Development of the Constructive Alignment Evaluation Instrument for Lecturers of Teachers Education Institutes

Md Daud Md Jani, Adibah Abdul Latif and Rohaya Talib

Abstract--- This study was conducted to build the constructs and sub-constructs for the Constructive Alignment Evaluation Instrument (CAEI) for lecturers of Teachers Education Institutes (TEIs) based on the experts' views. Interviews involving a total of five experts from TEIs in Malaysia were conducted using purposive sampling. The experts involved were Chairman of the TEI Assessment Committee, Internal Examiner Expert, Chairman of the MQA Committee, Chairman of the ISO Secretariat and Assessment Coordinator of the Department. The interview data was analyzed thematically using Nvivo software. Based on the interview, it was found that there were certain shortcomings to be addressed in the implementation of constructive alignment among TEIs' lecturers. The constructs driven from the interview were knowledge and practice, comprising a total of six sub-constructs, namely, Learning Outcomes, Teaching and Learning Activities, Assessment of Assignment, Evaluation and Grading, Learning Context and Students Learning Time. The sub-construct of learning outcomes consists of four elements; Programme Educational Objectives, Programme Learning Outcomes, Teaching Taxonomy, and Course Learning Outcomes. The sub-construct of Teaching and Learning Activities is also divided into four elements; Teaching and Learning Planning, Mapping of Knowledge Type, Interactive Teaching and Class Management. Meanwhile, the sub-construct of assessment assignment contains elements such as Formative and Summative, Authenticating, Converging and Diverging Assessments and Bloom's Taxonomy. As for Students Learning Time, its sub-construct includes elements of Implementation of Learning Hours, Credit and Learning Load. The sub-construct of Evaluation and Grading contains elements of Validity and Reliability, Criterion References, Norm References and Evaluation Based on Learning Outcomes. Finally, the sub-construct of Learning Context is divided into five elements, Metacognitive Control, Reflective Learning, Teaching Quality and Student Activity, Formative Feedback and Motivational Approach. Based on the results obtained, the constructive alignment evaluation instrument should include all the constructs and sub-constructs identified.

Keywords--- Instrument, Constructive Alignment, Teachers Education Institutes, Interview, Experts.

I. INTRODUCTION

Constructive alignment was introduced by John Biggs [1]. According to J. Biggs [2], 'constructive' refers to the emphasis on students' learning, where they build their experience and knowledge through learning. 'Constructive' comes from the constructivist theory, which encourages students to use their own activities to build knowledge, as interpreted through their own existing scheme. Learning is the outcome of student activities and experiences and not just tutorials. Lecturers should focus on student activities when planning the learning experience. When designing a

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learning experience, lecturers should consider several key questions; what can students understand and apply at the end of their learning experience? What activities do students need to do for this learning? And how do teachers know if students have mastered their learning?

Alignment, according to Biggs [2], is a principle in curriculum theory, where assessment tasks should be aligned with learning outcomes and teaching activities. It should use the 3Ps (Presage, Process and Product) approach, which will create consistency between curriculum, teaching and assessment methods. Overall, according to J. Biggs [2], "Constructive alignment" is an approach in designing and achieving learning outcomes, teaching and learning activities, and integrated assessment to create a constructive learning environment. This approach uses student-centred methods, where teachers act as lesson planners and facilitators, aligned with the planned learning outcomes.

Teachers Education Institutes (TEIs) began the implementation of constructive alignment through the Outcome Based Education (OBE) system in 2015 [3]. It was then when the centre of TEIs introduced the Course Information Summary (CIS), which is an official document that includes Programme Education Objectives (PEOs), Course Learning Outcomes (CLOs), Programme Learning Outcomes (PLOs), Student Learning Time (SLT), Syllabus Content and Soft Skills. Teacher Education Institutes are an educational institutions which provide training to prospective and in-service teachers. The courses offered are full-time and part-time degree and diploma programmes in the field of teaching. TEIs are responsible for preparing, managing, planning, implementing, developing, supporting and monitoring to facilitate academic performance, teacher professionalism, examination administration and drafting of assessment items [4]. Based on the role played by TEIs, the implementation of constructive alignment which comply with the guidelines set by the MQA is highly desirable.

