



## DEVELOPMENT OF THE 21ST CENTURY MEDIA LITERACY SKILLS SCALE, VALIDITY AND RELIABILITY STUDY

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### Abstract:

In this research, it was aimed to develop a valid and reliable scale to determine the opinions of high school students and teachers about 21st century media literacy skills. During the scale development process, an item pool of 32 items that provided content validity was created, after expert opinion, the number of items was reduced to 30 items in total, and the scale was applied to a total of 794 people for the first application of the scale development phase. The data obtained as a result of the first application were subjected to exploratory factor analysis (EFA) and reliability studies. As a result of the analysis, a three-factor scale ("Being Aware and Paying Attention", "Being Informed" and "Ability to Use Media Tools") consisting of a total of 18 items was obtained, the validity and reliability of which were ensured. To test the suitability of the factor structure of the scale, confirmatory factor analysis (CFA) was performed by applying the scale to a total of 418 people. As a result of the analysis, it was observed that the factor structure (fit index values) of the scale was within the desired reference ranges. As a result of all analysis studies of the scale, a scale consisting of 16 items in total, whose validity and reliability have been sufficiently proven, has been developed and can be applied to high school students.

**Keywords:** 21st-century skill, media literacy, scale development

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## 1. Introduction

It can be said that the most important factor in the rapid increase in science and technology in the 21st century is technological innovations in communication tools. With the development of communication tools, the impact of media on society has increased, making it even more important as a source of information and a tool of influence. Media has become an increasingly used tool to shape public opinion and share information, creating a major impact on political, cultural, and social changes. In addition, the widespread use of the Internet and smartphones has made media accessible anytime, anywhere, which has contributed to media becoming an integral part of daily life.

The concept of literacy has been associated with many different concepts and processes throughout history. These relationships reflect the evolution of humanity from the times before written communication to the present day. We can list this evolutionary development as cave walls and symbols, the emergence of writing in Egypt and Mesopotamia, the invention of the printing press, the nation-state and social literacy, and the digital revolution (İnal, 2016; Türkoğlu, 2007). All these relationships show that the concept of literacy takes different forms in an evolutionary process and that people constantly improve their knowledge and communication skills in order to adapt to their societies. Literacy has been constantly redefined and developed due to cultural, technological, and social changes.

The concept of media literacy is closely related to different disciplines and technological developments and therefore covers a large number of features (Baran, 2021). Media literacy aims to enable individuals to interact effectively with media and communication technologies and to critically evaluate information coming through these media tools. Media literacy helps individuals better understand and respond more effectively to access to information and communication in the information age. It is also a critical skill for a democratic society by enabling them to engage more consciously and effectively with social media, news, and digital information.

Media literacy refers to practicing one's own culture and learning situations, being in constant communication with people from different cultures learning the learning situations of people in these different cultures, and helping them develop skills such as creativity, teamwork, self-expression, and life skills (Bailik & Fadel, 2015). These characteristics represent a dynamic skill set of media literacy that can be adapted to many different fields and different aspects of life. By gaining these skills, individuals can act more effectively, consciously, and effectively in the information age.

Today, one of the most critical factors in raising qualified individuals is the educational environment. When designing an educational environment, determining students' personal differences and characteristics should be considered one of the most important issues (Callison & Lamb, 2004). In the beginning, the teacher should know his/her student comprehensively and create the teaching plan considering the individual characteristics of the student (Melvin, 2011). From this perspective, the teacher; Must be an instructor and trainer who has cultural, pedagogical, and professional knowledge, can

adapt the teaching environment by taking into account individual differences, and is familiar with contemporary knowledge and methods.

The most important skill expected from teachers in the twenty-first century is to guide students in developing their abilities to not only consume but also produce, differentiate, design, and control information and technology. These skills, which enable students to become qualified individuals, are often called "21st century skills". Although there are many different definitions for these skills, the most frequently used ones include skills such as creativity, communication, problem-solving, collaboration, critical thinking, decision-making, information literacy, media literacy, technology literacy, productivity, responsibility, flexibility, adaptation, leadership, and entrepreneurship. These skills are critical to helping students become successful individuals in the current business world and helpful to their communities (Ekici, Abide, Canbolat & Öztürk, 2017).

We can say that one of the most important competencies expected from teachers in our age is to raise students with 21st century media literacy. It can be said that it will be very difficult for teachers who do not have 21st century media literacy skills to raise students with these skills. Therefore, the main problem of this study is; The aim is to determine to what extent teachers have 21st Century media literacy skills and to what extent there is a difference between these skill levels and the students they teach. This study aimed to develop a valid and reliable scale to determine the opinions of high school students and teachers about 21st century media literacy skills.

When the literature is examined, it is seen that there are a limited number of 21st century media literacy skill scales. It has been observed that the scales available in the literature are studied separately for teachers and students. For this reason, there is no same media literacy scale in the literature to be applied to both teachers and students at the high school level. In this research, a new type of scale will be introduced to the literature by developing a media literacy scale with proven validity and reliability to solve the main problem ("It can be said that it will be very difficult for teachers who do not have 21st century media literacy skills to raise students with these skills").

