

# Exploring and Developing Items Measuring the Effect of Mentees' Teaching and the Role of Mentors

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## Abstract

This study intended to develop a valid and reliable survey instrument to measure mentees' effective teaching by analyzing mentors' role through Exploratory Factor Analysis (EFA). This study adapted thirty-three items on the role of School Improvement Specialist Coaches Plus (SISC+) as mentors for the teachers. The items were modified accordingly to fit the current study on coaching and mentoring in Malaysia. A pilot study was then performed with 50 chosen mentee teachers as participants for this study after the items were validated by experts. Five components (personal attributes, pedagogical knowledge, role modelling, system requirement and feedback) were identified using the EFA. From this study, the internal reliability was achieved for all five components. The development of this instrument will help to uncover the role of mentors in order to improve the teachers' teaching quality.

**Keywords:** Mentees Teaching Quality, Exploratory Factor Analysis, School Improvement Specialist Coaches Plus (SISC+).

## Background

Changes in the Malaysian education system have been continued with a comprehensive transformation plan involving the transformation of schools, the transformation of state/district offices, the transformation of ministry and the transformation of the whole education system. As stated in the Malaysian Education Blueprint (2013-2025) that is through Shift 1, every student will have access to quality education with international standards (MOE, 2013). In line with the promise to improve the quality of education, the Ministry of Education Malaysia has introduced the District Transformation Program (DTP) since 2011. This program is to enable the District Education Office to provide support to the school in terms of school operations including teaching and learning support. Support from the party closest to teachers in school, namely School Improvement Specialist Coach Plus (SISC+) specialises in coaching and mentoring teachers is very much needed by the school to ensure that the actions taken by the school are in line with the aspirations and policies of education. Specifically, SISC+ plays

a role in mentoring teachers to improve their teaching in the classroom.

## The Roles of SISC+ in School improvement

School improvement is outlined as strategies to improve learning and schools' capacity to manage change through a system-wide approach. Part of approaches include the appointment of coaches derived from the District Transformation Program. Thus, the appointment of coaches is a big help in improving schools by providing professional support. This coach known as the School Improvement Partners (SIP+) are mainly responsible to coach school leaders to enhance their capability as high-performance school leaders. Whereas, School Improvement Specialist Coaches (SISC+) are responsible to help out with the quality of instructional in the classroom (MOE, 2013). For this study, focusses are on the SISC+ as mentors to the teachers. SISC+ plays important roles to boost teaching standard (Roces et al., 2022). Selected coaches must have significant knowledge and experience of the teaching and learning in order to improve and enhance teaching and learning in schools (Bibi et al, 2019).

Overall, many researchers have suggested that coaching and mentoring enhance the teachers' teaching and learning efficiency and also the teachers' pedagogical skills (Kadir et al, 2021; Elenchothy and Malathi, 2019) and drives the quality of teachers (Madhavan et.al, 2020). In addition to that, factors on roles of mentors on effective mentees' teaching must be highlighted.

### Methodology

A survey was distributed for pilot study to 50 mentee teachers. Using the extraction method of Principal Component with Varimax Rotation, the researcher performed the EFA procedure. Bartlett's Test of Sphericity and the sampling adequacy by (KMO) was also performed. Cronbach's Alpha was applied to test the reliability of the retained items.

### Instrumentation

The questionnaire consisted of 35 items equipped with score on 5-point Likert Scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) was distributed to the participants involved in the mentoring programme. A Likert scale is a psychometric scale commonly involved in research based on survey questionnaires. The items used in this study were adapted from past studies. The items were introduced by Hudson (2003) from his research on Five-Factor Mentoring Model. The instrument was then adapted and translated by Azizah Sarkawi (2012) in her research on mentoring to college teachers. The researcher

then adapted the translated version in this current study.

One of the components studied is the quality of a mentor. Effective mentors influence the impact on mentees. According to Hudson (2004) in his study of mentoring, there are five factors that influence effective teaching. In this study, the researcher needs to categories the factors accordingly. The five factors are the personal attributes of the mentor, system requirements, pedagogical knowledge, modelling and feedback. Hudson introduces these five factors as the Five-Factor Mentoring Model.

### The Exploratory Factor Analysis (EFA) Procedure

The revised questionnaire was distributed to 261 mentee teachers. The data was collected and the EFA was employed to measure the mentors' quality construct. EFA is carried out to determine the dimensionality of measuring items. EFA has to be conducted in order to modify statements based on current research (Awang, 2012; Hoque et al., 2018)

### EFA for Mentor's Role

In this study, the component role of mentors was represented by 33 items. The researcher calculated standard deviation to understand the data distribution. Standard Deviation defines the normal distribution of the data based on the error and variance values to identify the mean. Table 1 shows the mean and standard deviation cuts for each item.

