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## Exploring and Developing Items Measuring Authentic Learning Teacher Competency Scale (Alcos)

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### Abstract

In this study, an instrument for measuring educators' competency in implementing authentic learning approach have been developed. This study had obtained thirty-six items that represented eight dimensions. These items were derived and modified from extensive literature reviews from prior studies that resonates with educators' competencies. The items later were validated by experts, and a pilot study was conducted with 250 respondents chosen from the state of Perak. Eight constructs (ie., Assessment Knowledge, Content Knowledge, Curricular Knowledge, Communication Skills, Classroom Management Skills, Teacher Sensitivity, Professional Commitment and Authentic Learning Teacher Competency) were created through Exploratory Factor Analysis (EFA). Cronbach's Alpha was employed to verify the internal reliability of the instrument. This paper had provided a detailed explanation of the procedures for conducting the EFA to develop a valid and reliable scale to measure Authentic Learning Teacher Competency.

**Keywords:** Authentic Learning, Competency, Instrument, Measurement

### Introduction

Malaysian Education Blueprint (2013-2025) have been developed to produce educators who can transform their instructional approach in allowing learners to become more active in the classrooms. Aligning to the needs of the quintessential elements of 21<sup>st</sup> Century Learning environment. Learners must be taught and empowered in gaining and applying that knowledge later in their future workplace during the era of Fourth Industrial Revolution (IR 4.0). Thus, conforming the idea that our education system must be focusing primarily on life skills. It can be done through Authentic Learning approach. Educators must be able to implement this approach to activate their learners learning.

According to Beier et al (2019) only through active learning which is primarily obtained through authentic learning approach that learners are able to stay interested and connected over real-world issues for a long period of time. Thus, improving their performance and retention. Educators must be competent in facilitating the learning environment in order to engage the learners with realism during lessons (Zain, 2017). Authentic learning connect knowledge taught in the classroom to real world issues, problems and applications. Authenticity in learning will mirror the complexities and ambiguities of real life, inferred from

authentic situations in everyday life. (Güneş et al., 2020). Teaching must be resonated with the learners' lives and taught through real-life contexts.

Therefore, this study is conducted to identify a multidimensional instrument employed in measuring items related to the educators' competency implementing authentic learning approach. The instrument items were obtained from prior literature and modified to ensure they fit with the purpose of this study. According to Awang (2016), the content validity, criterion validity, and the face validity of the instrument were examined. The exploratory factor analysis (EFA) test was implemented to verify its validity and reliability

### **Literature Review**

Learners are said to have higher retention of knowledge when they are learning in learning environment that instils authenticity. The process of learning can be meaningful and permanent when educators are seen to have applied similar to real-life situations (Güneş et al., 2020). Authentic learning is derived from situated learning approach (Gulikers et al., 2004; Herrington et al., 2010; Ozverir et al., 2017) Many teaching strategies have been associated with authentic learning terms: presentation, invention, research, lecture, question-answer, discussion, case studies, demonstration, problem-solving, and individual, group learning, and out-of-class teaching. Now with so many high-tech gadgets, out-of-class activities can be carried out easily.

Implementation of authentic learning in teaching practices will allow maximum engagement among the learners, that later will motivate them to participate in active learning (Harboura et al., 2015). According to (Ashford-Rowe et al., 2014; Choo, 2007), learning is seen happening effectively when carried out in a professional setting where students are seen engaged in real-world activities. Learners will be given real tools with real purposes and later expected to come up with a tangible product using their own style of learning.

Future workforce is the learners now, therefore everything begins in the classroom, where learning is connected to the real-world scenarios through a different method of teaching. Educators are required to bridge the knowledge learnt in the classroom to the outside world by representing the knowledge through authentic learning approach. Educators are required to provide the skills and tools that they need to meet the demand of the future. Only competent educators are able to instil problem solving and critical thinking skills, necessary for the learners to face the uncertain future.