## **2. Methods**

### **2.1 Research Design**

This research is a quantitative study conducted in the survey model, aiming to develop a scale that can be used to determine the opinions of high school students and teachers about 21st century media literacy skills. Survey-type studies are studies that aim to describe the characteristics and opinions of large participating audiences by taking a picture of the current situation. Information is collected from the masses using the answer options prepared or determined by the researcher for these studies that he aims to describe. (Fraenkel & Wallen, 2006; Wellington, 2006). This information collected from the participants is used to understand how the participants' "media", "talent", "skills", "interest or attitudes" regarding an event or issue are distributed (Büyüköztürk, Çakmak, Kılıç, Akgün, Karadeniz & Demirel 2008).

## 2.2 Research Group

The study group of the research consists of students (9th, 10th, 11th, and 12th grades) studying at Tokat Cumhuriyet Vocational and Technical Anatolian High School, Tokat Gaziosmanpaşa High School, and Tokat Private Dynamic Vocational and Technical Anatolian High School located in the central district of Tokat province between 2020 and 2023. It consists of teachers in different branches working in high education institutions in the central district of Tokat province. In accordance with the purpose of the study, typical case sampling, one of the non-random purposive sampling methods, was used for students, and convenient case sampling, one of the non-random purposive sampling methods, was used for teachers (Büyüköztürk, Çakmak Kılıç, Akgün, Karadeniz & Demirel, 2008).

In Table 1 and Table 2, the statistical information of the students participating in the research according to their gender and the teachers' gender and seniority variables are given. While determining the seniority range of the teachers participating in the research, the period (10 years) determined by the Ministry of National Education for the Specialist Teaching and Head Teaching criteria was taken into account (Ministry of National Education [MEB], 2022).

**Table 1:** Statistical Information of the First Group Participating in the Research

Participant Profile	Categories	Subcategories	N	%	
Student	Female		246	48.01	
	Male		256	50.99	
Teacher	Female	Seniority year	1 - 10	34	36.96
			11 - 20	40	43.48
			21 above	18	19.56
	Male	Seniority year	1 - 10	68	34.00
			11 - 20	93	46.50
			21 above	39	19.50
<b>Total</b>			<b>794</b>	<b>100</b>	

**Table 2:** Statistical Information of the Second Group Participating in the Research

Participant Profile	Categories	Subcategories	N	%	
Student	Female		107	50.71	
	Male		104	49.29	
Teacher	Female	Seniority year	1 - 10	32	32.32
			11 - 20	40	40.40
			21 above	27	27.28
	Male	Seniority year	1 - 10	31	28.70
			11 - 20	44	40.74
			21 above	33	30.56
<b>Total</b>			<b>418</b>	<b>100</b>	

## 2.3 Research Instruments and Processes

During the preparation of the items required for the scale, a total of 32 items were created to ensure content validity and were presented to expert opinion. The number of items on

the scale, which went through linguistic and scientific control along with expert opinion, was reduced to 30 and it was decided to use it in a 5-point Likert type.

In order to implement the scale, which was ready for application, permission was first obtained from the University Ethics Committee Unit. Later, permission was obtained from Tokat Provincial Directorate of National Education for the students in the schools where the application would be carried out. The data collected in the application was obtained between 2020 and 2023. A total of 502 students from three high schools in the central district of Tokat participated in the application. The data was obtained using an online form (Google Form) because the application to student and teacher groups was economical the analysis was quick and errors were minimized.

### **2.3.1 First Research Instrument**

The scale, consisting of a total of 30 items, was applied to a total of 502 students from three high schools in the central district of Tokat who participated in the application. The application was then applied to a total of 292 teachers in different branches working in high school institutions in the central district of Tokat. In the first application phase, a total of 794 people were treated.

### **2.3.2 Second Research Instrument**

As a result of the analyzes made after the first application, the scale turned into a structure with 16 items and two sub-factors and was applied to a total of 418 people, including 211 students and 207 teachers, within the same sample group.

## **2.4 Data Analysis**

The scale finalized by the researcher was applied to the participants, and Microsoft Office 2016, SPSS 22.0, and AMOS 21.0 programs were used to analyze the validity and reliability of the data obtained as a result of the application. Before the validity and reliability analysis of the scale, the Kaiser-Meyer-Olkin (KMO) test was applied to determine whether the sample size of the data obtained from the 21st century media literacy skills scale was large enough. In addition, in order to determine the suitability of the collected data for factor analysis, the Bartlett Sphericity test was performed and the "M" code was defined for each item in media literacy. For the reliability analysis of the scale, firstly, the internal consistency of the items and factors was calculated with the Cronbach Alpha coefficient. Then, the item-total correlation was examined to determine the correlation (positive relationship) between each item and the total score of each factor. Finally, to analyze the discrimination of the items from each other, it was checked whether there was a positive (significant) difference between the 27% lower and 27% upper groups.

To test the construct validity of the scale, EFA (Exploratory Factor Analysis) and CFA (Confirmatory Factor Analysis) were used, respectively. To determine whether the 21st century media literacy scale serves its purpose, its construct validity was first tested with EFA (Exploratory Factor Analysis). "Exploratory Factor Analysis: It is done to collect

the items that measure the same structure in the measurement tool under factors, that is, to determine the implicit structure of the measurement tool." (Bursal, 2017). With Exploratory Factor Analysis, items with low item variance ( $< .30$ ) and overlapping items were removed from the scale and the scale was ready for the second application (Tabachnick & Fidell, 2007). Then, it was tested with CFA (Confirmatory Factor Analysis) to test whether the Exploratory Factor Analysis categorized the factors correctly. Finally, in the light of the data obtained after the second application, various variables were analyzed in line with the sub-objectives of the study. Whether there was a difference according to (gender, years of seniority, etc.) was analyzed by independent t-test and ANOVA test.

