SCALE DEVELOPMENT STUDY OF SECONDARY SCHOOL STUDENTS FOR ADVANCED READING AWARENESS[i]

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Abstract:
Reading is defined as the reader perceiving and interpreting written symbols using their physical and mental processes. Reading is one of the four basic language skills and it is also a type of communication between the reader and the writer. Many concepts such as "critical reading, strategic reading, implicit reading, advanced reading" have come to the fore about the reading process carried out by the reader. Forward reading, which is one of the prominent concepts, is the way of reading that is carried out by using appropriate strategies in the whole reading process, before reading, during reading and after reading, and one of the strategies used in reading forward is metacognition strategies. The concept of metacognition can be referred to simply as "thinking about thinking". In this study, it was aimed to develop the Advanced Reading Awareness Scale, which aims to measure the advanced reading awareness of middle school students using metacognition strategies. In order to determine the construct validity of the developed scale, Exploratory Factor Analysis was performed with the data obtained from a group of 513 students formed by middle school students, and then Confirmatory Factor Analysis with data obtained from a different group of 141 people. After applying the scale in two different groups of middle school students, the reliability of the scores was determined by calculating the Cronbach alpha internal consistency coefficients. As a result of Exploratory Factor Analysis, it was determined that the draft scale of 58 items consisted of 21 items and three dimensions. The Confirmatory Factor Analysis also confirmed the three-factor structure of the Advanced Reading Awareness Scale, consisting of 21 items. The scale consists of three dimensions: "pre-reading (planning), reading order (process monitoring) and post-reading (evaluation)". When the reliability evidences and validity evidences obtained as a result of these analyzes are evaluated together, the Advanced

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Reading Awareness Scale, which was developed, was found to be a valid and reliable scale that can be used in future studies.

Keywords: reading, advanced reading, metacognitive reading, scale development

1. Introduction

Reading is the process of making meaning through text. Reading is an important skill field for reasons such as improving the imagination of the human being, expanding his knowledge, making him competent at the point of self-expression, enabling him to experience different situations, opening the door of new worlds to him. Reading, obtaining information, performing a specific task, gaining literacy experience (Donahue, Voelkl, Campbell & Mazzeo, 1999); to improve reading pleasure and expression power, to use books to obtain information, to have the ability to understand and interpret what they read, to improve vocabulary (Çelik, 2006); It has goals such as enriching our inner world, broadening our perspective, communicating healthy, making analysis-synthesis, enabling thinking, increasing our speaking and writing skills (Gündüz & Şimşek, 2013). But basically the purpose of reading is to make sense of what is read. Reading comprehension is an important language skill that seeks to grasp the meaning, order and details of the content of a written material and should be gained to the individual from primary school level (Rose, Parks, Androes & McMahon, 2000).

It was agreed that reading in the 1960s was not only about making sense of signs, it was one of the important elements of intellectual skills and its developability; Reading process was observed and reading comprehension studies were carried out and in line with the results obtained from these studies, strategies used at different stages of reading skill were emphasized (Topçu, 2017). As a matter of fact, considering that one purpose of reading is understanding, it is seen that achieving this goal will only be achieved by strategic reading (Mert, 2015). Reading strategies are defined as the comprehension of the information in the text content of the readers and finding solutions to the problems in the text by using some methods (Carrell, 1998). The reader consciously selects the strategies he chooses to use in order to achieve the purpose of reading and controls them throughout the process (Carrel, 1998; Pereira & Deane, 1997). According to Baker and Brown (1984), reading strategies help the reader realize the shortcomings in the understanding process, decide how to read, and determine what to do in case of failure to eliminate shortcomings and correct mistakes.

In reading comprehension process, the brain uses reading comprehension strategies and cognitive skills together (Duke & Carlisle, 2011). Reading strategies include the actions that the individual performs consciously throughout the reading action and is used to improve cognitive skills in developing comprehension and overcoming comprehension failures (Karatay, 2014). This shows that two words "cognitive" and cognitive awareness (metacognitive) come to the forefront in researches about reading comprehension. Metacognitive reading strategies are actions that the individual applies

in three stages to plan, track and regulate his / her reading performance (Baydık, 2011). Metacognitive reading strategies in general terms (Başaran, 2013; Carrel, 1998; Çöğmen & Saracaloğlu, 2009; Mokharti & Reichard, 2002):

- It happens when the reader uses it consciously.
- It depends on the type of text, the characteristics of the reader and the purpose of the reader.
- It has the feature that the reader can discover spontaneously. But it requires trend and knowledge.
- They are cognitive tools based on personality, as they can be controlled by readers.
- It gives the reader the opportunity to practice with many texts, evaluate the process and evaluate the effectiveness of different strategies.
- Thanks to the awareness of the reader, it is used in the solution of reading comprehension problems.
- It is a feature of expert (advanced) readers.