Competency is integration of knowledge, skills and attitudes that needed by an individual to execute designated tasks according to International Board of Standard for Training, Performance and Instruction (2006). Therefore, referring to that context, the focus of this study is to identify the multidimensional factors involved in terms of knowledge, skills and attitude needed to implement authentic learning approach. The identification of those factors will lead to the development of an Authentic Learning Teacher Competency Model. The explicitly structured Authentic Learning Teacher Competency Model can be used a tool and guideline by educators to create an authentic learning environment.

According to Sani et al (2015), competency is a standardized matrix referred to determine the performance of personals carrying out their duties and responsibilities. Therefore, in an educational setting, competency discusses on standard guidelines for an educator to adhere in order to maximize learning in the classroom.

In this study, two competency models have been adapted in order to develop the Authentic Learning Teacher Competency Model (ALCoM). The models are Iceberg Competency Model by Spencer & Spencer (1993) and the Malaysian Teacher Standard (2009)

by the MoE. According to Spencer & Spencer (1993), competency can be explained by a set of features that has been deeply embedded in an individual and it is responsible in predicting the performance of that individual in completing a task. According to this model, it is clear that knowledge and skills are components of competency traits that are easily recognizable but attitude of a person is also important in distinguishing high-performance workers and regular performance.

Malaysian Teacher Standard (2009) was developed based on the assumption that when educators are competent thus, high standards of education are achieved. The competency framework was launched in order to benchmark the Malaysian education system globally, thus producing first class human resources that will be at par with global standards. According to Shaharuddin (2009), this framework, serves as a guideline for educators to be sensitive in gaining knowledge and skills together with personality needed beyond the minimum requirements of teaching.

In a nutshell it can be concluded that both competency models are developed based on three main components: knowledge, skills and attitude. Therefore, the development of the Authentic Learning Teacher Competency Model also had identified various types of knowledge, skills and attitude to implement authentic learning approach in schools.

It is rather difficult to conceptualize explicit educators' knowledge needed in the authentic learning teacher competency model since there are different components of knowledge intertwined (Atay et al., 2010). According to (Fernandez, 2014), Pedagogical Content Knowledge inspired by (Shulman, 1986) is the best model that can be referred to develop a competency model for educators. Pedagogical Content Knowledge is a type of knowledge needed to make subject matter easily achievable to learners.

Assessment Knowledge, Content Knowledge and Curricular Knowledge had been chosen as knowledge base for the competency model. Content knowledge is important when educators are responding to contextual idiosyncrasies while they are working towards their subject matter content. Content Knowledge plays an important part in Pedagogical Content Knowledge (Depaepe et al., 2013; Friedrichsen et al., 2009; Krauss et al., 2008; Sadler et al., 2013).

Assessment Knowledge had also been chosen as one of the important components in Authentic Learning Teacher Competency Model, since educational assessment is vital in the systemic process of documenting and analyzing the empirical data collected from learners to improve their learning. According to (Tierney, 2020) assessment knowledge is important for educators to identify and acknowledge the things that the learners required to know and later assess the need of the learners in order to allow learning to become more meaningful. Authentic learning is carried out to embed 21<sup>st</sup> skills among the learners. Thus, assessment knowledge will ensure educators to have the mastery to evaluate the learners on the impact of 21<sup>st</sup> skills learnt through authentic learning approach.

Curricular Knowledge is important among educators to design authentic learning environment because (Khoza, 2016) had stated that educators can only start to teach meaningfully when they are able to understand the curriculum and identify the impact of the learning goals itself. Curriculum will be referred as a map for educators to refer since it contains what are objectives and goals that learners need to achieve. Thus, understanding the need of the curriculum is imperative in producing highly competent educators (Akker & Brugman, 2014).

Referring the skills domain, educators' Communicative Skills and Classroom Management Skills had been chosen to be in the Authentic Learning Teacher Competency

Model. Communicative skills are as important as the educators' content knowledge. Educators success in their learning environment in the process of imparting knowledge depends on their communication skills (Das, 2014). Communication skill is dynamic and not stationary and it is important in delivering strong and effective teaching and learning process (Khan et al., 2017).

According to (Erdogan & Kurt, 2015) classroom management is a systematic implementation of principles that helps in planning needed in accomplishing specific educational goals. In developing learners' knowledge and cognitive competence, educators' classroom management skills are important (Dinçer & Akgün, 2015) since effective teaching and learning activities through optimum classroom management strategies can transform learners' potentials.

