

RESEARCH ARTICLE

Development of a Scale for Evaluating Secondary School Field Practice Programs

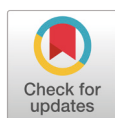
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ABSTRACT

The school field practicum program is crucial for enhancing the teaching competencies of pre-service teachers. This study aimed to develop a suitable scale to evaluate how field practicum programs are operated in secondary schools and what outcomes pre-service teachers can achieve. To achieve this, the study reviewed previous research on secondary school field practicums and examined the field practicum programs in secondary school settings. Through expert consultations, 14 items for evaluating the operation process of secondary school field practicums and 9 items for evaluating outcomes were developed. Subsequently, the results from 130 student teachers from the College of Education at G-University, who responded to the school field practicum evaluation scale, were analyzed. To improve model stability and reduce measurement variables, an item parceling technique was applied to the evaluation scale. Exploratory and confirmatory factor analyses validated its factor structure, and reliability analyses assessed its internal consistency. The evaluation scale developed in this study can be used as a diagnostic tool for assessing the operational status and outcomes of secondary school field practicums and is expected to contribute to the development of the secondary teacher training system.

Keywords: Evaluation scale, factor analysis, item parceling, practicum operation, practicum outcomes, secondary school field practicum.



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Introduction

In modern educational environments, the importance of teacher training is increasingly emphasized, and school field practicums serves as a key process in enhancing pre-service teachers' understanding of school environments and their teaching competencies (Kim et al., 2023; MOE, 2021; Musset, 2010). In South Korea, the teacher training process defines 'teaching practicum' as encompassing both 'school field practicum' and 'educational volunteer activities' (MOE, 2014). Therefore, this study will refer to it as 'school field practicum' instead of 'teaching practicum'.

Pre-service teachers in universities preparing secondary school teachers typically participate in a 4-week school field practicum during their third or fourth year, earning 2 credits (Choi et al., 2020). However, secondary teacher training institutions face challenges in securing stable practicum schools due to the diversity of subjects and the large number of trainees (Cho & Kim,

2013; Park, Maeng, & Woo, 2016). Consequently, there are qualitative differences in the systematic nature and detailed elements of the practicum, depending on the situation of the practicum schools (Choi, 2020; Choi et al., 2020; Kwon & Kwon, 2018).

Generally, field practicums in secondary schools begin with training on understanding the school environment and teaching duties, as well as observing classes and classroom management during the first 1-2 weeks. This is followed by activities such as teaching demonstrations, classroom management, student guidance, and participation in school events (Kim, 2018; Kim et al., 2021; Park & Lee, 2016). Through this process, pre-service teachers engage in various practicum activities, including lesson planning, teaching demonstrations and feedback, interaction and guidance with students, and assisting with teaching duties (Choi et al., 2020). Additionally, pre-service teachers gain practical experiences that help them explore their aptitude for teaching and establish a professional identity as teachers (Jeong, 2022).

During the school field practicum, secondary pre-service teachers devote significant time to subject teaching, student guidance, and classroom management. However, they are reported to face difficulties in areas such as creating a conducive classroom atmosphere, guiding and counseling students, preparing lesson plans, and addressing a lack of subject-related knowledge (Eom & Uhm, 2010). Key reasons for these challenges have been identified as the insufficient frequency and duration of school field practicums (Choi et al., 2020), unstructured program management at practicum schools, and inadequate guidance from mentor teachers (Cho & Kim, 2013). Kim (2018) also highlighted that the content and quality of teaching practicums are largely determined by the mentor teachers at practicum schools and that the practicum experiences provided vary significantly between schools.

Therefore, to improve the quality of school field practicums, it is essential to identify improvement strategies based on systematic evaluations of practicum schools (Park, 2019; Darling-Hammond, 2006; Zeichner, 2010). To evaluate practicum programs conducted in schools, evaluation scales need to be developed; however, in South Korea, evaluation scales have only been developed for elementary school practicum programs (Park, 2019). Internationally, studies have been conducted in countries such as Turkey (Aslan & Sağlam, 2018; Ekiz, 2022) and Pakistan (Gujjari et al., 2011). These evaluation scales for school field practicum programs have mainly been developed based on Stufflebeam's (1971) CIPP evaluation model (Lee, 2019).