In the studies centered on reading skills, it was emphasized that in order to perform an efficient reading, it is necessary to be a conscious reader, and therefore to choose strategies suitable for the purpose of reading. In the literature, it is seen that the concepts of *"forward reader, good reader, strategic reader, expert reader, strong reader, gifted reader" are used synonymously with the concept of conscious reader"*. Within the scope of the research, the concept of "advanced reader" was preferred and work was planned within the framework of this concept. Advanced readers are able to successfully apply metacognitive reading strategies (Özbay & Bahar, 2012); who are aware of the fact that they supervise the reading process and that they should use some plans and strategies to solve their reading problems (Law, 2009); are people who ask questions about the text, make predictions about the text, explain, comment and summarize the text where necessary (Taraban, 2011). According to Baker and Brown (1984), readers who have not developed reading skills are lacking in using these strategies.

Gelen (2004), classified advanced (good) and poor readers according to their cognitive awareness and later made various determinations about the readers.

"Poor readers while reading; easily distracted, becomes anxious, passes directly to reading without guessing about the text, cannot know what to do when he does not understand what he is reading, cannot take out words they do not know from context, cannot define the way the text is organized, cannot establish a relationship between old and new information, piles up information and does not realize that he does not understand information. Compared to weak readers, advanced readers read carefully, predict the text, determine the lack of understanding, and use strategy to solve this deficiency, analyze the content, identify important words from the context, understand the structure of the text and understand better what it reads, organize new and old information and checks whether he understands the information and if necessary, revises the text again."

2. Purpose of The Study

It is aimed that the students take effective reading and become advanced (conscious) readers in the acquisitions based on the use of reading strategies in the Turkish Lesson Teaching Program (2018) prepared for secondary school students. But it is important to read and understand what they read; It is observed that secondary school students are not able to achieve the desired success in the applications (PISA, ABİDE) where the use of high level mental skills is expected from students regarding reading skills. It is important that secondary school students who fail to understand what they read in the national and international exams have an awareness of what they do in the reading process, what methods they use to achieve their reading goals, and to what extent they use their reading strategies. As a matter of fact, middle school students are an important stage of development in reading skills. Therefore, in order to determine the advanced reading awareness levels of secondary school students, it was aimed to develop a scale "Advanced Reading Awareness Scale" and to examine the reliability and validity values of the scale.

3. Method

In this section, research design, working group, data collection and data analysis are included.

3.1 Research Design
This research is a descriptive research aimed at developing the Advanced Reading Awareness Scale and revealing its psychometric properties.

3.2 Participants
The pre-application of the 58-item scale was carried out with students in the secondary school determined after obtaining the necessary permissions. Students at the 5th grade level were excluded from the study because the items of the scale were taught to 10 students from the 5th, 6th, 7th and 8th grades before the application phase and the 5th grade students made the items more difficult than the other students. The reason why 5th grade students have difficulty in understanding the scale items is that they are in the concrete operations period. As a matter of fact, in concrete processes, abstract concepts, idioms and proverbs do not make sense for the individual (Keklik, 2010). The draft scale was applied to 578 students consisting of 6th, 7th and 8th grade branches. After carefully reading each item, the participants were asked to tick the box corresponding to the action they did about that item. The scales were examined and 65 scale forms that were found to be filled in incorrectly or incomplete were excluded from the study. The missing values and extreme values were examined before starting the analysis. It has been determined that there are no missing and extreme values in the data sets. Thus, 513 people formed the working group. While it is recommended that the working group should not fall

below 100 in order to make various analyzes, it is mentioned that this number should exceed 5 times the number of items, and 10 times the number of items with a more acceptable perspective (Ho, 2006; as cited in Can, 2017).

The demographic characteristics of this working group are presented in Table 1.