In the attitude domain, two sub-domains had been chosen: Sensitivity Towards Diversity and Teacher Sensitivity. Teacher sensitivity is important in catering positive relationship with the learners that will later have a significant impact on the learners' cognitive competence (Brock & Curby, 2014; Roorda, Koomen, Spilt, & Oort, 2011). Teacher sensitivity will actively support the ability of learners to learn more meaningfully.

Educators are constantly facing a classroom that is filled with different group of learners with mixed ability and unique by themselves. Educators must be able to embrace it and have empathy in understanding their diverse learners. Educators who are being sensitive towards the diversity in their classroom can promote learning to be carried out meaningfully and learners' growth. Sensitivity towards diversity will allow learners to be receptive towards different perspectives and come together to solve problems.

Another dimension that plays an important part in the Authentic Learning Teacher Competency Model is educators' Professional Commitment. Educators' professional commitment is directly proportional to the quality of education (Thien & Razak, 2014). Since the quality of education is related to the learners achievement, it is crucial that Professional Commitment of educators is explored and studied (Mohamad, Zakaria & Nasir, 2017; Stan, 2013; Hamid, Nordin, Adnan, Sirun, 2013; Hanaysha, 2016; Karim & Rehman, 2012; Cheasakul & Varma, 2016; Hayden, 2011; Ambotang & Bayong, 2018).

In a nutshell, based on extensive literature review, the Authentic Learning Teacher Competency Model will be developed with eight dimensions: Content Knowledge, Assessment Knowledge, Curricular Knowledge, Communicative Skills, Classroom Management Skills, Sensitivity Towards Diversity, Teacher Sensitivity and Professional Commitment.

### **Objective**

The main objective of this study:

- To develop a multidimensional scale that can be employed in measuring the items related to competency of educators conducting Authentic Learning approach.

### **Methodology**

Purpose of the study to develop a multidimensional scale that can be employed in measuring the items related to competency of educators conducting Authentic Learning approach. These items were developed from extensive literature reviews and prior studies. These items were later modified to ensure it can measure the competency level of educators implementing Authentic Learning approach. Content validity and Pre-test of the instrument were examined



as suggested by Awang (2016). Later, Exploratory Factor Analysis (EFA) was implemented in order to verify the validity and reliability of the instrument.

The data collected for this study were collected using a self-administered survey questionnaire based on past research and adjusted accordingly. The constructs were measured using 5-point interval scale. The score of 1 denotes "strongly disagree," whereas the score of 5 denotes "strongly agree". The items in the instrument were adapted from extensive literature review. For instant, (Baumert et al., 2013; Chen et al., 2020; Das, 2014; König, 2015; König et al., 2011; Kyriacou, 2007; Mohamad et al., 2017; Murgianto, 2016; Sukumaran, 2012; Tschannen-Moran, 2005). The respondents also had been asked to fill in the demographic details such as age group, gender and teaching experiences through the questionnaire.

After that, the items in the questionnaire were comprehensively evaluated for the reliability and content validity. Panel of experts were required in this stage. Reliability is used to measure the degree of which the questionnaire is able to produce stable and consistent results, meanwhile validity is the extent where the questionnaire is accurately measuring the concept discussed in the study (Cooper and Schindler, 2003). Therefore, in this study, content validity had been carried out, since it is a prerequisite to other validity thus it must be prioritized. (Haas & Springer, 2020). For this study, a total of 6 experts have been chosen to evaluate the instrument. These panels have been chosen based on their vast experience in the similar field of this study.

Later, pre-test was conducted in order to assess irrelevant ideas and grammatical errors that might occur in the items. Pre-test had included 15 experts' and practitioners' views to analyze and scrutinize the questions (Zikmud et al., 2013). The researcher had requested the reviewers to assess the (1) words appropriateness, (2) items clarity, (3) sufficient items to measure the chosen constructs (4) the questionnaire arrangement. The reviewers provided feedback and comments on the instrument. After going through the content validity and reliability testing, the final instrument before the Pilot Testing, consisted 49 items. The research instrument had showed acceptable reliability and validity to be used in the next step of the research.

