

Developing a Measurement Scale for Korean Language Textbook Selection Using the Analytic Hierarchy Process

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- I. Introduction
- II. Review of Previous Studies
- III. Research Methods
- IV. Research Results
- V. Conclusion

I. Introduction

The policies and institutions¹ on textbooks for Korean language education have recently been the target of dramatic reform. One of the urgent challenges has been to improve the process of selecting school textbooks using a rational and systematic methodology. Unlike other subjects, textbooks for Korean language education had been under control of the state for a long time, and now they are written, developed, and distributed under a textbook examination system in which new books are produced following various educational roles corresponding to the new textbook policy and institutions. The role that is perceived to be the most important in a school setting is to select the textbooks, and despite the transition to the textbook examination system, Korean language education still conforms to the tradition and customs of a state-controlled system. Policies and institutions of Korean language education should thus ensure that both the process and results for 'textbook selection' adhere to a certain level of quality.

Although Korean language education has now shifted to using a textbook

¹ J. Park (2011), J. Park (2013), G. Cheon (2016) etc. could be referred for these studies

examination system, the reality of the selection needs to be in sync with the new characteristics of the corresponding institutions after the changes are implemented. As such, many studies are currently on-going to improve the current situation (S. Yoon, 2010; H. Jeong, 2011; I. Choe, 2011, etc.), which means that a more sophisticated policy is required to support all processes under the textbook examination system, including textbook development, selection, and distribution. Essentially, a theoretical approach based on Korean language education should be thoroughly conducted to provide policy makers practical assistance.

In spite of previous research outcomes, Korea still lacks a practical, authentic evaluation scale that is suitable to evaluate textbooks for Korean language education. The evaluation scale can be discretized into an evaluation sub-scale, but every one of these can not be evaluated using the same degree of importance. Some of the criteria should be given more importance and should thereby be applied to select good textbooks while others should be given relatively less importance in practice. Currently, Korean language education has an urgent need for an evaluation scale that can systematically determine the criteria of good textbooks by using evaluation criteria with a given priority to select good books that reflect the weight of the categories that the evaluation scale describes.

This study organized the evaluation scale used for Korean language textbook selection and applied the AHP (Analytic Hierarchy Process) to calculate the evaluation range and weight for the evaluation criteria in order to produce scientific calculations and to set evaluation points.

The framework of this study is as follows.

First, an evaluation scale is produced to reflect the logical system of the components for the evaluation of Korean language education textbooks.

Second, develop an evaluation scale for Korean language education

textbooks where the weight is determined using the AHP technique.

II. Review of Previous Studies

Effective, efficient evaluation criteria for textbook selection are both a prerequisite to and an integral part of the overall school education. When school textbook selection criteria are rational, systematic, and easy to apply, textbook evaluation and evaluator's corresponding decisions can be cost effective and productive, and the quality of the evaluation outcome will be appropriately controlled. Given the importance of such criteria, previous studies have been conducted with two distinct goals. First, some studies have critically analyzed the current practice of selecting Korean language textbooks by nearly exclusively using the "list of general subject criteria"² published and distributed by the government (S. Yoon, 2010; G. Nam et al., 2011; H. Jeong, 2011; I. Choe, 2011; E. Kim et al., 2012). In particular, G. Nam et al. (2011), and H. Jeong (2011) investigated the actual evaluation materials used by the teachers of textbook evaluators while focusing on the evaluation criteria. Second, based on criticism and insight into the actual practice of Korean language textbook evaluation, researchers attempted to develop a new kind of evaluation tool (E. Kim et al., 2013; E. Kim et al., 2014; G. Lee, 2015, etc.).³ E. Kim et al. (2013) and E. Kim et al. (2014) proposed a

2 This refers to a list of evaluation criteria contained in the "Manual for Selecting Authorized Textbooks" published by the Ministry of Education, Science, and Technology.