The CIPP evaluation model comprises four areas: assessing the need for policy programs (Context), evaluating the adequacy of plans (Input), evaluating implementation processes (Process), and evaluating outcomes (Product). It has been widely used for decision-support evaluations of educational programs (Koo & Nam, 2019; Kim & Lee, 2019; Stufflebeam & Zhang, 2017). However, secondary school practicums in South Korea are currently conducted within the framework predetermined by teacher training institutions and existing educational policies, using the facilities and conditions available in secondary schools. Thus, to evaluate the actual implementation of practicums in school settings, it is necessary to focus on the Process and Product areas of the CIPP evaluation model, rather than the Context and Input areas.

The purpose of this study is to develop a reliable evaluation scale focused on the operational processes and outcomes of school field practicums implemented in secondary schools, based on the CIPP evaluation model. This evaluation scale is expected to serve as a useful tool for diagnosing secondary school practicum programs, identifying their challenges,

and proposing areas for improvement.

Methods

Participants

In this study, a survey was conducted with 138 fourth-year students from the College of Education at G-University who completed their teaching practicum at middle or high schools. The participating pre-service teachers undertook a 4-week teaching practicum at one of the following: G-University's affiliated middle and high schools, partner schools in the region where the university is located, or their alma maters. For data analysis, responses from 130 pre-service teachers with no missing values were included in the final analysis (Table 1). The distribution of participants by school level was 60 in middle schools (46.2%) and 70 in high schools (53.8%).

Table 1. Distribution of field practice schools and number of participants

Field Practice Operating School	Middle School			High School			Total
	Affiliated Middle School	Within the Region	Outside the Region	Affiliated High School	Within the Region	Outside the Region	
Number of Trainees	24	20	16	42	12	16	130
(%)	(18.5)	(15.4)	(12.3)	(32.3)	(9.2)	(12.3)	(100)

Procedure

The process of developing a scale to evaluate the content and outcomes of field practicum operations in secondary schools is shown in Table 2.

Table 2. The development process of the evaluation scale for secondary school field practicum programs

Step	Contents
1. Preliminary Research	-Conducted literature Review on the Implementation and Effects of Field Practicum, Both Domestically and Internationally. -Summarized commonalities and Distinctions in the Implementation Plans for Middle and High School Field Practicums.
2. Preliminary Item Construction	-Developed preliminary Items Corresponding to the Process and Product Areas of the CIPP Model. -Created 20 Preliminary Items for Evaluating the Operation Process of School Field Practicum and 15 Preliminary Items for Evaluating the Outcomes of School Field Practicum.
3. Main Item Construction	-Evaluated and revised the appropriateness of the preliminary items through expert consultation. -Finalized 14 items across five elements for the operation domain and 9 items across five elements for the outcome domain of school field practicum. -Conducted a content validity (S-CVI/UA) assessment with 10 experts for a total of 23 items.
3. Exploratory Factor Analysis	-Performed exploratory factor analysis using the item parceling method. -Selected factors based on a communality threshold of 0.5 or higher and a factor loading of 0.4 or higher.
4. Confirmatory Factor Analysis	-Conducted confirmatory factor analysis to verify the structural fit of the scale. -Analyzed inter-factor correlations and calculate the Average Variance Extracted (AVE) values and assessed reliability using Cronbach's α coefficient.

Preliminary Research and Construction of Preliminary Items

To evaluate the operational processes and outcomes of school field practicum programs, the contents and effects experienced by pre-service teachers during the practicum were organized based on previous studies related to the

operation of teaching practicums (Chung & Chung, 2012; Cho & Kim, 2013; Choi, 2020; Choi et al., 2020; Eom & Uhm, 2010; Gim & Park, 2019; Kang, 2013; Kim, 2018; Kim et al., 2022; Kwon & Kwon, 2018). Subsequently, to address the differences in the operational systems of elementary and secondary school practicums, the commonalities and unique aspects of operational content were extracted and organized through an analysis of middle and high school field practicum plans.

We then referred to literature on the development of evaluation scales for elementary school practicums based on the CIPP model (Park, 2019) to construct items for secondary school practicums. However, given that secondary school field practicums in Korea are conducted within the facilities and conditions predetermined by educational policies, we focused on the elements related to Process and Product from the CIPP model to develop items addressing the operation process and outcomes of secondary school practicums.

Based on the literature on the development of evaluation scales for elementary school field practicum programs using the CIPP model (Park, 2019), items for secondary school field practicum programs were constructed. However, as secondary school field practicums in South Korea are conducted within the regulations determined by educational policies and under the facilities and conditions of secondary schools, items related to the operational processes and outcomes of secondary school practicums were constructed with a focus on the Process and Product components of the CIPP model.