Pilot study is carried out to purposefully enhance research questionnaire and the parameters connected in the real research (Riedll, Kainz & Elmes, 2006) and to observe the feasibility of the study (Chua, 2012). The revised questionnaire was distributed to 250 randomly chosen respondents. After data is collected through Pilot Study, Exploratory Factor Analysis (EFA) was employed to explore and assess the items and the dimensionality measuring the constructs involved (Ali, 2018).

Exploratory Factor Analysis confirms the concept dimensions that had been identified through literature review as practical and indicates the best suitable elements for every dimension (Sekaran, 2009). According to Awang (2010, 2012), Hoque et al. (2017, 2018) and Yahaya et al. (2018), EFA must be employed to every dimension to identify if the items will create different dimension of previous studies because the dimensionality of the items may change since it has been adapted from other literature reviews and studies. The dimensionality may change because of differences in the cultural background, socio-economic status of the population and also the lapse in the time (Awang, 2010, 2012; Hoque et al., 2018).

### Discussions and Analysis

In this study, the competency model had been represented by 9 dimensions and 49 items. Accordingly, Table 1 show the descriptive statistics for every item measuring the constructs. Standard deviation was calculated in order to understand the data distribution and 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 the Authentic Learning Teacher Competency Model.

Item	Item Statement	Mean	Standard Deviation
AK1	I have the ability to choose the assessment methods appropriate for learners.	4.19	.476
AK2	I have the ability to measure learners' progress systematically using appropriate assessment method.	4.18	.500
AK3	I am able to use variety of instructional strategies suitable for the learners' age level.	4.20	.463
AK4	I am able to create conditions that require learners' demonstration of adaptability	4.19	.416
AK5	I have the ability to develop, administer, score and interpret the results of assessment	4.21	.466
AK6	I am able to change the ways I do things to assist me in a new situation in the classroom	4.44	.656
AK7	I am able to use instructional strategies that will actively engage learners	4.19	.412
CT1	I am able to help learners develop their abilities of making decisions themselves	4.19	.440
CT2	I am able to integrate knowledge gained from different subject matter or disciplines for learners to see the connections and obtain added knowledge and skills.	4.22	.412
CT3	I am able to use variety of instructional strategies suitable for the learners' age level.	4.22	.451
CT4	I am able to provide examples of subject taught from the learners' daily life experiences.	4.26	.447
CT5	I am able to take into account learners' previous knowledge to plan activities.	4.22	.430
CR1	I am able to prepare problem solving learning opportunities for learners to develop critical and creative thinking skills.	4.23	.435
CR2	I am able to create learning environments that meet the standard/ curriculum and behavioural expectations.	4.11	.690
CR3	I am able to use different instructional strategies that suits learners' needs	4.12	.655
CR4	I am able to understand learners' different abilities, learning rates and styles.	4.20	.592
CR5	I am able to model and reinforce ways learners master challenging materials accessible.	4.11	.706