**Table 1:** The mean and standard deviation for items measuring Role of Mentors

	Mean	Std. Deviation
KM3	4.46	.613
KM5	4.32	.551
KM6	4.24	.687
KM9	4.30	.580
KM10	4.54	.579
KM11	4.28	.640
KM12	4.48	.505
KM13	4.48	.580
KM14	4.50	.580
KM15	4.40	.639
KM16	4.36	.631
KM17	4.50	.505
KM18	4.50	.544
KM19	4.28	.730

KM20	4.50	.580
KM21	4.44	.644
KM22	4.52	.614
KM23	4.58	.538
KM24	4.64	.485
KM26	4.66	.519
KM27	4.36	.693
KM28	4.60	.571
KM30	4.54	.579
KM31	4.48	.544
KM32	4.36	.663
KM33	4.42	.499
KM34	4.34	.872
KM35	4.32	.844
KM37	4.40	.606
KM38	4.34	.798

The result for Mentor's quality construct was represented in Table 2. Based on Table 2, the value for KMO is above 0.5. (0.715) and the value for Bartlett's test of Sphericity is significant ( $p < 0.05$ ). In order to perform factor

analysis, the sufficient value for Bartlett test is  $p < .05$ . Based on result gained from the analysis, it is said that each item is proven to be valid because they had met the minimum requirements (Hair et al.,2010).

**Table 2:** The KMO and Bartlett's Test Score

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.715
Bartlett's Test of Sphericity	Approx. Chi-Square	1854.817
	df	528
	Sig.	.000

### Dimensions and Total Variance

In addition to the results of the KOM and Bartlett tests, through the Kaiser criteria, the researcher only needs to look at components that have an eigenvalue value of 1 or even more. From Table 3, which is the Table of Total Variance Explained, it is found that, under the

Initial Eigenvalue column, the eigenvalue for each component is listed. Only the top five values had an eigenvalue value greater than 1 (15.862, 2.845, 2.237, 1.623, 1.429). These five components explain a total of 72.71% of the variance which exceeded the minimum requirement of 60%.

**Table 3:** The Total Variance Explained for Mentors' Role Construct

Component	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
t	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
		e			e			e	

1	15.86 2	48.067	48.067	15.86 2	48.067	48.067	6.54 4	19.829	19.829
2	2.845	8.621	56.688	2.845	8.621	56.688	6.18 1	18.729	38.558
3	2.237	6.779	63.467	2.237	6.779	63.467	4.62 8	14.023	52.581
4	1.623	4.919	68.386	1.623	4.919	68.386	3.68 4	11.162	63.744
5	1.429	4.330	72.717	1.429	4.330	72.717	2.96 1	8.973	72.717

The extraction method of Principal Component Analysis (PCA) with Varimax rotation was implemented on the items. The result from the EFA shown in Table 4. The items were

extracted to their respective components accordingly. Based on the results, 3 items (KM8, KM7, KM25) were excluded due to low factor loading.

**Table 4:** The Components and Respective Items

	Component				
	1	2	3	4	5
KM34	.858				
KM35	.794				
KM27	.784				
KM38	.760				
KM22	.629	.505			
KM37	.620				
KM20	.585				
KM28	.576	.503			
KM19	.575		.560		
KM26		.805			
KM3		.748			
KM15		.675			
KM14		.650			
KM12		.644			
KM24		.621			
KM21		.591			
KM23		.565			
KM25					
KM8					
KM32			.807		
KM33			.797		
KM13			.732		
KM6			.683		
KM16			.589		
KM18				.858	
KM17				.835	
KM31				.643	
KM30				.610	
KM5					.739
KM9					.673
KM11	.510				.518
KM10		.505			.513

## KM7

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 11 iterations.

### The Instrument Internal Reliability

Finally, the internal reliability of the retained items was computed through the Cronbach's

alpha value. The internal reliability for the Role of Mentors' construct shown in Table 5.

**Table 5:** The Internal Reliability for the Construct

Component	No. of items	Cronbach's Alpha
Personal attributes	9	0.935
Pedagogical Knowledge	8	0.901
Role Modelling	5	0.866
System Requirement	4	0.882
Feedback	4	0.783

### Conclusion

SISC+ plays an crucial role in assisting and developing excellent teachers in keeping with the expansion of highly demanding global education capable of creating a more advanced world society. Teachers are thus the pillars of world-class human capital development since they are capable of boosting students' skills while also continuing to increase professional learning through SISC+ activities with coaching and mentorship. As a result, policymakers are being asked to adopt strategic measures to strengthen the function and credibility of SISC+ officers as coaches with skills on pedagogical knowledge, with respectable personal attributes to increase the quality of teaching for mentee teachers.

### Contribution

The present study contributes to the measurement of Mentors' Role in effective teaching construct, particularly in the context of this study. The EFA results of the present study produced a structure which extracts five components of Mentors'. The components are personal attributes, pedagogical knowledge, role modelling, system requirement and feedback can be measured by 30 items out of 33 items developed in this study as all reliability measures for the five components has directed high Cronbach's Alpha value, meets Bartlett's Test of Sphericity requirement (significant), KMO (> 0.6), factors loading exceeds the

minimum threshold of 0.5. The thorough scale development based on previous items and validation procedures of the present study have ensured that the adapted instrument is internally consistent and stable across samples.

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