3 These previous studies only mentioned factors directly related to evaluation measures such as "selection criteria," "evaluation criteria," and "adoption criteria." These factors were used to focus on describing the history of the research relevant to the present study. However, these previous studies were based on an analytical and critical review of previous research studies on Korean language textbooks.

framework and criteria to evaluate Korean language textbooks based on an analysis of diverse experiences of schoolteachers and a systematic analysis of previous research. G. Lee (2015) suggested standards with which Korean language textbooks and grammar books could be evaluated, using a combination of a literature review and a Delphi survey of experts. These studies have mainly focused on logically developing the content and structure of the evaluation criteria, but they have not yet produced an optimum and practical evaluation tool tailored to the specific purposes and situation of Korean language textbook evaluation.

At this moment, it is necessary to create and build a systematic and scientific evaluation tool in order to improve Korean language textbook evaluations. We thus refer to previous research on textbook evaluation methods based on the Analytic Hierarchy Process (AHP). The AHP was first introduced by Saaty (1980) in 1971 to solve resource problems in the military, and it has been widely studied and applied in almost all sectors that require decision-making.⁴ As the terms “analytic hierarchy process,” “hierarchy analysis method,” and “hierarchy decision-making method” suggest, the AHP is a decision-making theory that captures the knowledge, experience, and intuition of an evaluator by obtaining results of pairwise comparisons for factors comprising the hierarchical decision-making structure (Y. Park, 2009). Textbook selection typically requires for multiple textbooks to be assessed using multiple criteria, and it is a typical example of a decision-making problem. Therefore, the AHP has also been utilized in textbook evaluation (Weistroffer & Hodgson, 1998; Yang, Wang, & Wen, 2008; Hsu, 2011; Kato, 2014). Weistroffer and Hodgson (1998) demonstrated that when combined with the Expert's Choice program, the AHP can become a highly efficient tool to select college textbooks. Yang, Wang, and Wen (2008) argued

4 Please refer to Saaty (1994) as the earlier theses of Saaty to introduce the AHP.

that although English textbooks have been evaluated using largely with qualitative methods, this process needs to be modified in order to adopt quantitative methods. Thus, they proposed a hierarchically structured textbook evaluation model that combines Fuzzy theory with AHP. Ho and Hsu (2011) investigated the textbook evaluation criteria using AHP for teachers at 504 elementary schools in Taiwan, and they found that priority was placed on the correctness of the textbook content and in providing methodological support on the teaching and learning methodology. Kato (2014) evaluated EFL/ESL textbooks by deriving results for four evaluational categories of the AHP through a pairwise comparison of three kinds of textbooks. The results indicate that the AHP has advantages in that sub-criteria of multiple textbook evaluation criteria are clearly revealed, and thus the textbook evaluation process is facilitated by reflecting the hierarchy of multiple elements.

These research studies have thus demonstrated that the AHP is an efficient, valuable tool to develop a measurement scale for Korean language textbook selection. Hence, we discuss in the following section the process to apply the AHP and the outcome thereof.

III. Research Methods

1. Objective

Opinions on the evaluation scale for Korean language textbooks were obtained by conducting an expert survey with a group of professors of Korean language education, researchers, and current Korean language teachers, all of who are considered experts in Korean language textbooks. Typical quantitative research studies use a questionnaire to

derive a generalization with the arithmetic means, and thus, such research requires a sample equal to or greater than a certain size. However, the absolute size of a sample does not matter when using the AHP technique, which is used to organize opinions obtained from a group of experts. The expert survey was conducted with 32 experts from November 1, 2014 to November 31, 2014, and the results were organized and analyzed on December 11, 2014. Table 1 presents the details of the experts that participated.

Table 1. Composition of the panel of Korean language education experts participating in the expert survey

Professors/researchers of Korean language education			Korean language teacher in middle school	Total
Category	Listening & Speaking, reading, writing	Grammar	Literature	Middle and high schools
Subtotal	8 persons 25.0%	4 persons 12.5%	8 persons 25.0%	12 persons 37.5%
Teaching career				13.2 years
Experience with writing textbooks	1.7 times			2.6 times
Experience with selecting textbooks				4.3 times

2. Procedures

1) Establishment of a logical structure for evaluation criteria

The evaluation scales for Korean language textbooks drawing on AHP were developed by establishing a logical structure for the evaluation criteria. Therefore, it is necessary to form the logical structure of the evaluation scale by using the following process.