### 2.5 Ethic

The data collection processes carried out within the scope of this research were approved by the Tokat Gaziosmanpaşa University Social and Humanities Research Ethics Committee's document dated 02.04.2020 and numbered 33490967-044/19337.

### 3. Findings

Before starting the validity and reliability studies of the scale, item analyzes of the data were made, and skewness and kurtosis values, general mean and standard deviation values of the items were examined to determine whether they were normally distributed.

**Table 3:** Total Item Analysis of Participants Who Participated in the First Study

N	Average	Standard Deviation
794	3.88	1.12

When Table 3 is examined, the average value given to the items by a total of 794 people who participated in the first study was 3.88 and the standard deviation was 1.12. Accordingly, since the median value is 3.88 and the total score of the participants is between 3.41 and 4.20, it is seen that they express "I agree" in terms of the average of all items.

**Table 4:** Normal Distribution Parameters of the First Application Scale

Normal Distribution Parameters	Result
Skewness	-0.67
Kurtosis	0.92

When Table 4 is examined, it is seen that the skewness value of the items is  $-.67$  and the kurtosis value is  $.92$ . In order for the items to show a normal distribution, it is sufficient for these values to be between  $+1$  and  $-1$ . In addition, the closer it is to  $0$ , the more normal it is distributed (Büyüköztürk, 2008). Accordingly, it can be said that the items are in a normal distribution.

### 3.1 Findings Regarding Validity and Reliability

For the media literacy skills scale, first the Kaiser-Meyer-Olkin (KMO) test was applied. In addition, Bartlett's Sphericity test was performed to determine the suitability of the collected data for factor analysis.

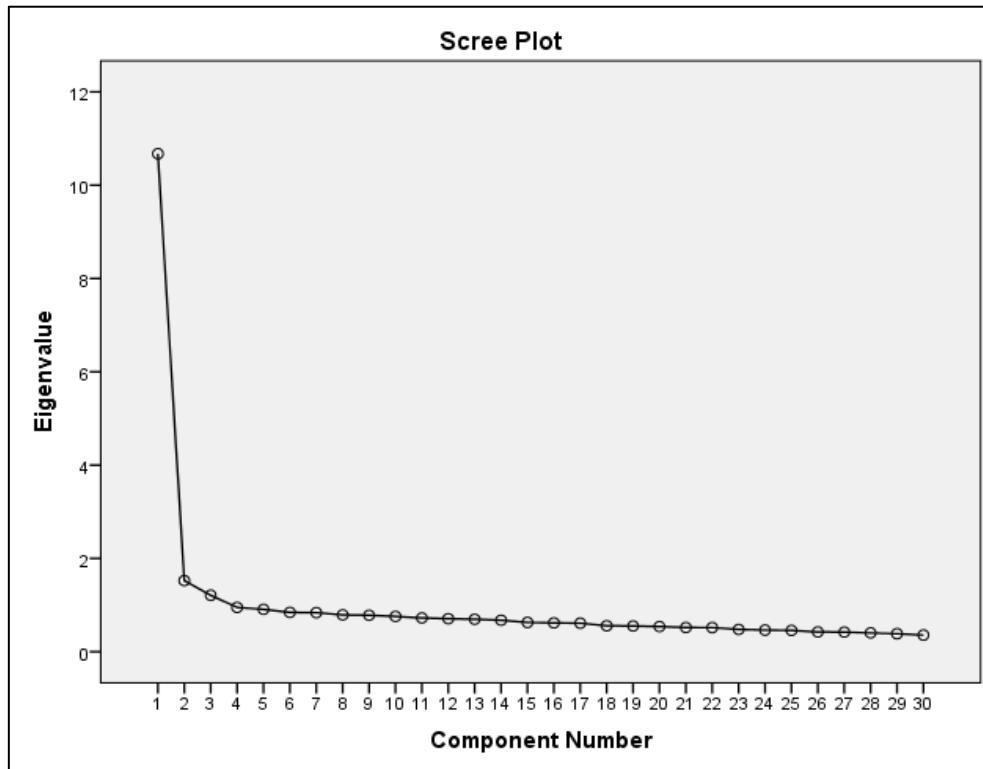
**Table 5:** Findings Regarding KMO and Bartlett Sphericity Test

<b>KMO Coefficient</b>		0.96
<b>Bartlett Sphericity</b>	<b>X<sup>2</sup></b>	9124.27
	<b>Sd</b>	496
	<b>p</b>	0

When Table 5 is examined, the Kaiser-Meyer-Olkin (KMO) test was found to be .96. A value of .90 or above is considered "excellent" in terms of sample size (Büyüköztürk, 2008). Additionally, Bartlett's Sphericity test was found to be significant as  $X^2_{794} = 9124.27$  and  $p < .005$ . The findings show that exploratory factor analysis can be performed on the data obtained for media literacy skills.