<b>CR6</b>	I am able to use appropriate resources and technologies while teaching.	4.08	.723
<b>CM1</b>	I am able to articulate thoughts and ideas effectively using oral, written and non-verbal communication skills.	4.15	.416
<b>CM2</b>	I am able to effectively communicate with learners to support their learning.	4.20	.461
<b>CM3</b>	I am able to prepare well-structured lessons with challenging tasks and measurable outcomes	4.11	.453
<b>CM4</b>	I am able to begin my lesson with activities to support collaboration among the learners.	4.19	.448
<b>CM5</b>	I am able to organize activities into logical stages to meet the objectives of the lesson.	4.18	.451
<b>CM6</b>	I am able to give opportunity to learners to set their own learning goals	4.23	.532
<b>MN1</b>	I am able to encourage active and ensure equitable learner participation during lessons.	4.19	.414
<b>MN2</b>	I am able to allow learners to contribute to the management of instructional groups.	4.20	.421
<b>MN3</b>	I am able to provide each learner with multiple opportunities to respond during lesson.	4.20	.415
<b>MN4</b>	I am able to help learners make responsible choices of their learning.	4.17	.413
<b>MN5</b>	I am able to provide a learning environment that allows learners to take responsibility of their learning.	4.19	.414
<b>TS1</b>	I am able to take personal interest in what learners do outside their class.	4.35	.652
<b>TS2</b>	I am able to use instructional strategy that motivates and engages learners.	4.34	.731
<b>TS3</b>	I am able to give opportunities to complete given task on their own terms.	4.44	.626
<b>TS4</b>	I am able to listen to learners respectfully and acknowledge that their opinions are important.	4.46	.628
<b>TS5</b>	I am able to create a safe environment where learners feel safe.	4.50	.599
<b>SD1</b>	I am able to allow learners to learn in ways most relevant to them.	4.19	.660
<b>SD2</b>	I am able to bring in people from different background as class resources to allow learners to connect with.	4.19	.429
<b>SD3</b>	I am able to identify learners background, interests and learning style. (Conducive learning environment)	4.17	.395
<b>SD4</b>	I am able to teach learners that everyone has strengths and weakness while working in a group.	4.22	.447
<b>SD5</b>	I am able to make sure that all learners are participating in the classroom discussion and activities.	4.18	.420
<b>PR1</b>	I am responsible to ensure my learners' success.	4.35	.477
<b>PR2</b>	I am responsible to ensure good social relations among my learners.	4.32	.466



<b>PR3</b>	I am able to mediate among the learners.	4.34	.475
<b>PR4</b>	I will put in effort to increase my learners' knowledge and skill.	4.39	.489
<b>PR5</b>	I will try to do my best to help struggling learners.	4.43	.496
<b>AL1</b>	I am able to engage learners in an authentic learning process that provides them with the tools to cope with everyday situations.	4.45	.498
<b>AL2</b>	I am able to create learning strategies that enable learners to become aware of their progress.	4.40	.491
<b>AL3</b>	I am able to provide authentic learning environment by implementing real-life situations.	4.34	.476
<b>AL4</b>	I am able to encourage collaborative work based on respect for the integrity of others.	4.27	.447
<b>AL5</b>	I am able to engage learners to work in a team and take leadership toward achieving learning goals.	4.30	.458

As indicated by the results in Table 2, Bartlett's Test of Sphericity was significant ( $p$ -value  $< 0.05$ ) and the Kaiser-Meyer-Olkin (KMO) measuring the adequacy of sampling had reached the required value of 0.6 (Awang, 2010, 2012; Hoque et al., 2018; Bahkia et al., 2019).

Table 2: The KMO and Bartlett's Test Score

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.890
Bartlett's Test of Sphericity	Approx. Chi-Square	12090.259
	df	1176
	Sig.	.000

Figure 1 specifies the components that emerged from the scree plot in EFA procedure. This procedure resulted in grouping the 49 items into ten components, where each component represents a set of measuring items. As described by (Awang, 2010, 2012; Hoque et al., 2018), the rotated component matrix will then specify the components with specified item.