As a result, we developed 20 preliminary items for evaluating the operational process of school field practicums, which include aspects such as mentor teachers' guidance of trainees, trainees' class observation and demonstration, student assessment, classroom management, student guidance and counseling, extracurricular educational activities, and experiences in administration and teacher training.

Furthermore, we developed 15 items for evaluating the outcomes of school field practicums, which cover understanding the school environment, administrative competency, teaching and assessment competency, student guidance competency, career assistance, establishment of professional identity, and relationship building with teachers and students. These items are designed to reflect the specific characteristics of secondary education practicums and encompass the various educational challenges and opportunities faced by trainees in real school settings.

Construction of Main Items

The preliminary items initially developed were revised and refined through item reviews conducted by four middle school teachers and four high school teachers, each with over five years of experience in supervising school field practicums, as well as two professors specializing in education. The evaluation criteria for the operational domain of school field practicums were based on appropriateness, while the evaluation criteria for the outcome domain were based on effectiveness and satisfaction.

The detailed composition of the evaluation scale items for secondary school field practicum programs is shown in Table 3. The evaluation factors for the operational domain of school field practicums consist of five elements: feedback for trainees, teaching experience of trainees, student assessment experience, student guidance experience, and administrative task practice, with a total of 14 items.

The evaluation factors for the outcome domain of school field practicums include five elements: understanding of

the school environment, development of teaching and assessment competency, improvement of student guidance competency, the extent to which the practicum supports career planning in teaching, and overall satisfaction, with a total of 9 items.

The content validity (S-CVI/UA) analysis of the 23 developed items, conducted by 10 experts, showed a score of .857 for the "school field practicum operations" domain and .888 for the "school field practicum outcomes" domain. Since an S-CVI score of 0.8 or higher is generally considered acceptable, the composition of the survey items can be regarded as having high content validity. Each item was designed to be rated on a 5-point Likert scale, allowing respondents to indicate the degree to which they agree with each statement.

Table 3. Evaluation scale for the operational process and outcomes of the secondary school field practicum program

Domain	Element	Survey Item
Operation Process	Feedback	1. During the teaching practicum, was the support and feedback from the university sufficient?
		2. Was the guidance and feedback from the teachers at the practicum school sufficient?
	Class Instruction	3. Was your experience in lesson planning and teaching demonstrations sufficient?
		4. Was your experience in observing classes (both in your major and other subjects) sufficient?
		5. Was your experience in participating in professional learning communities with practicum school teachers sufficient?
	Student Evaluation	6. Was your experience in managing student assessments, such as supervising and grading exams, sufficient?
		7. Was your experience in developing performance assessment criteria and conducting educational assessments of students sufficient?
		8. Was your experience in developing written test items and receiving feedback sufficient?
	Student Guidance	9. Was your experience in classroom management and student guidance (homeroom meetings, cleaning, lunch, class meetings, etc.) sufficient?
		10. Was your experience in counseling individual students (on school life, academics, career, etc.) sufficient?
		11. Was your experience in guiding students in creative experiential activities (autonomy, clubs, volunteering, career) sufficient?
	Administrative Operation	12. Was your practice in using the school administrative computer systems (NEIS, drafting official documents, purchasing supplies) sufficient?
		13. Was the training on the characteristics of the practicum school and departmental administrative tasks sufficient?
		14. Was your experience in participating in school events (sports day, outdoor experiences, festivals, etc.) with students sufficient?
Operation Outcomes	Understanding of the School Environment	15. To what extent did the teaching practicum help you understand and grasp the overall state of the school environment?
		16. To what extent did the teaching practicum help you understand overall school administrative tasks?
	Teaching and Evaluation Competence	17. To what extent did the teaching practicum help you develop your teaching demonstration and instructional skills?
		18. To what extent did the teaching practicum help you develop your student assessment and management skills?
	Student Guidance Competence	19. To what extent did the teaching practicum help you develop your student guidance and counseling skills?
		20. To what extent did the teaching practicum help you in forming a proper professional identity as a teacher?
	Assistance with Teaching Career Path	21. Did the teaching practicum have a positive influence on your decision to pursue a career in teaching?
		22. To what extent did the teaching practicum help you prepare for the teacher certification exam (lesson plans, teaching demonstrations)?
	Overall Satisfaction	23. What is your overall satisfaction with the teaching practicum?