Accurate and consistent implementation of constructive alignment will assist the institutions in producing graduates who meet the relevant standards while teaching in schools. However, findings from the literature study showed that, the number of instruments developed to evaluate the implementation of constructive alignment by Malaysian higher education is limited in number. Among previous studies on the development and validation of constructive alignment instruments is that conducted by Rohaya & Mohd Najib [5] which developed and validated the Assessment Literacy Exam Instrument to measure the knowledge competency of assessing secondary school teachers in Malaysia. Mertler & Campbell [6], in their study, developed and validated inventories to measure the literacy of pre-school teachers who would be placed to serve in schools. The Assessment Literacy Inventory was built through interviews with experts. From the interviews, an inventory of five constructs and 35 items was developed. The essence of the inventory was to focus more on classroom assessment scenarios and the different types of assessments related to student achievement.

In a study by Nor Hasnida [7], instruments of high validity and reliability in evaluating the School-based Assessment (SBA) were produced. SBA is an assessment system introduced by the Ministry of Education in 2011, implemented in Malaysian schools under the Malaysian Education Plan 2011 to 2015. The development of instruments focus on forms of assessments that will enhance the teaching and learning process of students, so that they are more meaningful than grade-based assessment. Addington & Johnson [8], in their study, discussed the design of students' surveys regarding new assessment mechanisms for the engineering curriculum at the Virginia

Military Institute, Lexington. New engineering assessment mechanisms are a way of assessing and measuring students, based on learning outcomes designed for student learning. Therefore, a technique for measuring the achievement of learning outcomes should be studied, to enhance the effectiveness of the programme. Thus, Addington & Johnson [8] designed a survey to analyze the implementation of engineering curriculum programmes based on learning outcomes. Three forms of student surveys were conducted: course evaluation, exit survey and alumni survey. The three forms of the survey were aimed at gaining the students' individual perceptions of the opportunity to gain skills and achievement in each course by pursuing an outcome-based engineering curriculum.

In a study by Akib & Najib [9], instruments that focused on assessments for student learning in higher institutions were developed. These instruments focusd more on the types of assessments to be practised in higher education institutions to enhance the development of the teaching and learning process in Indonesia. However, studies focusing on the development of instruments in assessing the implementation of constructive alignment approaches among TEIs' lecturers are still lacking [3], especially on aspects related to learning outcomes, teaching activities, assessment tasks, student learning time, learning contexts, student assessment and grades. These aspects are the key concept definitions in the implementation of constructive alignment of learning [1,2][10–17] Therefore, interview sessions with experts in the related fields should be conducted to get an accurate picture of the constructive alignment approach implemented in TEIs, so that the instrument being developed would become specially-tailored tools for testing the constructive alignment in TEIs.

II.   RESEARCH OBJECTIVES

This study aimed to develop constructs and sub-constructs for constructive alignment instruments for TEIs' lecturers, based on expert views.

III.   METHODOLOGY

This study employed a qualitative approach using semi-structured interviews with experts to obtain appropriate constructs and sub-constructs for use in the TEI Constructive Alignment Instrument (TEI-CAI). The expert interview method is an important step in obtaining information about the appropriate constructs and sub-constructs used for instrument development [18,19]. According to Czaja R & Blair [20], experts should consist of three to five people comprising field experts and practitioners. The strength of combining expert selection is to gather feedback from a wide range of expertise and to create more accurate work [19]. A total of five experts were involved in this study as purposive samples with experience of those in the field of constructive alignment. The experts involved were Chairman of the TEI Assessment Committee, an Internal Examiner Expert, Chairman of the MQA Committee, Chairman of the ISO Secretariat and an Assessment Coordinator of the Department of Technical and Vocational Education.

Researchers conducted their own interview analysis to improve their understanding of the study data. Verified interview transcripts were analyzed using Nvivo software using the open coding process. Subsequently, an open coding process was performed to identify the appropriate constructs and sub-constructs used for the development of the TEI Constructive Alignment Instrument (TEI-CAI). Following this, the axial coding process was used by linking

these concepts to two main categories (themes) of constructive alignment. Finally, the selective coding process was done to relate the theme to the sub-themes of the document analysis.

