-grade primary school students was found. Similarly, in a study conducted by Çiner (2022), no significant correlational relationship between technology use and digital skills and academic success was found. However, Talan (2020) stated in his study that if the academic success level of students is high then the digital literacy level of the students is also high. In a meta-analysis study conducted by Lei et al. (2021), it was determined that there was a positive significant relationship between information literacy and academic success. Yustika and Iswati (2020), in their research examining the role of digital literacy in online education, stated that students with higher DLL showed higher academic performance. This diversity shows the complexity of the relationship between students' digital literacy level and academic achievement and that various factors can affect this relationship.

Considering the sample used in this study, it is limited to teacher opinions. Moreover, in future perspective, students, school administration, and parents may also be included in the working group. Additionally, a sample from a different region or school group can be selected in future research. This study was limited to fourth and fifth-grade students. It may also be effective to conduct similar studies with different class groups at different times.

Conclusions

This research has revealed the possible correlation between primary school students' dual language learning (DLL) and their perception of academic achievement. In the light of the findings, the following conclusions were reached;

- It was determined that the DLL and academic success perceptions of all primary school students were high.
- It has been determined that the DLL of male and female students are similar, and their perception of academic success is higher in female students.
- When evaluated according to age, it was determined that the DLL of 11-year-old students was higher than those of 10-year-old students, and their perception of academic success was lower.
- It was determined that the DLL of fifth-grade students was higher than those of fourth-grade students, and their perception of success was lower.
- There were no significant relationships between the DLL of primary school 4th and 5th-grade students and their perceptions of academic success.

Again, considering the findings of this study, it may provide practical implications for educators, policymakers, and other relevant stakeholders. For example, training programs or resources can be developed in order to increase digital literacy skills. Future research may discuss these practical implications in more detail and provide practice recommendations.

Consequently, the findings of this study can inform the curriculum development process, instructional practices, and policy decisions in the educational setting. By considering the importance of digital literacy skills and their impact on students' perceptions of success, educators, and policymakers can develop more effective strategies and align the education system with the needs of the digital age.

Recommendations

Further development of the high DLL skills and perceptions of success among 4th and 5th-grade students in primary school should be prioritised. Students can be provided with interactive and student-centred educational materials to strengthen their digital literacy skills.

Gender-sensitive educational approaches can be applied to students in order to understand and support gender-based differences to increase female students' perception of academic success.

The finding that fifth-grade and 11-year-old students have high digital literacy levels, but low academic success perceptions, reveals the need to provide individualised support to students in this age group. Support programs can be created taking into account the special needs of students.

To gain a deeper understanding of the significant relationship between DLL and perceptions of academic success among 4th and 5th-grade primary school students, further research can be conducted on different student profiles and other factors at similar levels. Future studies can be conducted on larger populations. In addition, a significant relationship between DLL and academic success perceptions can be examined with the opinions of primary school teachers.

Suggestions for Future Research

According to the research findings and results, future research can be suggested as follows: for example, by conducting a longitudinal study, we can track the evolution of primary school students' digital literacy level and their perceptions of academic achievement as they advance through various grade levels and age groups. This research would offer valuable insights into how these factors develop and transform over an extended period of time. In addition, intervention-based studies can also be conducted. For example, designing and implementing interventions to improve primary school students' digital literacy levels and perceptions of academic success will provide practical strategies and approaches that educators and policymakers can use. Evaluating the effectiveness of such interventions can help identify best practices for improving students' digital literacy skills and promoting positive perceptions of academic success. In addition, it is also meaningful to conduct comparative studies between different schools or education systems to examine how the level of digital literacy and perceptions of academic success change in different contexts. Additionally, these studies can be supported by qualitative studies. For example, qualitative research such as interviews or focus groups can be conducted to gain a deeper understanding of the factors that influence students' level of digital literacy and their perception of academic success. Another study could focus on examining the influence of parental involvement on students' digital literacy levels and their perceptions of academic success. This means that more meaningful studies can be conducted by examining the impact of parental support, involvement, and access to digital resources on students' digital literacy skills and perceptions of academic success.

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