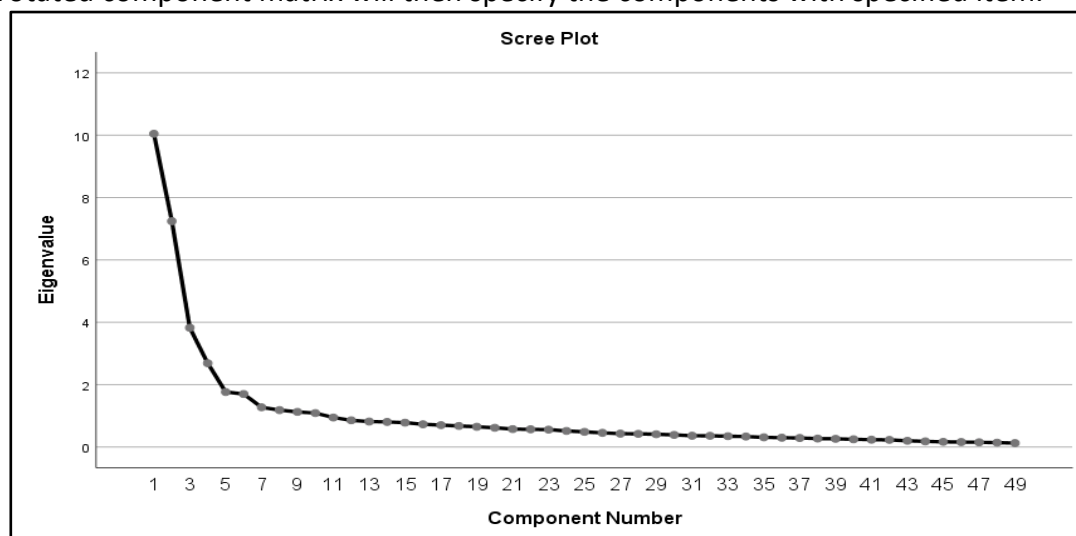


Figure 1: The scree plot shows 10 components emerged from the EFA procedure

### Dimensions and Total Variance

Results given in Table 3 show there are 10 components that are greater than 1.0 emerged from computing the eigenvalue. The values are between 1.089 and 10.046. The total explained variance upon measuring these constructs was 65.183%. Since it has exceeded the minimum requirement of 60% (Awang, 2010, 2012; Hoque et al., 2018; Bahkia et al., 2019), as stated in (Dehisat & Awang, 2020) it is considered acceptable.

Component	Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings			
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	10.046	20.501	20.501	10.046	20.501	20.501	6.751	13.702	13.702	
2	7.242	14.779	35.280	7.242	14.779	35.280	4.355	8.880	22.621	
3	3.825	7.807	43.087	3.825	7.807	43.087	4.266	8.702	31.323	
4	2.687	5.484	48.571	2.687	5.484	48.571	3.297	6.721	38.104	
5	1.765	3.602	52.173	1.765	3.602	52.173	2.848	5.812	43.926	
6	1.701	3.471	55.644	1.701	3.471	55.644	2.568	5.242	49.168	
7	1.274	2.600	58.244	1.274	2.600	58.244	2.291	4.671	53.839	
8	1.184	2.417	60.661	1.184	2.417	60.661	2.253	4.591	58.432	
9	1.127	2.299	62.960	1.127	2.299	62.960	1.862	3.801	62.233	
10	1.089	2.223	65.183	1.089	2.223	65.183	1.447	2.951	65.183	

Extraction Method: Principal Component Analysis.

Principal Component Analysis (PCA) with VariMax (Variation Maximization) rotation method of rotation was implemented on all the 49 items. After EFA procedure has been conducted, the 10 components and their respective items with their factor loadings have been presented in Table 3

Table 3: Factor Analysis for Every Constructs

	Component									
	1	2	3	4	5	6	7	8	9	10
AK2	.807									
AK1	.774									
AK5	.772									
AK3	.760									
AK7	.757									
AK4	.692									
MN	.686									
3										
MN	.673									
5										
AK6	.634									
CT5	.617									
MN	.610									
2										
SD3										
CM		.825								
1										
CM		.806								
3										
CM		.801								
2										
CM		.793								
4										
CM		.753								
5										
CM		.657								
6										
CR3			.782							
CR2			.764							
CR6			.742							
CR4			.739							
CR5			.665							
TS5										
CT2				.757						
CT4				.755						
CT3				.732						
CT1				.726						
CR1										
AL1					.750					
AL3					.721					
AL2					.717					
PR4					.605					
PR5										

TS1	.811		
TS3	.707		
TS2	.676		
TS4	.616		
PR2	.731		
PR1	.723		
PR3	.695		
MN		.618	
1			
MN		.600	
4			
SD4			
SD1		.736	
SD2		.644	
SD5			
AL4			.748
AL5			.668

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Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

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a. Rotation converged in 10 iterations.

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A total of 12 items that has factor loading of <0.6 have been deleted and another rotation was conducted. The process was conducted in stages to achieve the best factor loading for each item. After the re-specification was carried out, the results were shown below.