Table 2. Process of establishing a logical structure of the evaluation scale

Stage 1	Establish a framework of evaluation criteria for textbook selection based on the experience of users that actually evaluate and select textbooks.
Stage 2	Review previous theoretical outcomes in a systematic manner, and draw detailed evaluation components suitable for the evaluation criteria framework.
Stage 3	Specify the evaluation criteria in a question form by considering the facility of evaluation for users and the validity of evaluation results.

The above process was used to systematically organize the evaluation components for this study as follows.

First, the evaluation criteria framework for textbook selection specified by E. Kim et al. (2013) was used to derive three evaluation categories and 12 evaluation items for the logical structure and components of the evaluation scale. Kim et al. (2013)⁵ extracted 12

5 M. Kim et al. (2014: 30–31) argued that “E. Kim et al. (2013) conducted an in-depth interview with 60 teachers and analyzed their process of textbook selection. The study suggested that the selection criteria should be reorganized centering on the “units of

evaluation items from the results of a survey on the textbook selection experience of Korean language teachers, considering that Korean language teachers had conducted their evaluations by focusing on specific “units of perception” such as the table of contents, chapters, study material, learning activities, design, and author. These items were then categorized into three evaluation categories including “content,” “format,” and “background.”

Second, the evaluation criteria specified by E. Kim et al. (2014) were used as reference to obtain detailed evaluation components suitable for the evaluation criteria framework. E. Kim et al. (2014) conducted a systematic literature review of existing references concerning textbook evaluation, and detailed evaluation components applicable for each of the 12 items of three categories were extracted from E. Kim et al. (2013) and are suggested in Table 3.

Table 3. Korean language textbook selection criteria (E. Kim et al., 2014)

	Items	Criteria
Content	Table of Contents	Systematicity
	Units	Systematicity, efficiency
	Learning objectives	Systematicity, symbolicity

“perception” based on perceived understanding including the table of contents, units, learning objectives, texts, learning activity, explanation, assessment, author, publisher, additional materials, volume, design, teaching and learning method, textbook system, and price, rather than abstract units suggested in the manual by the current Ministry of Education, which include association with curriculum, possibility of self-directed learning, and creativity. In turn, this was suggested in the form of “user-centered textbook selection criteria framework.” And their study also argued that “in order for teachers to fully exercise their expertise in selecting textbooks corresponding to the characteristics of each school in a real school setting, it is required that a manual or a guide be given for establishing the criteria per subject at a ministerial or regional office level.” Then Their study had cited the “user-centered textbook evaluation criteria for Korean language education”, which E. Kim et al. (2013) proposed, as a good example to reflect the unique characteristics of the subject.

	Texts	authenticity, balance, suitability, efficiency
	Learning activities	Systematicity, efficiency, authenticity
	Explanation	Accuracy, clarity
	Assessment	Feasibility, efficiency
	Volume	Suitability
Format	Design	Suitability, durability, conformity, readability, aesthetic factor
	Author	Expertise
Background	Publisher	Professionalism
	Additional materials	Efficiency, diversity

Third, it is necessary to specify the evaluation criteria as a simple statement to improve the evaluation facility for users as well as to ensure the validity of the evaluation results. The evaluation criteria suggested by E. Kim et al. (2014) in Table 3 apply “system, efficiency, and authenticity” as characteristics, and it is very likely that evaluators make subjective judgments concerning the subjects and the range of these characteristics. Therefore, evaluation criteria expressed as “attributes” need to be replaced by a set of questions that clearly describe the object and range of evaluation in order to increase the feasibility and reliability of the evaluation. For this study, the researchers held a joint consultation on July 7 and on August 5, 2014. The core content was sorted according to the characteristics in the evaluation criteria suggested by E. Kim et al. (2014). They were combined with the evaluation subjects – the evaluation items – and were then modified into questions as the evaluation criteria. For example, the subjects of the evaluation and instruction were specified using the following questions: “Is the composition of the learning activities systematic?” for “system,” which is the criterion for the item “learning activity”; “are the learning activities effective for teaching and learning?” for “efficiency”; and “do the learning activities reflect the reality of

Korean language?" for "authenticity." This process was thus used to tabulate the logical hierarchy of the evaluation scale for the selection of Korean language textbooks in Table 4, with the corresponding evaluation categories, evaluation items, and evaluation criteria.