Table 1: Demographic features of the working group

Variable	Category	n	%
Gender	Woman	243	47.36
	Man	270	52.63
	Total	513	100.00
Grade Level	6th grade	162	31.57
	7th grade	206	40.15
	8th grade	145	28.26
	Total	513	100.00
School Type	Middle School	513	100.00

Although exploratory and confirmatory factor analyzes are two important and complementary factors in the scale development process, attention should be paid not to perform these two analyzes on the same sample and data set (Erkuş, 2016, p. 93-94). For the confirmatory factor analysis, which constitutes the second stage of the scale study, the 21-item data collection tool was applied to 150 students studying at different branches in the same secondary school. The scale applied to the 6th, 7th and 8th grades was found to be missing or empty by 9 students. For this reason, 141 people constituted the working group. Demographic information of the study group is given in Table 2.

Table 2: Demographic features of the study group in the second stage of the scale study

Variable	Category	n	Percent
Gender	Woman	67	47.51
	Man	74	52.48
	Total	141	100.00
Grade Level	6th grade	68	48.22
	7th grade	35	24.82
	8th grade	38	26.95
	Total	141	100.00
School Type	Middle School	141	100.00

3.3 Application

The scale consists of three dimensions: "pre-reading (planning), reading order (process monitoring) and post-reading (evaluation)".

In the development of the scale, an item pool was created based on the literature. In order to create the item pool, literature on advanced reading and metacognitive reading skills was scanned and reading gains in Turkish Lesson (Grades 1-8) Curriculum were examined. The pool, which was created based on the relevant literature and kept wide in terms of items, consists of 84 items. 18 of the items created are pre-reading, 45 are reading order, and 21 are post-reading related items.

In order to determine the scope validity of the scale, the draft scale was submitted for the evaluation of the subject matter experts. Content validity is important in determining the extent of the measurement tool's content and expected behavior (Balcı, 2013). The experts consist of 8 faculty members who are experts in the fields of Educational Sciences (1), Turkish Education (7) and 2 Turkish teachers working in public schools. The experts were asked to evaluate the items in accordance with the options "not suitable (0), corrected (1) and suitable (2)" and write the suggestions about the item, if any. In line with the suggestions coming from expert opinions, it was decided to correct 12 items and remove 15 items from the draft scale on the grounds that they measured the same skill or were deemed unnecessary.

In line with the recommendations, an item was added to the pool. The items were revised and corrected considering the openness that students could understand, not measuring more than one behavior in one item, and having scope validity. As a result of the corrections, the draft scale consisting of 58 items was made ready for preliminary application. The 58-item scale, which is ready for pre-application, was created in the form of a 5-point Likert scale by grading "Never (1), Rarely (2), Sometimes (3), Generally (4) and Always (5)". In order to check whether the target audience can understand the items, the items were taught to six students studying in the seventh grade first. These students were selected among the most successful, moderately successful and unsuccessful students of the class. All of the students stated that they did not understand the two items. These two items were corrected in a more descriptive form, taking into account student feedback.

The data obtained after the pre-application were transferred to the SPSS 23 data program and subjected to factor analysis. Factor analysis has two types, exploratory and confirmatory. In exploratory factor analysis, a process for finding factors in line with the relationships between variables; In confirmatory factor analysis, a predetermined hypothesis or theory about the relationship between variables is tested (Büyüköztürk, 2016). In order to determine the construct validity of the developed draft scale, firstly exploratory factor analysis was performed with the data obtained from the application group and then confirmatory factor analysis was made with different data obtained.

4. Findings

4.1 Exploratory Factor Analysis (EFA)

Exploratory factor analysis is a statistical technique aiming at gathering the variables that measure the same structure or feature together and explaining the measurement with few factors (Büyüköztürk, 2016). Before conducting exploratory factor analysis, some conditions (assumptions) required for the analysis must be met.

In order to see whether the scale draft is suitable for factor analysis, Kaiser-Meyer Olkin (KMO), which gives information about the degree of the relationship between variables, and Bartlett's sphericity test, which shows the degree of significance of the relationships in the correlation matrix, were applied. While the KMO value close to 1

indicates that the data is suitable for factor analysis, p value of .1 and below indicates that factor analysis can be performed. As a result of the analysis, KMO value is .942, Bartlett test value is "$\chi 2 = 2397.063$; df = 1653. p <.000 ", determinant value was found as" 3.737> .001 ". While KMO and Bartlett values show that the draft scale is suitable for factor analysis, the fact that the study group of 513 is above the KMO value of .7 indicates that the sample adequacy is "good" (Özen & Durkan, 2016).