### 3.2 Findings of Exploratory Factor Analysis (EFA)

When Figure 1 is examined, it is seen that the accumulation graph starts to flatten from the fifth item. It is seen that the thirty items in the media literacy skills of the scale are grouped under three factors with eigenvalues greater than 1. When the factors with eigenvalues greater than 1 and the slope-drain graph in Table 7 are examined, it is seen that the scale consists of five factors.



**Figure 1:** Media Literacy Skills Scale Scree Plot Graph

When Table 6 is examined, the eigenvalues and variance values explained by the three factors with eigenvalues above 1 are seen. The total variance ratio explained by the three factors with eigenvalues greater than 1 of the 30 analyzed items regarding media literacy skills is 44.69%.

**Table 6:** Explained Variance Values

Factor	Eigenvalues			Transformed Sum of Squares		
	Eigenvalue	Explained Variance (%)	Total Variance (%)	Eigenvalue	Explained Variance (%)	Total Variance (%)
1	10.67	35.58	35.58	10.67	35.58	35.58
2	1.52	5.08	40.66	1.52	5.08	40.66
3	1.21	4.03	44.69	1.21	4.03	44.69

Tabachnick and Fidell (2007) stated that the loading value of each item in the scale should be .30 and above. First of all, it was examined whether each item had a score of .30 or less and whether there were overlapping items. As a result of the examination, a total of 12 items, namely items 4, 7, 14, 13, 8, 12, 30, 11, 25, 23, 24 and 2, were determined to be overlapping and were excluded from the analysis one by one. The overlapping status of the items indicates that the loading values between at least two factors are less than approximately .10 (Tümer & Gür, 2007; Yavuz, 2005).

**Table 7:** Factor Loadings of Scale Items

Items	Factors			Total
	1	2	3	
M9	0.69			
M17	0.69			
M10	0.66			
M20	0.57			
M16	0.56			
M15	0.56			
M28	0.55			
M3	0.54			
M29		0.69		
M27		0.67		
M18		0.62		
M21		0.59		
M22		0.59		
M19		0.54		
M26		0.52		
M1			0.74	
M6			0.66	
M5			0.63	
<b>Explained</b>	<b>6.51</b>	<b>1.19</b>	<b>1.09</b>	
<b>Variance (%)</b>	<b>36.18</b>	<b>6.64</b>	<b>6.05</b>	<b>48.87</b>



As a result of the analysis, it was observed that the remaining 18 items had a three-factor structure after excluding a total of 12 items (approximately 0.10). When the analysis was repeated with 18 items, the variance rates and factor loadings obtained for each factor are shown in Table 7. As a result of the first analysis, it is seen that the scale, which consists of 3 factors according to the scree plot and eigenvalue data, consists of 3 factors in total with the final analysis result, but its total variance has increased.

The scale's explanation percentage of the total variance was 48.87. In multi-factor scale designs, the variance explained between 40% and 60% is considered sufficient for factor determination analysis (Çokluk *et al.*, 2012). When the items gathered together in the factors were examined, the first factor was named "Awareness and Paying Attention". The items are listed according to the factor loading, from higher to lower, as follows: items 9, 17, 10, 20, 16, 15, 28 and 3.

The eigenvalue of the Awareness and Paying Attention sub-dimension is 6.51 and the variance explanation percentage of the factor is 36.18. Additionally, it is seen that factor loadings vary between .54 and .69. The second factor of the scale is called "Having Knowledge". The items are listed according to the factor loading, from higher to lower, as follows: items 29, 27, 18, 21, 22, 19 and 26. The eigenvalue of the Having Knowledge sub-dimension is 1.19 and the variance explanation percentage of the factor is 6.64. Additionally, factor loadings appear to vary between .52 and .69. The third factor of the scale is called "Ability to Use Media Tools". The items are listed in order of factor loading, from higher to lower, as follows: Items 1, 6, and 5. The eigenvalue of the Ability to Use Media Tools sub-dimension is 1.09 and the variance explanation percentage of the factor is 6.05. Additionally, factor loadings appear to vary between .63 and .74.

### 3.2.1 Findings of Reliability Analysis

After the factor analysis of the media literacy scale, Cronbach's alpha ( $\alpha$ ) coefficients were analyzed for the reliability level. The findings obtained as a result of the analysis are presented in Table 8.

When Table 8 is examined, the reliability coefficient for the first factor of the scale is .83 and the item-total correlation coefficients vary between .51 and .59, the reliability coefficient for the second factor of the scale is .80 and the item-total correlation coefficients vary between .45 and .56, and the third factor of the scale It is seen that the reliability coefficient for is .63 and the item-total correlation coefficients vary between .38 and .56.

According to Kalaycı (2006), it can be said that both the general and factor-related reliability (internal consistency) levels of the media literacy skills scale are "quite" reliable. In addition, it is seen that the item-total score coefficients are in a sufficient relationship ( $r \geq .30$ ) (Bursal, 2017).