Table 4. Logical structure of evaluation criteria for selecting Korean language textbooks

Evaluation domain (level 1)	Evaluation category (level 2)	Evaluation item (level 3)
Content	Table of contents	(1) Is the composition of the table of contents systematic?
	Units	(2) Is the composition of units systematic? (3) Is the composition of units effective in teaching and learning?
	Learning objectives	(4) Is the statement of learning objectives clear and easy to understand? (5) Is the composition of learning objectives systematic?
	Texts	(6) Are the texts effective in teaching and learning? (7) Is the selection of texts balanced? (8) Do the texts reflect the reality of the Korean language?
	Learning activities	(9) Is the composition of the learning activities systematic? (10) Are the learning activities effective in teaching and learning? (11) Do the learning activities reflect the reality of the Korean language?
	Explanation	(12) Are the explanations accurate? (13) Are the explanations clear?
	Assessment	(14) Is the assessment content appropriate? (15) Is the assessment method effective?
Format	Volume	(16) Is the volume optimal?
	Design	(17) Is the design effective in teaching and learning? (18) Are the method and type of bookbinding appropriate?
Background	Author	(19) Is the author an expert in Korean language education?
	Publisher	(20) Is the publisher specialized in publishing textbooks?
	Additional materials	(21) Are additional materials supplied effectively?

2) Weight assignment for each factor in the hierarchically-structured evaluation criteria using AHP

The degree of attention that teachers give to each item varies, as noted by E. Kim et al. (2013), and so the relative weight of each factor within the same level is different. For example, the relative weights are different for ‘content’, ‘background’, and ‘format’ in the same evaluation domain (level 1). This study used the AHP to calculate the relative weights of each factor in the hierarchically-structured evaluation criteria in order to understand the logical frame of this phenomenon. As was already mentioned, the AHP was developed by Saaty in 1980 to support decision making, and it conducts pairwise comparisons of logically structured items to calculate the relative weights, and it then determines the overall weights of a logical structure.

This study applied the AHP to a three-layered structure for textbook selection comprised of an evaluation domain (level 1), an evaluation category (level 2), and an evaluation item (level 3), as shown in Table 3. First, pairwise comparison matrices were constructed to determine the relative weights for the three factors in evaluation level 1, i.e., “content,” “format,” and “background.” If the immediate lower level is comprised of n elements when collecting data for the pairwise comparison, we need to conduct $n(n-1)/2$ comparisons. For a pairwise comparison of the three factors in level 1, three comparisons are required, as shown in Table 4. A 9-point Likert scale was used for the pairwise comparison, and the 5-point Likert scale used for general surveys can only identify the subjective importance of the evaluators for individual items. In contrast, the AHP can measure the relative importance among the items by conducting pairwise comparisons. This paper identified the relative importance by arranging the survey questions, as shown in Table 4.

Regarding the evaluation category (level 2) and the evaluation item (level 3), the same matrices were constructed to collect the data.

Table 5. Examples of an Expert Survey Questionnaire for Pairwise Comparison

Factor A	A is more important		←	same	→	B is more important		Factor B		
	Absolutely more important	Much more important	More important	Slightly more important	Equally important	Slightly more important	More important	Much more important	Absolutely more important	
Content	9	7	5	3	1	3	5	7	9	Format
Content	9	7	5	3	1	3	5	7	9	Background
Format	9	7	5	3	1	3	5	7	9	Background

The data set was collected from 32 respondents via email and was analyzed using Microsoft Excel. The AHP does not employ the arithmetic mean, but uses the geometric mean instead.⁶ After calculating the geometric mean for the 32 respondents, the relative weights were calculated by applying the AHP formula in Excel. We used two methods to integrate the results of the evaluation of the 32 specialists: (1) a collective evaluation method that constructs a single pairwise comparison matrix by collecting opinions of evaluators through discussion or voting, and (2) a numerical integration method that collects a pairwise comparison matrix obtained from individual specialists. We then integrated the evaluation measures that were collected for the whole group. This paper employed a numerical integration method for which a single pairwise comparison matrix was obtained from the geometric mean of the evaluation results of individual specialists.