Finalization of Items

The developed scale was validated for its validity and reliability through exploratory and confirmatory factor analyses based on data collected from 130 pre-service teachers. The internal consistency of the items was evaluated using

Cronbach's α coefficient. Through this process, the finalized items established themselves as a reliable evaluation tool that aligns with the objectives of the study.

Data Analysis

A total of 138 responses were collected to validate the evaluation scale for secondary school field practicums. Of these, responses with any missing answers or those with identical responses to all items were excluded, leaving a final dataset of 130 responses for analysis. The construct validity of the evaluation scale for secondary school field practicum programs was examined through exploratory factor analysis (EFA), and the suitability of the item composition was verified using confirmatory factor analysis (CFA) (Bartlett, 1950).

The school field practicum for pre-service secondary teachers is conducted across various school levels, such as middle and high schools, with different mentoring approaches in practicum schools. Due to these variations, applying a standard item-based factor analysis may pose limitations in validity verification. Additionally, the dataset of 130 responses may be insufficient for standard factor analysis. To address these limitations, an item parceling technique based on a factor-based approach was applied, reducing the number of items per factor and lowering the measurement ratio per participant (Little et al., 2013; Rogers & Schmitt, 2004).

In the exploratory factor analysis, indicators for each factor were selected based on a communality threshold of 0.5 or higher and a factor loading of 0.4 or higher. Subsequently, confirmatory factor analysis was conducted to verify the structural fit of the scale. Additionally, to assess the discriminant validity of the scale, correlations between factors were analyzed, and the Average Variance Extracted (AVE) values were calculated. Finally, the reliability of the sub-items within the identified factors was evaluated using Cronbach's α coefficient.

Exploratory and confirmatory factor analyses, along with related visualizations, were performed in the R software environment (R Core Team, 2024) using the Psych package (Revelle, 2018), Lavaan package (Rosseel, 2012), and LavaanPlot package (Balluerka, 2021). The results of the analysis confirmed the structural validity and reliability of the scale, demonstrating the potential of this study to make a practical contribution to the evaluation of teaching practicums.

Results

Exploratory Factor Analysis of the School Field Practicum Program Evaluation Scale

In this study, factor analysis was performed on 14 items related to the school field practicum process and 9 items related to the outcomes of the school field practicum. To determine whether factor analysis was appropriate, the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were computed for the 23 items.

The results showed a KMO measure value of 0.870, which, according to Kaiser (1970), indicates suitability for factor analysis as it exceeds the threshold of 0.50. Additionally, Bartlett's test of sphericity yielded a test statistic of χ^2 ($df=2$) = 1011.16, $p < 0.001$, indicating that the data do not satisfy the assumption of sphericity. This suggests that the dataset is appropriate for conducting factor analysis (Bartlett, 1950).

Exploratory factor analysis conducted on the 23 individual items revealed that operational items and outcome

items were classified into the same factor, which did not align with the theoretically expected construct structure. This discrepancy is likely due to the high sample size requirements for factor analysis when individual items are used as indicator variables.

To address this issue, the item parceling technique was applied to reduce the ratio of measurements per participant (Little et al., 2013). Accordingly, single-factor analyses were performed on the given scale, and item parcels were constructed based on factor loadings (Tables 4 and 5). Items were selected sequentially, starting with those with the highest factor loadings, and the selection direction alternated between parcels to ensure an even distribution of item content across parcels, maintaining the representativeness of the factor structure (Rogers & Schmitt, 2004).

Applying this factorial algorithm to the 14 items related to the school field practicum operations resulted in three item parcels in Table 4: Parcel A1 (1, 3, 6, 9, 12), Parcel A2 (2, 4, 7, 10, 13), and Parcel A3 (5, 8, 11, 14).

Table 4. Single factor analysis and item parceling for school field practicum operation items

Item Number	Communality	Factor Loading	Item Parcel
10	0.132	0.363	A2
14	0.141	0.375	A3
9	0.180	0.424	A1
4	0.221	0.470	A2
11	0.233	0.483	A3
1	0.281	0.530	A1
12	0.304	0.552	A1
13	0.307	0.554	A2
3	0.312	0.558	A1
5	0.327	0.572	A3
2	0.381	0.617	A2
6	0.584	0.764	A1
8	0.591	0.769	A3
7	0.637	0.798	A2

A previously applied item parceling method was used for the 9 items related to the outcomes of the teaching practicum, yielding three item parcels, as presented in Table 5: Parcel B1 (15, 18, 22), Parcel B2 (16, 17, 20), and Parcel B3 (19, 21, 23).