**Table 8:** Item Analysis of Scale Items

Factor	Item	Item Total Correlation	Cronbach Alfa
Awareness and Paying Attention	M3	0.51	.83
	M9	0.56	
	M10	0.59	
	M15	0.52	
	M16	0.58	
	M17	0.57	
	M20	0.54	
Having Knowledge	M28	0.54	.80
	M18	0.56	
	M19	0.55	
	M21	0.55	
	M22	0.55	
	M26	0.45	
	M27	0.53	
Ability to Use Media Tools	M29	0.51	.63
	M18	0.56	
	M1	0.38	
Total	M5	0.45	.89
	M6	0.49	

In order to analyze the discrimination power of the items in the media literacy skills scale, the score averages of the groups comprising the lower 27% (n=214) and upper 27% (n=214) of the participants in the study were compared with independent (in unrelated samples) t-test and obtained. The findings are presented in Table 9.

**Table 9:** Item Distinctive Findings

Factor	Upper Group (27%)		Lower Group (27%)		t	P
	$\bar{X}$	Ss	$\bar{X}$	Ss		
Factor 1	38.65	1.31	24.29	4.07	49.08	.000
Factor 2	32.86	1.71	19.92	3.47	48.85	.000
Factor 3	14.43	0.72	7.65	1.62	55.72	.000
<b>Total</b>	<b>83.78</b>	<b>4.19</b>	<b>54.43</b>	<b>7.55</b>	<b>48.21</b>	<b>.000</b>

When Table 9 is examined, it is seen that there is a significant difference as a result of the independent groups' t-test for the media literacy scale and its sub-factors ( $p < .001$ ). Accordingly, it can be said that each item and factor in the scale is distinctive enough to measure the feature it is intended to measure.

### 3.3 Findings of Confirmatory Factor Analysis (CFA)

The 21st century media literacy scale was completed with a 3-factor structure for media literacy as a result of Exploratory Factor Analysis. Confirmatory Factor Analysis (CFA) was conducted to verify the appropriateness of the subfactors. CFA is a very useful

analysis method in terms of confirming the accuracy of the model, which has a theoretical basis, testing the suitability of the factor structure determined as a result of the model, developing it, and re-establishing the factor structure by editing it if necessary (Büyüköztürk, 2008; Gürbüz, 2019). As a result of confirmatory factor analysis of the data, in order for the relationship between the model and the model to be perfect, it should be close to 0 and the p-value (significance) should not be significant (Hoyle, 1995).

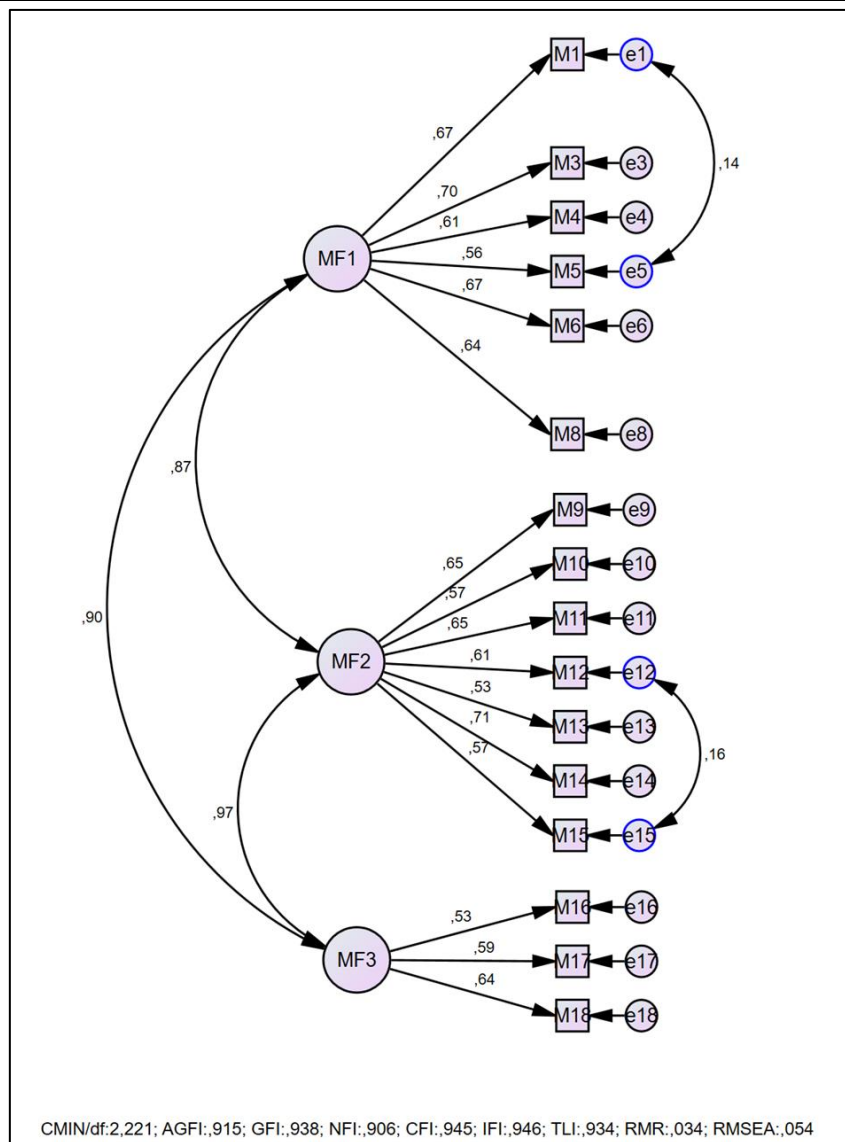
The goodness of fit indexes of the model must be able to be interpreted in its entirety and the values for the fit of the model must be among the parameters specified in Table 10 (Brown, 2006; Çokluk *et al.*, 2014; Kline, 2015; Schumacker & Lomax, 2010; Sümer, 2000; Şencan, 2005; Şimşek 2007).