⁶ Geometric mean is the square root of the product of n positive numbers. Arithmetic mean is the sum of a collection of numbers divided by the number of items in the collection.

IV. Research Results

1. Relative importance of evaluation factors in level 1 ~ level 3

Table 5 lists the statistics that were obtained using the AHP. As mentioned earlier, the AHP enables the relative importance of the items to be determined through a pairwise comparison. Table 5 shows the relative importance and the priorities for “three evaluation domains (level 1)” and “evaluation categories under each domain (level 2).” In addition, the overall priorities for “21 individual evaluation items (level 3)”, as shown in Table 5, represent the ranking of priorities derived according to the product of the relative importance of the evaluation factors in level 1~level 3.

Table 6. Analysis results for relative importance and priorities

Evaluation domain (level 1)	Relative importance (A)	Priorities	Evaluation category (level 2)	Relative importance (B)	Priorities	Evaluation item (level 3)	Relative importance (C)	Overall relative importance = Ax BxC	Overall priorities
Content	72.60%	1	Table of contents	4.56%	7	(1) Is the table of contents systematic?	100.00%	3.31%	16
			Units	7.88%	6	(2) Is the composition of units systematic?	35.61%	2.04%	19
			Learning objectives	10.39%	4	(3) Is the composition of units effective in teaching and learning?	64.39%	3.68%	14
						(4) Are the learning objective statements clear?	46.72%	3.52%	15

				(5) Is the composition of learning objectives systematic?	53.28%	4.02%	11
Texts	23.52%	2	(6) Are the texts effective in teaching and learning?	55.00%	9.39%	1	
			(7) Is the selection of texts balanced?	21.77%	3.72%	13	
			(8) Do the texts reflect the reality of the Korean language?	23.22%	3.97%	12	
Learning activities	26.60%	1	(9) Is the composition of learning activities systematic?	29.38%	5.67%	7	
			(10) Are the learning activities effective in teaching and learning?	46.41%	8.96%	3	
			(11) Do the learning activities reflect the reality of the Korean language?	24.21%	4.68%	8	
Explanation	18.02%	3	(12) Are the explanations accurate?	68.76%	9.00%	2	
			(13) Are the explanations clear?	31.24%	4.09%	10	
Assessment	9.03%	5	(14) Is the assessment content appropriate?	66.83%	4.38%	9	
			(15) Is the assessment method effective?	33.17%	2.17%	18	

Format	16.00%	2	Volume	54.36%	1	(16) Is the volume appropriate?	100.00%	8.70%	4
			Design	45.64%	2	(17) Is the design effective in teaching and learning?	79.87%	5.83%	6
						(18) Are the method and type of bookbinding appropriate?	20.13%	1.47%	21
Background	11.40%	3	Author	61.26%	1	(19) Is the author an expert in Korean language education?	100.00%	6.98%	5
			Publisher	14.33%	3	(20) Does the publisher specialize in publishing textbooks?	100.00%	1.63%	20
			Additional materials	24.41%	2	(21) Are additional supportive materials supplied effectively?	100.00%	2.79%	17
								100.00%	

First, the relative importance within evaluation level 1 was found to be in the descending order of content (72.60%) > format (16.00%) > background (11.40%), suggesting that ‘content’ is relatively more important than ‘format’ and ‘background’.

Within evaluation level 2, the relative importance of seven factors in the “content” domain was found to be in the descending order of learning activities (26.60%) > texts (23.52%) > explanation (18.02%) > learning objectives (10.39%) > assessment (9.03%) > unit (7.88%) > table of contents (4.56%). “Learning activities” and “texts” were given a higher importance. In the “format” domain, the relative importance of “volume” and “design” were 54.36% and 45.64%, respectively. “Volume”, which evaluates

whether the amount of learning and teaching is appropriate, was slightly more important than the “design”. Within the “background” domain, the relative importance was assigned in descending order from author (61.26%) > additional materials (24.41%) > publisher (14.33%), demonstrating that the “author” was considered to be relatively more important than the “publisher” and “additional materials”.