It was also observed that the draft scale developed by the researchers with 3 factors was compatible with the slope deposit graph and the factor number of the scale was determined as 3. After determining the factor number and suitability of the draft scale for factor analysis, exploratory factor analysis was started to see the structure validity and factor structure. Varimax rotation technique was preferred as the factoring technique in the analysis process.

As a result of EFA, it was determined that some items showed high correlation in more than one factor or showed a value outside of the desired value range in a single factor. It was observed that there were 8 binary items (factors with high correlation of the items) with high correlation in multiple factors and these items were as follows: m8 (1-3), m18 (2-3), m30 (1-2), m37 (2-3), m42 (2-3), m44 (2-3), m46 (1-2-3), m52 (2-3). In addition, in order for the item that measures a certain item to remain on the scale, it is desired that the factor load value be above a certain value and it is considered to be good to have a factor load value of .45, while the factor loads of a small number of items can be neglected down to .30 (Büyüköztürk, 2016: p. 134). 30 items in the draft scale were found to have a value below .45. Among these items, the m50 (.44> .30), which is considered to be of serious importance, was kept within the scale, but the other 29 items were removed from the scale due to factor loads. The 29 items removed from the scale are as follows: m3, m4, m5, m7, m9, m10, m14, m15, m19, m21, m22, m24, m26, m28, m29, m31, m32, m33, m34, m35, m36, m38 , m43, m45, m47, m48, m49, m53 and m56.

After EFA, 37 items were observed to be contiguous and have a value below the desired factor load. The opinion of two field educators that 21 items remaining in a three-factor structure can measure the desired situation was measured and thus the content validity of the items was preserved. Factor load values for the remaining 21 items and items are given in Table 3.

When the exploratory factor analysis in Table 3 is analyzed, it is seen that the scale consists of three factors explaining 39.151% of the total variance whose eigenvalue is greater than 1. The first factor that constitutes 9,840% of the total variance (pre-reading-planning-), the second factor that makes up 17,176% of the total variance (during reading - process monitoring-) and the third factor that constitutes 12,135% of the total variance (post-reading-evaluation-) was found. According to Büyüköztürk (2016), it is expected that the total variance in single factor scales is 30%, while the variance explained in multi-factor scales is expected to be more. It is seen that the factor loads of the 21 items in the scale ranged between .421 and .655. It can be said that this situation is important in terms of showing the representation power of the items in the scale. In addition, in order to determine the validity and reliability coefficient of the measurement tool, it was aimed to

determine the consistency of the scale within a single application without the need for more than one application and therefore "Cronbach's Alpha" was calculated (Can, 2017). Cronbach's Alpha reliability coefficient calculated for the 3-factor 21-item scale obtained as a result of exploratory factor analysis was calculated as ".87" and it was concluded that this value was sufficiently reliable.

Table 3: Exploratory factor analysis results related to the scale

Rotated Component Matrix			
	Size 1 (Planning)	Size 2 (Process Monitoring)	Size 3 (Evaluation)
m2	.641		
m6	.635		
m1	.613		
m11	.451		
m25		.676	
m39		.619	
m23		.598	
m40		.578	
m16		.572	
m41		.537	
m27		.515	
m17		.505	
m12		.645	
m13		.546	
m20		.532	
m58			.689
m57			.588
m51			.566
m55			.541
m54			.527
m50			.443

As a result of the exploratory factor analysis, the Advanced Reading Awareness Scale was determined to be a 21-item scale consisting of three factors (planning, process monitoring, evaluation). There is no negative-rooted item in the scale, and dimensions can be evaluated on the basis of total score or arithmetic mean scores.

4.2 Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis was performed to see if the scale structure that emerged after the exploratory factor analysis was confirmed.