Table 5. Single factor analysis and item parceling for school field practicum outcome items

Item Number	Communality	Factor Loading	Item Parcel
21	0.265	0.515	B3
16	0.358	0.598	B2
15	0.440	0.664	B1
18	0.462	0.680	B1
20	0.462	0.680	B2
19	0.542	0.736	B3
22	0.587	0.766	B1
17	0.611	0.782	B2
23	0.615	0.784	B3

The exploratory factor analysis conducted on the six constructed item parcels demonstrated an acceptable factor structure, as presented in Table 6.

Table 6. Appropriateness of factor analysis for item parcels in secondary school field practicum program evaluation scale

KMO Measure of Sampling Adequacy (MSA) Test	0.871	
Bartlett's Test of Sphericity	Approx χ^2	37.258
	Degrees of Freedom (df)	5
	<i>p</i>	.000

The results of the exploratory factor analysis examining the factor loadings of each item parcel are presented in Table 7. All item parcels satisfied the established criteria. Specifically, each item parcel demonstrated a factor loading of 0.40 or higher on its primary construct and 0.30 or lower on all other constructs, meeting the predefined thresholds.

Additionally, the conditions outlined by Costello & Osborne (2005) and McCoach et al. (2013) were met. No item parcel exhibited a factor loading exceeding 0.30 on two or more factors, and no cross-loadings were observed, as all differences in factor loadings exceeded the 0.1 threshold.

Table 7. Results of the exploratory factor analysis for the evaluation scale (item parcels) of the secondary school field practicum program

Variable Name	Communality	Factor Loading		Cronbach's α
		Factor 1	Factor 2	
A1	0.787	0.924	-0.047	0.897
A2	0.742	0.672	0.226	
A3	0.745	0.872	-0.012	
B1	0.789	-0.019	0.904	0.866
B2	0.754	-0.001	0.869	
B3	0.546	0.129	0.633	
Factor Name		School Field Practice Operation	School Field Practice Outcomes	
Eigenvalue		4.233	0.656	
Explained Variance		0.706	0.109	
Cumulative Explained Variance		0.706	0.815	

※Extraction Method: principal axis factoring

※Rotation Method: Direct Oblimin

Upon reviewing the two extracted factors, the first factor was composed of item parcels related to school field practicum operations and was named "School Field Practicum Operations," with a Cronbach's α of .897. The second factor consisted of item parcels related to school field practicum outcomes and was named "School Field Practicum Outcomes," with a high Cronbach's α of .866.

Confirmatory Factor Analysis of the School Field Practicum Program Evaluation Scale

Confirmatory factor analysis was performed on the evaluation scale for the school field practicum program. In confirmatory factor analysis using item parcels, unidimensionality must be established. To examine this, the internal consistency of the items within each parcel was first evaluated, and exploratory factor analysis was conducted with the

number of factors set to one to verify whether each parcel appropriately corresponded to its designated factor.

Generally, an internal consistency value of 0.60 or higher is considered an acceptable level (Kiston & Widaman, 1994). In this study, the internal consistency of the parcels related to the school field practicum process ranged from 0.59 to 0.65 (0.652, 0.638, 0.588). Although some parcels slightly fell below the 0.60 threshold, they were overall within an acceptable range. For the parcels related to the outcomes of the school field practicum, internal consistency values ranged from 0.59 to 0.78 (0.753, 0.594, 0.778).

Additionally, factor loadings for the parcels on their respective factors ranged from 0.84 to 0.89 (0.89, 0.84, 0.87) for the school field practicum process parcels and from 0.72 to 0.89 (0.89, 0.88, 0.72) for the school field practicum outcomes parcels. These results confirm that each parcel had high factor loadings on its designated factor. These findings indicate that the three parcels related to the school field practicum process and the three parcels related to the school field practicum outcomes each exhibit unidimensionality and align with the theoretically established factor structure.

To access the assumption of multivariate normality, a prerequisite for the commonly used maximum likelihood estimation in confirmatory factor analysis, was met, the kurtosis and skewness of individual item parcels were analyzed. Generally, the assumption of multivariate normality is considered satisfied when kurtosis is less than ± 7 and skewness is less than ± 2 (West et al., 1995). Additionally, skewness exceeding an absolute value of 3 is considered extreme, and kurtosis exceeding 7 or 8 is deemed statistically problematic (Kline, 2016; Hopkins & Weeks, 1990). In this study, kurtosis values ranged from 2.27 to 6.99, and skewness values ranged from -1.85 to -0.50 , indicating that the assumption of multivariate normality was satisfied.