Within evaluation level 3, the top 10 of the 21 evaluation items are listed below.

- (1) Are the texts effective in teaching and learning? (9.39%)
- (2) Are the explanations accurate? (9.00%)
- (3) Are the learning activities effective in teaching and learning? (8.96%)
- (4) Is the volume appropriate? (8.70%)
- (5) Is the author an expert in Korean language education? (6.98%)
- (6) Is the design effective in teaching and learning? (5.83%)
- (7) Is the composition of the learning activities systematic? (5.67%)
- (8) Do the learning activities reflect the reality of the Korean language? (4.68%)
- (9) Is the assessment content appropriate? (4.38%)
- (10) Are the explanations clear? (4.09%)

Among the 10 evaluation items mentioned above, “(1) effectiveness of texts,” “(2) accuracy of explanations,” and “(3) effectiveness of learning activities,” all of which belong to the “content” domain, were found to have the highest priority. “(4) Suitability of volume” and “(6) effectiveness of design” in the “format” domain and “(5) expertise of the author” in the “background” domain were found to carry a relatively high significance.

Aside from these top 10 evaluation items, the “systematicity of composition of learning objectives” (4.02%), “authenticity of texts” (3.97%), “balanced selection of texts” (3.72%), “effective composition of units” (3.68%), and “clarity of learning objectives” (3.52%) were considered to be important items to evaluate Korean language textbooks.

2. Lower relative importance of evaluation categories that supply comprehensive information

The relative importance of evaluation categories within the “content” domain is as follows: Learning activities (26.60%) > Texts (23.52%) > Explanation (18.02%) ... > Units (7.88%) > Table of contents (4.56%).

As the above result demonstrates, “units” (7.88%) and “table of contents” (4.56%) had a relatively low importance. Unlike other factors in the “content” domain, “units” and “table of contents” provide macro as well as comprehensive information. First, “table of contents” provides information on the number of units, the composition, selection of texts, and so on. Therefore, “table of contents” is related to other factors including “units”, “texts”, and “volume” in the “content” domain. In addition, evaluating the systematicity and effectiveness of “units” cannot be logically separated from the evaluation of other factors such as “texts”, “learning activities”, “learning objectives”, and “assessments”, which are the main components for “units.”

Accordingly, “table of contents” and “units” may be very effective factors in that they can provide summary information about related factors. However, they may be redundant in that they cannot supply information that differs from related factors. The low level of importance that is assigned to “table of contents” and “units” within the content domain may be explained by this redundancy, and these results can provide good evidence to decide whether to adopt such factors when selecting textbooks, and, if adopted, to assign scores to these factors.

3. Higher relative importance of evaluation items regarding “volume,” “design,” and “author.”

Some of the overall relative importance rankings among the 21 evaluation items (level 3) are listed here again.

- (1) Are the textseffectiveinteachingandlearning?(9.39%)
- (2) Are the explanationsaccurate?(9.00%)
- (3) Are learningactivitieseffectiveinteachingandlearning?(8.96%)
- (4) Is the volumeappropriate?(8.70%)
- (5) Is the authoranexpertinkoreanlanguageeducation?(6.98%)
- (6) Is the designeffectiveinteachingandlearning?(5.83%)

That is, although the relative importance of the domain was greater for the content, format, and background domains in descending order (level 1), the evaluation items such as “appropriateness of volume” and “effectiveness of design in teaching and learning” within the format domain and “professionalism of author” within the background domain were ranked as 4th, 6th, and 5th, respectively, with high levels of relative importance. These findings are consistent with the results obtained by E. Kim et al. (2011, 2013), which suggested that when Korean language teachers and subject specialists select textbooks, they give significant weight to the format and external factors in addition to the textbook’s internal factors including the actual content. So far, the editing and layout of the textbooks have been considered to warrant an insignificant weight as evaluation criteria, and author information has been treated as an exogenous variable. Hence, these findings indicate that external factors related to format and background domain need to be included as significant evaluation criteria and should be assigned appropriate scores that are commensurate with their relative importance.