**Table 10:** Confirmatory Factor Analysis Fit Index Parameter Value Ranges

Fit Index	Excellent Value (Excellent Fit)	Normal Value (Good Fit)	Acceptable Value (Fit)
Ki-square/sd	>0.00 - <2.00	>2.00 - <3.00	>3.00 - <5.00
AGFI	>0.95 - <1.00	>0.90 - <0.95	>0.85 - <0.90
CFI	>0.97 - <1.00	>0.95 - <0.97	>0.90 - <0.95
GFI	>0.95 - <1.00	>0.90 - <0.95	>0.85 - <0.90
NFI	>0.97 - <1.00	>0.95 - <0.97	>0.90 - <0.95
IFI	>0.97 - <1.00	>0.95 - <0.97	>0.90 - <0.95
RMR	>0.00 - <0.05	>0.05 - <0.08	>0.08 - <1.00
RMSEA	>0.00 - <0.05	>0.05 - <0.08	>0.08 - <1.00

As a result of the confirmatory factor analysis for media literacy skills, t-values were examined and it was found that all 18 items were significant at the .01 level. However, since the CFA fit index values were not within the desired reference ranges, the 2nd and 7th items, which affected the factor structure the most, were removed respectively and the path diagram was redrawn by making the necessary modifications (e1-e5, e12-e15) among the error references.

When Table 11 is examined, the RMSEA value is found to be .05 and the RMR value is .03. These values show that the model has a perfect fit. The X<sup>2</sup>/df (chi-square/degrees of freedom) value was found to be 2.22, the AGFI value was .91, the CFI value was .95 and the GFI value was .93. These values show that it has a good fit with the model. The NFI value was found to be .91 and the IFI value was .94. These values show that there is an acceptable fit with the model. When the values obtained as a result of the analysis are compared with the desired reference values, it is seen that all the values for the media literacy sub-factors are within the desired values.



**Figure 2:** Media Literacy Skills Scale Confirmatory Factor Analysis Path Diagram

**Table 11:** Confirmatory Factor Analysis Results of the Media Literacy Skills Scale

Fit Index	Measurement Value	Fit
Ki-square/sd	2.22	Good Fit
AGFI	0.91	Good Fit
CFI	0.95	Good Fit
GFI	0.93	Good Fit
NFI	0.91	Fit
IFI	0.94	Fit
RMR	0.03	Excellent Fit
RMSEA	0.05	Excellent Fit

### 3.4 Examining the Total Scores of the 21st Century Media Literacy Skills Scale by Students' Gender

Independent groups t-test analysis was conducted to determine whether there was a significant difference in the 21st century media literacy skills levels of high school students according to gender. The data obtained as a result of the analysis are shown in Table 12.

**Table 12:** Independent T-Test Results on the Difference in Media Literacy Skill Levels of High School Students by Gender

Dimension	Gender	N	$\bar{X}$	SS	T	DF	P
Awareness and Paying Attention	Male	104	3.81	0.81	1.28	209	0.20
	Female	107	3.68	0.65			
Having Knowledge	Male	104	3.63	0.79	-1.34	174.83	0.18
	Female	107	3.76	0.51			
Ability to Use Media Tools	Male	104	3.64	0.89	-1.60	179.60	0.11
	Female	107	3.81	0.60			
<b>Media Literacy (Total)</b>	<b>Male</b>	<b>104</b>	<b>3.70</b>	<b>0.75</b>	<b>-0.42</b>	<b>178.78</b>	<b>0.67</b>
	<b>Female</b>	<b>107</b>	<b>3.74</b>	<b>0.50</b>			

When Table 13 is examined, the Awareness and Paying Attention sub-factor values ( $t = -0.02$  and  $p > .05$ ), the Being Informed sub-factor values ( $t = .42$  and  $p > .05$ ), the Ability to Use Media Tools sub-factor. values ( $t = .29$  and  $p > .05$ ) and Media Literacy total values ( $t = .66$  and  $p > .05$ ). These results show that teachers' Media Literacy skill levels do not create a significant ( $p > .05$ ) difference according to the gender variable.

### 3.5 Examination of Total Scores of the 21st Century Media Literacy Skills Scale by Teachers' Gender

In order to determine whether the 21st Century Media Literacy skill level average scores of teachers working at the high education level showed a significant difference according to their years of seniority, the homogeneity hypothesis was first examined. The homogeneity hypothesis situation was analyzed with Levene's test and the analysis results are given in Table 13.