The model fit indices for the confirmatory factor analysis of the measurement model are shown in Table 8. Five indices were used to evaluate model fit. First, the χ^2 statistic provides a basis for rejecting or accepting the null hypothesis that the estimated model perfectly matches the sample correlation matrix. However, because the χ^2 statistic is a function of sample size, it tends to yield very large values even with small discrepancies when the sample size is large. Therefore, additional fit indices less sensitive to sample size, such as Goodness-of-Fit Index (GFI), Root Mean Squared Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI), were also considered.

Generally, an RMSEA (Root Mean Squared Error of Approximation) value below 0.08 is considered to indicate good fit, while values between 0.08 and 0.10 are interpreted as indicating moderate fit (Hong, 2000; Hu & Bentler, 1999). TLI (Tucker Lewis Index) and CFI (Comparative Fit Index) range from 0 to 1, with values of 0.90 or higher generally regarded as indicative of good fit (Bentler, 1990; Hong, 2000; Tucker & Lewis, 1973).

Table 8. Fit indices for the evaluation scale (item parcels) of the secondary school field practicum program

Criteria for Good Fit	χ^2	df	p - value	Absolute Fit Index		Incremental Fit Index	
				GFI	RMSEA	TLI	CFI
Model	12.760	8	0.120	0.969	0.068 (0.000, 0.134)	0.983	0.991

All fit indices indicated an acceptable level; however, the 90% confidence interval for RMSEA was (0.000, 0.134), with the upper bound exceeding the commonly accepted upper threshold of 0.08. Therefore, it is necessary to re-evaluate the fit of the model by conducting confirmatory factor analysis again with a data set of sufficiently large sample size for

this scale. The results of the confirmatory factor analysis and reliability analysis for the evaluation scale (item parcels) are presented in Table 9.

Table 9. Confirmatory factor analysis and reliability of the evaluation scale (item parcels) for secondary school field practice program

Variable Name		Unstandardized Coefficient	Standardized Coefficient	Standard Error	C.R. (t-v alue)	AVE	Cronbach's α
Operation	A1	1.000	0.872			0.951	0.897
Process	A2	0.822	0.866	0.064	12.749***		
	A3	0.909	0.858	0.072	12.588***		
Operation	B1	1.000	0.884			0.962	0.66
Outcomes	B2	0.857	0.874	0.067	12.712***		
	B3	0.736	0.738	0.074	9.866***		

*** $p < .0001$

The Average Variance Extracted (AVE), which represents the variance explained by the observed variables for the latent variable, is considered acceptable when it is 0.50 or higher. This indicates that the observed variables reliably and validly measure the latent variable (Fornell & Larcker, 1981; Fornell & Bookstein, 1982). In this study, AVE values ranged from 0.951 to 0.962, all exceeding 0.50, confirming that the item parcels reliably and validly measure the latent variables.

Additionally, discriminant validity between the two latent variables is established when the AVE values of each latent variable are greater than the squared correlation coefficient between the two latent variables. In this study, the correlation coefficient between the two latent variables was 0.820, and its squared value (0.672) was smaller than the AVE values (0.951 and 0.962) of the latent variables, confirming that discriminant validity was achieved.

The standardized factor loadings ranged from 0.738 to 0.884 ($p < .001$), meeting both the threshold of 0.50 suggested by Hair et al. (2010) and the threshold of 0.40 proposed by Wang & Wang (2012). This indicates that the items exhibit convergent validity. The results of the confirmatory factor analysis for the evaluation scale of the secondary school field practicum program are illustrated in Fig. 1.

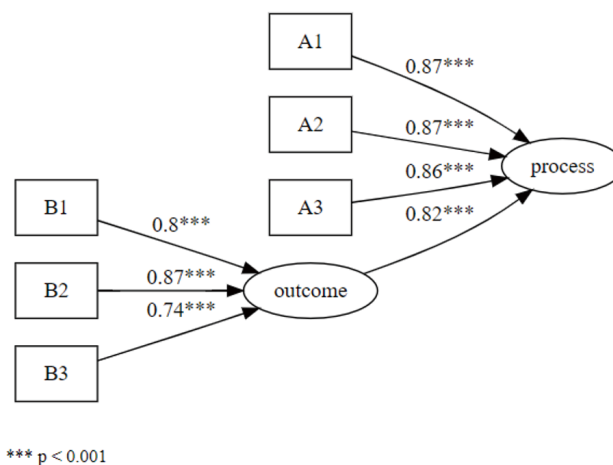


Fig. 1. Results of the Confirmatory Factor Analysis for the Evaluation Scale (Item Parcels) of the Secondary School Field Practicum Program