4. Varying relative importance of evaluation items under the same evaluation category

When the relative importance of all evaluation items under the same evaluation category is examined, the evaluation items are found to possess different levels of relative importance.⁷

Table 7. A wide gap in the overall priorities among evaluation item under the same evaluation category

Evaluation category	Evaluation item	Overall priorities
Texts	(6) Are the texts effective in teaching and learning?	1
	(7) Is the selection of texts balanced?	13
	(8) Do the texts reflect the reality of the Korean language?	12
Explanation	(12) Are the explanations accurate?	2
	(13) Are the explanations clear?	10
Assessment	(14) Is the assessment content appropriate?	9
	(15) Is the assessment method effective?	18
Design	(17) Is the design effective for teaching and learning?	6
	(18) Are the method and type of bookbinding appropriate?	21

These results suggest the following to develop an evaluation tool to select textbooks:

- (1) After specifying the evaluation items for each evaluation category, the evaluation should be conducted as per the “evaluation item.”
- (2) Evaluators should agree on and be well aware of the relative

⁷ However, with regard to learning activities, (9) the systematicity of composition, (10) effectiveness of teaching and learning, and (11) reflection of the reality of the Korean language were found to be ranked 7th, 3rd, and 8th respectively in terms of their overall relative importance, highlighting the significance of the intermediate category.

importance of each evaluation item.

The evaluation categories, including texts, learning activities, assessment, etc., are well recognized by textbook evaluators (E. Kim et al., 2013), and evaluation is mainly conducted for each of these factors. However, although textbook evaluators agree on the relative importance of certain factors, they may disagree on which aspect of that factor deserves the focus and how much importance should be assigned to this aspect. Therefore, the evaluation conducted by either ranking the evaluation factors and assigning scores to them only in level 2 could undermine the reliability of the evaluation results. Hence, evaluation criteria need to be specified up to level 3 (evaluation domain–category–item) through sharing and discussion among textbook selectors in order to achieve a reliable evaluation, and a systematic score should be assigned to the specified evaluation items according to their relative importance. Furthermore, textbook selectors should initiate the textbook selection process with a clear understanding of the measurement scales that follow the above suggestions.

V. Conclusion

This paper developed a hierarchically structured evaluation criteria to select Korean language textbooks and used the AHP formula to determine the relative importance of each factor. Table 7 below can be used as a measurement scale to select Korean language textbooks. As a result, an evaluation scale that takes the format presented in Table 8 can be used to actually select Korean language textbooks.

Table 8. Measurement scale for Korean language textbook selection using the AHP

Evaluation domain (level 1)	Evaluation category (level 2)	Evaluation item (level 3)	Evaluation results (A)	Score weight (B)	Scores = cAxBx20
Content	Table of contents	(1) Is the table of contents systematic?	①-②-③-④-⑤	3.31%	
		(2) Is the composition of units systematic?	①-②-③-④-⑤	2.04%	
	Units	(3) Is the composition of units effective in teaching and learning?	①-②-③-④-⑤	3.68%	
		(4) Are the learning objectives stated clearly?	①-②-③-④-⑤	3.52%	
	Learning objectives	(5) Is the composition of learning objectives systematic?	①-②-③-④-⑤	4.02%	
		(6) Are the texts effective in teaching and learning?	①-②-③-④-⑤	9.39%	
	Texts	(7) Is the selection of texts balanced?	①-②-③-④-⑤	3.72%	
		(8) Do the texts reflect the reality of the Korean language?	①-②-③-④-⑤	3.97%	
		(9) Is the composition of learning activities systematic?	①-②-③-④-⑤	5.67%	
	Learning activities	(10) Are the learning activities effective in teaching and learning?	①-②-③-④-⑤	8.96%	
		(11) Do the learning activities reflect the reality of the Korean language?	①-②-③-④-⑤	4.68%	
	Explanation	(12) Are the explanations accurate?	①-②-③-④-⑤	9.00%	
		(13) Are the explanations clear?	①-②-③-④-⑤	4.09%	
	Assessment	(14) Is the assessment content appropriate?	①-②-③-④-⑤	4.38%	
		(15) Is the assessment method effective?	①-②-③-④-⑤	2.17%	
Format	Volume	(16) Is the volume appropriate?	①-②-③-④-⑤	8.70%	
	Design	(17) Is the design effective in teaching and learning?	①-②-③-④-⑤	5.83%	
		(18) Are the method and type of bookbinding appropriate?	①-②-③-④-⑤	1.47%	
Background	Author	(19) Is the author an expert in Korean language education?	①-②-③-④-⑤	6.98%	
	Publisher	(20) Does the publisher specialize in publishing textbooks?	①-②-③-④-⑤	1.63%	
	Additional materials	(21) Are additional supportive materials supplied effectively?	①-②-③-④-⑤	2.79%	
Total				100.00%	/100