**Table 13:** Independent T-Test Results on the Difference in High School Teachers' Media Literacy Skill Levels According to Gender

Dimension	Gender	N	$\bar{X}$	SS	T	DF	P
Awareness and Paying Attention	Male	108	4.30	0.37	-0.02	205	0.98
	Female	99	4.30	0.36			
Having Knowledge	Male	108	4.18	0.45	0.42	205	0.66
	Female	99	4.15	0.44			
Ability to Use Media Tools	Male	108	4.15	0.63	0.29	205	0.93
	Female	99	4.14	0.55			
<b>Media Literacy (Total)</b>	<b>Male</b>	<b>108</b>	<b>4.22</b>	<b>0.37</b>	<b>0.66</b>	<b>205</b>	<b>0.80</b>
	<b>Female</b>	<b>99</b>	<b>4.21</b>	<b>0.36</b>			

When Table 13 is examined, the Awareness and Paying Attention sub-factor values ( $t = -0.02$  and  $p > .05$ ), the Being Informed sub-factor values ( $t = .42$  and  $p > .05$ ), the Ability to Use Media Tools sub-factor values ( $t = .29$  and  $p > .05$ ) and Media Literacy total values ( $t = .66$  and  $p > .05$ ). These results show that teachers' Media Literacy skill levels do not create a significant ( $p > .05$ ) difference according to the gender variable.

### 3.6 Examination of the Total Scores of the 21st Century Media Literacy Skills Scale by Teachers' Years of Experience

In order to determine whether the 21st Century Media Literacy skill level average scores of teachers working at the high education level showed a significant difference according to their years of seniority, the homogeneity hypothesis was first examined. The homogeneity hypothesis situation was analyzed with Levene's test and the analysis results are given in Table 14.

**Table 14:** Homogeneity Analysis Results of Sub-factors

Dimension	Levene's	Df1	Df2	P
Awareness and Paying Attention	0.32	2	204	0.72
Having Knowledge	0.37	2	204	0.68
Ability to Use Media Tools	1.05	2	204	0.34
<b>Media Literacy (Total)</b>	<b>0.38</b>	<b>2</b>	<b>204</b>	<b>0.68</b>

According to the analysis results, Being Aware and Paying Attention ( $LF = .32$  and  $p > .05$ ), Being Knowledgeable ( $LF = .37$  and  $p > .05$ ), Being Able to Use Media Tools ( $LF = 1.05$  and  $p > .05$ ) and Media Literacy ( $LF = .38$  and  $p > .05$ ) dimensions were found to be homogeneous. For this reason, a one-way analysis of variance (ANOVA) was performed and the analysis results are given in Table 15.

**Table 15:** ANOVA Test Results of High School Teachers According to Their Seniority Years

Dimension	Variance Sources	Squares Total	Freedom Degree	Average Squared	F	P
Awareness and Paying Attention	Intergroup	0.19	2	0.09	0.71	0.49
	In-group	27.94	204	0.13		
	Total	28.14	206			
Having Knowledge	Intergroup	0.44	2	0.22	1.14	0.32
	In-group	40.10	204	0.19		
	Total	40.55	206			
Ability to Use Media Tools	Intergroup	2.52	2	1.26	3.68	0.02
	In-group	70.01	204	0.34		
	Total	72.54	206			
<b>Media Literacy (Total)</b>	<b>Intergroup</b>	<b>0.32</b>	<b>2</b>	<b>0.15</b>	<b>1.20</b>	<b>0.30</b>
	<b>In-group</b>	<b>27.01</b>	<b>204</b>	<b>0.13</b>		
	<b>Total</b>	<b>27.33</b>	<b>206</b>			

When Table 15 is examined, the Awareness and Paying Attention sub-factor values ( $F = .71$  and  $p > .05$ ), the Being Knowledgeable sub-factor values ( $F = 1.14$  and  $p > .05$ ), the

Ability to Use Media Tools sub-factor value. ( $F= 3.68$  and  $p < .05$ ) and Media Literacy total values ( $F= 1.20$  and  $p > .05$ ). These results calculated that high school teachers showed a negative difference only in the sub-factor of Using Media Tools, compared to teachers with 21 years of seniority or more, compared to teachers with other years of seniority. Additionally, these results show that there is no significant ( $p > .05$ ) difference between years of seniority in other sub-dimensions and Media Literacy total skill levels.

### 3.7 Examining the Total Scores of the 21st Century Media Literacy Skills Scale by Category (Teacher-Student) Status

Independent groups t-test analysis was carried out to determine whether there was a significant difference between the 21st century media literacy skills levels of teachers teaching at the high school level and students studying at the high school level. The data obtained as a result of the analysis are shown in Table 16.

**Table 16:** Independent T-Test Results on the Difference between Media Literacy Skill Levels of High School Teachers and Students

Dimension	Gender	N	$\bar{X}$	SS	T	DF	P
Awareness and Paying Attention	Student	211	3.75	0.74	-9.74	309.84	0
	Teacher	207	4.30	0.37			
Having Knowledge	Student	211	3.69	0.67	-8.42	365.06	0
	Teacher	207	4.16	0.44			
Ability to Use Media Tools	Student	211	3.73	0.76	-6.17	395.56	0
	Teacher	207	4.14	0.59			
<b>Media Literacy (Total)</b>	<b>Student</b>	<b>211</b>	<b>3.72</b>	<b>0.63</b>	<b>-9.67</b>	<b>335.10</b>	<b>0</b>
	<b>Teacher</b>	<b>207</b>	<b>4.21</b>	<b>0.36</b>			

When Table 16 is examined, the Awareness and Paying Attention sub-factor values ( $t= -9.74$  and  $p < .05$ ), the Being Informed sub-factor values ( $t= -8.42$  and  $p < .05$ ), the Ability to Use Media Tools sub-factor. values ( $t= -6.17$  and  $p < .05$ ) and Media Literacy values ( $t= -9.67$  and  $p < .05$ ). These results show that there is a significant ( $p < .05$ ) difference in favor of the teachers between the sub-factors of Being Aware and Paying Attention, Being Knowledgeable, Being Able to Use Media Tools, and Media Literacy skill levels among high school students and teachers.