Before the confirmatory factor analysis, the remaining items were renumbered and the first and second level models resulting from the analysis are given below.
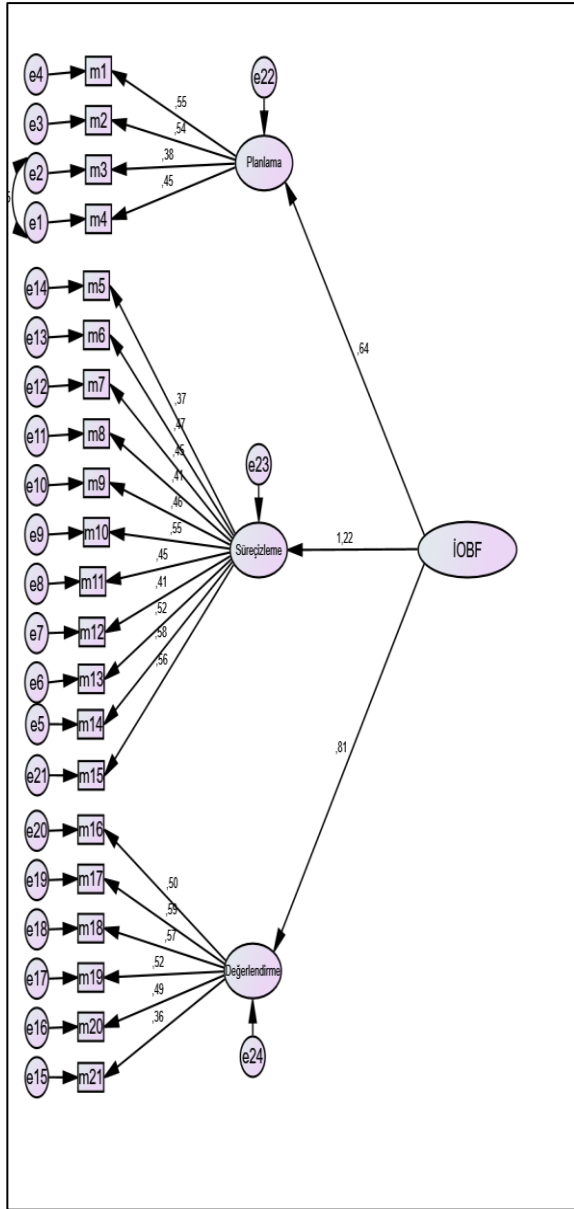
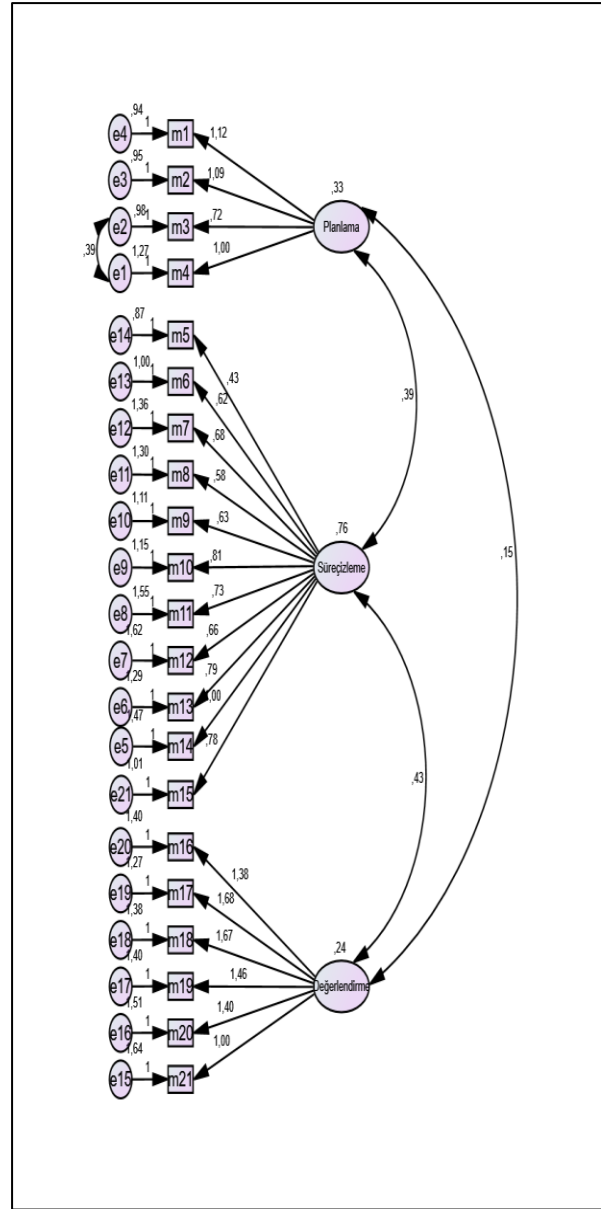**Image 1:** First Level CFA

Image 2: Second Level CFA

The structure that emerged as a result of exploratory factor analysis was tested with confirmatory factor analysis, but since the desired level of compliance was not achieved, covariance was assigned among the items deemed appropriate. As a result of defining covariances among items, the factor structure of the scales is as in Image 2.