The evaluation criteria given above applies the AHP technique, and the following factors provide implications for their utilization. First, the relative weight of each evaluation factor is shown, and it was scientifically calculated by collecting the opinions of specialists on Korean language textbook development and evaluation. This evaluation process,

and the corresponding results, is certainly different from existing textbook evaluation criteria that were established by understanding the evaluation criteria set by developers. Therefore, the above evaluation scale can be used as highly effective criteria to select Korean language textbooks for use in schools.

Second, the scale reflects the results of the relative weight per evaluation criterion to identify the primary conditions that need to be considered when selecting a textbook. Accordingly, schools, which are the main agents that select textbooks, can use this scale to devise their own evaluation tool optimized to the context of classroom teaching and learning as well as learner-related variables. Otherwise, it is possible to consider a simplified version of the evaluation scale including only some of the criteria that carry a relatively greater importance, as reflected by the weight of the evaluation criteria in the table above.

Third, the evaluation scale can be divided into category-item-criterion and can be accordingly systematized to suggest the resulting importance for each criterion. In this way, it will be possible to clarify the relative importance of the evaluation components for each stage from a macro level to a micro level. As a consequence, pre-service teachers will be able to understand the requirements for “good textbooks” within a systematic framework of the evaluation scale as well as teachers who participate in the selection of Korean language textbooks. In other words, the criteria will help improve teachers’ capacity to understand the logical structure of the evaluation components and the relative importance of each component to properly conduct the evaluation.

The evaluation criteria developed in this study can be applied to form a suitable evaluation framework to maintain a productive textbook development-screening-selection process. Thus, it will improve the quality of the series of processes required for textbook development,

screening, and selection. The quality is expected to be reinforced throughout the entire process, ranging from the textbook development stage to the selection stage, and it will largely contribute to the production, selection, and use of good textbooks in schools by improving the effectiveness of the textbook policy.

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ABSTRACT

Developing a measurement scale for Korean language Textbook Selection Using the Analytic Hierarchy Process

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This study developed a measurement scale that uses the Analytic Hierarchy Process (AHP) to help create an optimal textbook selection process for teachers. To this end, this study first established a logical three-layer structure to evaluate Korean language textbooks, and this structure is comprised of an evaluation domain (level 1), an evaluation category (level 2), and an evaluation item (level 3). 32 Korean language textbook specialists carried out a pairwise comparison to determine the relative weights of the factors for each level, and the AHP formula was then applied to calculate the relative weights. The results indicate that for the evaluation domain (level 1), 'content' was relatively more important than 'format' and 'background', and in the 'content' category (level 2), 'learning activities' and 'texts' were given a higher importance. Also, the 'appropriateness of volume', 'effectiveness of design in teaching-learning', and 'professionalism of author' were found to have high levels of relative importance. Finally, the relative importance of the evaluation items was found to be quite different even under the same evaluation category (level 2).

KEYWORDS Korean language textbook, Textbook selection, Measurement scale for Korean language textbook selection, the Analytic hierarchy process (AHP), Korean language education