## 4. Results and Discussion

It is seen that the total skill levels of the high school students and teachers participating in the research in the Awareness and Paying Attention, Being Knowledgeable, and Being Able to Use Media Tools sub-factor and Media Literacy do not create a significant difference according to gender of both students and teachers. In their study, Aslan, Turgut, Göksu, and Aslan (2009) determined that the media literacy levels of female students were significantly higher than male students. In the studies of Özer, Çelik, and Özatlı (2021), they determined that the media literacy levels of men were significantly higher than women.

It is seen that there is a significant difference in the sub-factor of Using Media Tools of the teachers participating in the research, among those whose seniority is less than 21 years, compared to those whose seniority is over 21 years. There was no significant difference in the Awareness and Paying Attention sub-factor, Being Knowledgeable sub-factor, and total level according to the teachers' seniority years. In Çakmak's (2019) study, there was no significant difference in media literacy levels of teachers according to their age (year of seniority). We can say that this situation arises due to variables such as the characteristics of the students and teachers participating in the study, the time when the research was conducted, the population, and the sample. In his study, Kıymacı (2009) concluded that teachers' media literacy levels differed in all sub-dimensions according to their years of seniority. The media literacy levels of teachers with low years of seniority were found to be more significant than those of teachers with high years of seniority. Again, we can say that the reason for the difference in the results between studies may be variables such as the characteristics of the teachers participating in the study, the time when the research was conducted, the population, and the sample.

It was observed that there was a significant difference in favor of the teachers between the 21st century media literacy skill levels of high school teachers and high school students. The opinions of the teachers participating in the research regarding the 21st century media literacy skill levels ( $X=4.21$ ) are at the "I definitely agree" level. Students' opinions regarding 21st century media literacy skill levels are at the "I agree" level ( $X=3.72$ ). This result shows us that teachers' 21st century media literacy skill levels are higher than students. There is no other study in the literature in which the same media literacy scale is applied to both teachers and students at the high school level. In addition, the scale developed in this study; Although it was developed for students studying at high school level, the fact that the media literacy skill levels of students and teachers are at parallel levels shows that the application is applicable to both students and teachers during the scale development process. Thus, the scale developed in this study; It has been a guide to the main problem of the research, which is "to investigate to what extent teachers have these skills in teaching media literacy skills to students".

According to all analysis results regarding the validity and reliability of the 21st Century Media Literacy Skills Scale: The content validity of the scale was ensured based on an extensive literature review and expert opinions. KMO values above .90 indicate that the sample size is at an "excellent" level. According to the Cronbach Alpha values tested separately for all skills regarding the reliability of the scale, it can be said that both the general and factor-related reliability (internal consistency) levels of the scale are "quite" reliable. As a result of the independent groups' t-test of all factors of the scale, it can be said that each item and factor in the scale is "sufficiently" discriminative in measuring the feature that is intended to be measured. As a result of the CFA applied to test the suitability of the factor structure, the fact that the fit index values of the factors are within the desired ranges shows that the scale is at a "sufficient" level in terms of construct validity.



## 5. Recommendations

Similar types of scales can be developed by researchers for students studying in primary school, High school, and high school. Since this study is a scale development study, the measurement results were associated with the gender variable for the students. Researchers can also examine students in terms of different variables according to their grade level, school type, and family demographic status (parents' education, number of siblings, financial situation, ICT equipment ownership status, etc.).

### Conflict of Interest Statement

The authors declare no conflicts of interest.

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## Appendix

21st Century Media Literacy Skills Scale			I strongly disagree	I do not agree	I'm undecided	I Agree	Absolutely I agree
Dimension	N	Items	(1)	(2)	(3)	(4)	(5)
Awareness and Paying Attention	1	I take the necessary precautions to protect personal data when using media tools.					
	2	I can notice what type and intensity of content (news, advertising, entertainment) media tools produce.					
	3	I am aware that media content of unknown origin may create perception.					
	4	I take the necessary precautions against the danger of virtual fraud when using media tools.					
	5	I pay attention to ethical principles and values when sharing on social media applications.					
	6	I can distinguish between digital games that can harm people mentally, psychologically, and socially.					
Having Knowledge	7	I know exactly what my digital rights are when using the internet.					
	8	I question whether media content values emotional, mental, and intellectual development.					
	9	I know what smart signs applied in media content mean.					
	10	I know whether the smart signs given in the media content are determined in accordance with the content.					
	11	When using e-commerce services, I prefer companies with 3D security certification.					
	12	I know which institutions and organizations I can convey my thoughts and complaints about media content that I find problematic.					
	13	I do not allow media content to prevent me from using my time efficiently during the day.					
Ability to Use Media Tools	14	I can download all kinds of image and audio resources to my mobile phone that do not require special permissions on media devices.					
	15	I can transfer audio and video between media devices wired or wirelessly.					
	16	I know the new definitions and concepts that emerge with social media application					

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