Discussion

School field practicum provides pre-service teachers with an opportunity to experience the educational field, bridging the theoretical instruction from universities with practical application in schools (Kang, 2013; Zeichner, 2010). However, school field practicum has traditionally exhibited inconsistencies in implementation across institutions, leading to disparities in student teachers' practicum experiences (Kim et al., 2021). Therefore, there is a need to develop an objective evaluation scale for diagnosing and addressing issues within school field practicum programs.

Although some studies have evaluated school field practicum operations (Kim, 2018; Baek & Ham, 2007), evaluations of educational programs like school field practicum are generally based on Stufflebeam's (1971) CIPP evaluation model, which assesses four areas: Context, Input, Process, and Product (Ekiz, 2022; Park, 2019). However, when applied to school field practicum evaluation scales, the CIPP model can result in an excessive number of items (Ekiz, 2022) or may lack measures that include practical operations (Park, 2019). In South Korea, Park's (2019) study on elementary school field practicums is the only research that developed an evaluation scale based on the CIPP model. Therefore, this study is significant as it develops a systematic evaluation scale tailored to the diverse contexts and conditions of secondary school field practicums compared to those of elementary schools.

Among the CIPP model's evaluation areas, Context and Input pertain to the operational conditions and plans rather than the actual execution of the practicum. Considering the current school field practicum, which operates within the fixed educational policies and existing facilities of secondary schools, it is necessary to focus on the Process and Product areas, which directly relate to the experiences and outcomes of pre-service teachers. Accordingly, this study developed evaluation items relevant to secondary school practicum content based on prior research and secondary school practicum operation plans, with content validity confirmed by experts.

Exploratory factor analysis of the 23 individual items revealed inconsistencies with the theoretically expected construct structure, likely due to the insufficient sample size. To address this issue, the item parceling technique (Rogers & Schmitt, 2004) was employed, which reduced the number of items per factor and decreased the ratio of measurements per participant. This approach helped mitigate problems arising during model estimation (Kiston & Widaman, 1994; Lee & Kim, 2016; Little et al., 2013; Moon, 2009).

The evaluation scale developed in this study, through expert consultation and factor analysis, focuses on the experiences pre-service teachers need and the outcomes expected of them in secondary school educational settings. As a result, it excludes the preparation and conditions domains found in the evaluation scale for elementary school practicums (Park, 2019), with differences in the content of the operational and outcome domains. For instance, Park's (2019) evaluation scale for practicum operations included only four items—student evaluation, counseling, classroom management, and relationship building with students and teachers. In contrast, this study's scale developed 14 items across five elements: feedback on practicum activities, lesson instruction, student evaluation, student guidance, and administrative operations. These items encompass diverse experiences necessary for secondary school practicums, including student observation and evaluation, participation in professional learning communities, creative experiential activities, use of administrative computer systems, administrative training, and school events. This differentiates it from elementary school practicum evaluation scales.

Additionally, while Park's (2019) evaluation scale for practicum outcomes presented six evaluation indicators, this study developed 14 items across five elements: understanding of the school environment, teaching and assessment competency, student guidance competency, support for career planning, and overall satisfaction. Compared to elementary school outcomes, this scale includes similar items for professional identity and career planning but further specifies teacher professionalism into areas such as administration, student evaluation, instruction, and student guidance. It also features evaluation items addressing the degree of support for preparing for teacher certification exams, which pre-service teachers consider important.

This study developed an evaluation scale for the overall operations and outcomes of secondary school field practicums, which can be used by secondary teacher training institutions to assess and improve the effectiveness of teacher training programs. To facilitate practical application in South Korea, the evaluation scale is provided in Korean in the appendix. Additionally, future research with a larger sample of secondary school practicum participants is needed to address the limitations of this study.

Conclusions and Implications

This study focused on developing a systematic scale to evaluate the operations and outcomes of secondary school field practicum programs. For this purpose, preliminary items were developed through a review of relevant literature on field practicums, and test items were constructed through expert review. The test items developed in this study were validated for their reliability and validity through exploratory and confirmatory factor analyses. The finalized scale consists of two factors: school field practicum operations (14 items) and school field practicum outcomes (9 items), with each item designed to systematically assess various aspects of pre-service teachers' experiences during the practicum process.