Detailed information regarding the compliance values that emerged as a result of the confirmatory factor analysis is given in Table 4.

Table 4: Confirmatory factor analysis results related to the scale

Scales	Model Fit Indices									
		X^2	sd	X^2/sd	GFI	AGFI	NFI	CFI	RMSEA	SRMR
	Acceptable			0/5	.85/1.0	.8/1.0	.90/1.0	.90/1.0	.00/.10	.00/.08
	Good/ Very good			0/3	.95/1.0	.90/1.0	.95/1.0	.95/1.0	.00/.05	.00/.05
	First Level CFA	541.325	128	4.229	.84	.80	.93	.89	.06	.07
	Second Level CFA	291.165	185	1.577	.94	.90	.97	.97	.05	.05

The four-factor 21-item measurement model, previously obtained through AFA, was tested in the CFA. CFA results for the measuring tool, chi-square (χ^2), χ^2 / sd ratio, goodness fit index (GFI), corrected goodness fit index (AGFI), normed fit index (NFI), comparative fit index (CFI) through the AMOS program, The approximate square root of errors (RMSEA) and standardized root mean (SRMR) were evaluated within the framework of fit indexes.

It was confirmed that the three-dimensional structure emerging with the exploratory factor analysis regarding the "Advanced Reading Awareness Scale" was in harmony, as a result of the confirmatory factor analysis.

As a result of the analysis, the chi-square (χ^2) value of the model was calculated as "541.325" and this value was found to be normal, ie, greater than ".05". This is an indication that the model has a good fit, but in large samples the ratio of degree of freedom (sd) to değ2 is considered an important criterion for sufficiency (Çokluk, Şekercioğlu & Büyüköztürk, 2012). Since this difference (χ^2 / sd = 1.577) difference is less than 5, it can be said that the Advanced Reading Awareness Scale has a good fit according to the structural equation model (Sümer, 2000). The average square root (RMSEA) of the model's approximate errors is ".05", the standardized residual mean square (Standardized RMR) is ".05", which means that the scale has a perfect fit. It can be said that the model has a perfect fit because the fit index (CFI) is above ".95" (.97). It can be said that the model indicates a good fit because the goodness fit index (GFI) and unedited goodness fit index (AGFI) are above ".90" or ".90" (.94).

5. Result

When the related literature is analyzed, many types of readers are encountered and one of these readers is advanced readers. In this study, the advanced reading carried out by the advanced readers was emphasized and it was aimed to develop a scale for determining the advanced reading awareness of secondary school students. For this purpose, the related literature has been scanned and an item pool has been created accordingly. In line with the opinions of the experts, changes were made in the items and the item pool was shaped. During the development of the scale, two different groups were studied. The pre-application of the 58-item scale was performed with 513 students

and exploratory factor analysis was performed after the application. As a result of the analysis, the Advanced Reading Awareness Scale was determined to be a 21-item scale consisting of three factors (planning, process monitoring, evaluation) and the reliability coefficient of "Cronbach's Alpha" was calculated as ".87". After pre-application, a scale was applied to 141 students different from the pre-application group and confirmatory factor analysis was performed. In general, when the fit values of the scale were considered, the suitability of the model was acceptable; In this framework, the three-factor structure of the Advanced Reading Awareness Scale consisting of 21 items was confirmed.

According to the results of the analysis, the Advanced Reading Awareness Scale developed for middle school (grades 6-8) students is a valid and reliable measurement tool that can be used to determine students' advanced reading awareness and raise awareness about advanced reading, and thus a valid and reliable measurement tool. It can be said that it was brought to the field.

With this scale, it is desired to create advanced reading awareness in students. In order to train advanced readers, it is recommended that teachers teach their students the use of strategy, guide the student about what strategies to adopt, and thus apply all of the strategies in the reading process to the student in an integrated way.

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