Table 4: Kaiser -Meyer-Olkin (KMO) value: After re-specification

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.883
Bartlett's Test of Sphericity	Approx. Chi-Square	9638.801
	df	666
	Sig.	.000

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Table 5: Exploratory Factor Analysis (EFA) (Re-specification)

	Component							
	1	2	3	4	5	6	7	8
AK1	.838							
AK2	.813							
AK3	.765							
AK5	.725							
AK4	.696							
AK7	.659							
AK6	.636							
CM1		.829						
CM2		.806						
CM3		.802						
CM4		.798						
CM5		.759						
CM6		.669						
CR2			.839					
CR3			.792					
CR4			.712					
CR5			.664					
CR6			.656					
TS1				.819				
TS2				.760				
TS3				.716				
TS4				.694				
TS5				.626				
CT1					.780			
CT2					.754			
CT3					.749			
CT4					.741			
MN1						.785		
MN2						.757		
MN4						.650		
MN3						.641		
PR2							.782	
PR1							.773	
PR3							.746	
AL1								.763
AL2								.733
AL3								.728

Extraction Method: Principal Component Analysis.  
 Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.



Table 6: Total Variance Explained (After Re-specification)

<b>Total Variance Explained</b>									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Sums of Rotation Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.396	22.691	22.691	8.396	22.691	22.691	4.680	12.649	12.649
2	6.402	17.302	39.993	6.402	17.302	39.993	4.268	11.536	24.185
3	3.166	8.558	48.550	3.166	8.558	48.550	3.633	9.818	34.003
4	2.500	6.757	55.307	2.500	6.757	55.307	3.073	8.305	42.308
5	1.673	4.520	59.827	1.673	4.520	59.827	2.874	7.767	50.075
6	1.136	3.072	62.899	1.136	3.072	62.899	2.637	7.127	57.203
7	1.083	2.926	65.825	1.083	2.926	65.825	2.250	6.081	63.284
8	1.057	2.856	68.681	1.057	2.856	68.681	1.997	5.397	68.681

Extraction Method: Principal Component Analysis.

Re-specification process had shown KMO value of 0.883 and Bartlett's Test of Sphericity is significant (.000) at  $p < 0.001$ . Thus, conforming that these data is suitable for the next analysis. The total variance value is 68.681 % and 8 factors have been extracted from the varimax rotation (0.6) with an Eigen value of more than 1. The communalities values are  $> 0.5$  for all the items, and these values are suitable for factor analysis and should be maintained (Hair et al.,2014). Re-specification also had reduced the number of items to 37 items and a total of 8 components. After individual EFA, one item had been deleted from Content Knowledge dimension, leaving the number of items to 36 items.

### The Internal Reliability

After the final re-specification had been carried out, the internal reliability of each component was computed through Cronbach's Alp-ha value. The reliability of the questionnaire is carried out to identify the effectiveness of the items to measure the constructs involved in the study. According to Awang (2010,2012), the threshold value of Cronbach's Alpha is greater than 0.7. Table 7 shows the Cronbach alpha score for each component and the value for each component had exceed 0.7, thus conforming the reliability of these items.

Table 7: The Inter Reliability for the Construct.

Component	Cronbach's $\alpha$	Number of Items
Assessment Knowledge	0.884	6
Content Knowledge	0.878	4
Curricular Knowledge	0.878	5
Communicative Skill	0.897	6
Classroom Management Skill	0.872	4
Teacher Sensitivity	0.854	5
Professional Commitment	0.783	3
Authentic Learning Teacher Competency	0.702	3
		<b>36 items</b>

### Conclusion

The current research had added a remarkable contribution to the development of authentic learning teacher competency scale. It was concluded from this study that a total of 8 components with 36 items were established, with high Cronbach's Alpha value, met Bartlett Test achievements (significant), KMO (>0.6), and factor loading exceeds the minimum threshold of 0.6. Thus, conforming that the elements are applicable in this study. (Aimran et al., 2017; Asnawi et al., 2019; Aziz et al., 2019; Mohamad et al., 2019; Majid et al., 2019). The validated instrument is consistent and stable across samples and can be used in the further studies of Authentic Learning Teacher Competency Model Development.

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