The scale developed in this study can serve as a tool for objectively evaluating the experiences of secondary pre-service teachers in educational settings. By analyzing and improving the operation of secondary school field practicum programs, this scale can provide direction for enhancing the quality of teacher training systems and field practicums.

This study offers several significant contributions:

1. **Structured Evaluation Tool:** By providing a structured evaluation tool to systematically assess the operations and outcomes of secondary school field practicum programs, this study offers a framework for diagnosing challenges in the practicum process more precisely and formulating targeted improvement strategies.
2. **Self-Reflection for Pre-Service Teachers:** The developed scale enables secondary pre-service teachers to obtain an objective assessment of their field practicum experiences. This facilitates a systematic identification of their strengths and weaknesses and provides opportunities for targeted improvements.
3. **Enhancing Program Effectiveness:** The developed scale contributes to enhancing the effectiveness of secondary school field practicum programs by providing a structured means of evaluation. Additionally, it encourages secondary pre-service teachers to engage in the practicum process with more clearly defined and specific objectives, thereby improving their overall engagement and outcomes.

Conflicts of Interest

The author(s) declared no conflicts of interest

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<Appendix in Korean> Evaluation Scale for the Operational Process and Outcomes of the Secondary School Field Practicum Program

영역	요소	평가 내용
운영 과정	피드백	1. 교육실습 기간 중 대학에서의 지도와 피드백은 충분히 이루어졌나요? 2. 교육실습 학교 교사의 지도와 피드백은 충분히 이루어졌나요?
	수업 지도	3. 수업지도안 작성 및 수업 시연 경험은 충분히 이루어졌나요? 4. 수업 참관(전공 및 타 교과) 경험은 충분히 이루어졌나요? 5. 실습학교 교사들과의 전문적 학습공동체 활동 경험이 충분히 이루어졌나요?
	학생 평가	6. 시험감독과 채점 등 학생 평가 관리 경험은 충분히 이루어졌나요? 7. 수행평가 기준을 개발하고 학생을 관찰 평가하는 경험은 충분히 이루어졌나요? 8. 지필평가 문항을 개발하고 피드백을 받는 경험은 충분히 이루어졌나요?
	생활 지도	9. 학급 운영 및 생활지도(조종례, 청소, 급식, 학급회의 등) 경험은 충분히 이루어졌나요? 10. 개별 학생과의 상담(학교 생활, 학업, 진로 등) 경험은 충분히 이루어졌나요? 11. 창의적 체험활동(자율, 동아리, 봉사, 진로)에 관련된 학생 지도 경험은 충분히 이루어졌나요?
	행정 운영	12. 학교 행정 전산 시스템(NEIS, 공문 작성, 물품 구입) 활용 방법에 대한 실습은 충분히 이루어졌나요? 13. 교육실습 학교의 특성과 부서별 행정 업무에 관련된 연수는 충분히 이루어졌나요? 14. 학교 행사(체육대회, 교외체험, 축제 등)를 학생들과 함께하는 경험은 충분히 이루어졌나요?
운영 성과	학교 현장 이해 능력	15. 경험한 교육실습이 학교 현장의 전반적인 실태를 파악하고 이해하는데 어느 정도 도움이 되었나요? 16. 경험한 교육실습이 전반적인 학교 행정 업무를 이해하는데 어느 정도 도움이 되었나요?
	수업 및 평가 역량	17. 경험한 교육실습이 수업 시연과 학습 지도 역량 함양에 어느 정도 도움이 되었나요? 18. 경험한 교육실습이 학생 평가 및 평가 관리 역량 함양에 어느 정도 도움이 되었나요?
	생활 지도 역량	19. 경험한 교육실습이 학생 생활지도 및 상담 역량 함양에 어느 정도 도움이 되었나요?
	교직 진로 도움	20. 경험한 교육실습은 올바른 교직원 형성에 어느 정도 도움이 되었나요? 21. 경험한 교육실습은 교직으로의 진로 결정에 긍정적 영향을 주었나요? 22. 경험한 교육실습이 교사 임용 시험(수업지도안, 수업시연) 준비에 어느 정도 도움이 되었나요?
	만족도	23. 교육실습에 대한 전반적인 만족도는 어느 정도인가요?