IV. FINDINGS

The findings of this study focused on addressing the questions that were based on the objective of the study, namely, to develop constructs and sub-constructs for constructive alignment instruments for TEIs lecturers, based on expert views. Based on the results of the analysis performed, the TEI-CAI Instruments should include the following constructs:

- Knowledge of Constructive Alignment
- Practice of Constructive Alignment

4.1 First Construct: Knowledge of Constructive Alignment

Based on the interviews conducted with all five experts, it was found that, a number of aspects of knowledge should be measured in developing TEI-CAI Instruments. These findings are summarized in Table 1, which shows a comparison of the knowledge that a lecturer needs to perform in the construction of constructive alignment. The sub-constructs of Knowledge that all the experts referred to, are (i) Teaching Activities; (ii) The Concept of Learning Outcomes; (iii) Implementation of Study Learning; (iv) The Concept of Assessment; (v) The Concepts of Learning Context and (vi) Evaluation and Grading.

Table 1: Expert's View of Knowledge in the Construction of Constructive Alignment

Construct	Sub-Construct	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
Knowledge	Teaching Activities		X	X	X	X
	The Concept of Learning Outcomes.	X	X	X	X	X
	Implementation of Study Learning Time	X		X	X	X
	The Concept of Assessment	X	X	X	X	X
	The Concepts of Learning Context.		X			
	Evaluation and Grading	X	X	X	X	X

According to the experts, through the sub-construction of teaching activities, lecturers need to know the way to implement constructive teaching activities. They need to be clear about their own constructive intentions. All experts agreed that lecturers need to be knowledgeable in aligning teaching activities with learning outcomes. The following statements are excerpts of the interviews with the experts involved, related to the sub-construction of the teaching activities:

Expert 1: When they (lecturers) have the right understanding, they can align and direct the directions the students need to achieve. When they realize it, they will strive to implement a variety of teaching activities to encourage their students to achieve the learning outcomes.

Expert 2: In terms of content knowledge of the course which they (lecturers) teach, maybe we can see the courses which they have attended. For example, they have been teaching for a long time, but they may have not attended required courses.

Expert 3: What matters is their knowledge, followed by their practice in their teaching activities

Expert 4: How they make references as guidelines for students' learning, course work implemented, learning activities and teaching activities, should also be in line with the evaluation conducted.

The second sub-construction emphasized by the experts is related to the concept of learning outcomes. Through this sub-construct, they explained that, lecturers need to understand and be clear about the learning outcomes developed by the Malaysian Teacher Education. Lecturers should be able to explain the differences for each learning outcome. Understanding the mapping of each learning outcome is also important. According to the experts also, the lecturers need to be clear about the relationship between learning outcomes and the TEI vision and mission. In addition, knowledge regarding the taxonomy level of teaching in learning outcomes should also be given priority. The experts explained further that, lecturers' ability to identify verbs, situations, conditions and standards in their learning outcomes would make them clearer in the constructive alignment process. The following statement provides a summary of the interviews with the experts involved in the learning outcomes sub-constructs.

Expert 1: Lecturers need to understand the learning outcomes.

Expert 2: Lecturers need to understand that to measure learning outcomes, it can be gauged in terms of students' achievement of knowledge and skills, whether it is in line with the expected results. Is it the same as what we want?

Expert 3: In CIS, it has been written about the number of hours of teaching, total credits, prerequisites, learning outcomes. It needs to be understood that, the learning outcomes must be aligned with the TEI's vision. One of the weaknesses which I observed is in the use of keywords found in the CLO. Lecturers sometimes get confused with them. These keywords must be in line with the PLO

Expert 4: I mean, when we read CIS, we know what level we want to achieve in terms of teaching.

Expert 5: Lecturers will need to first understand, examine and master the areas and dimensions of skills as well as knowledge through the learning outcomes of the course.

The third sub-construct is knowledge related to the implementation of student learning time. Through this sub-construct, lecturers need to clearly understand the allocation of learning hours for face-to-face interaction and non-face-to-face interactions. Based on the expert views, lecturers should be able to explain the relationships between subject credit and student learning time. The following statements are excerpts from the interviews conducted that show the establishment of a sub-construct for knowledge of student learning time.

Expert 1: Another thing is that, SLT is already in CIS, where we have time allocations. For example, every one-hour lecture must be accompanied with an additional hour for its preparation since there are time divisions. If there is a total of 30 hours of lecture, the students must be allotted 30 hours to make preparation.

Expert 2: In CIS, it has been written about the number of hours of teaching, total credits, prerequisites, learning outcomes. The learning outcomes must be in line with the vision and mission of TIE. This means, do the lecturers know about SLT, how to write PLO, CLO and so on.

Expert 3: The same goes with ISO, for example if the teaching time required is 30 hours, we need to deliver the weekly and semester plans for exactly 30 hours.

Expert 4: They forgot that the Task Specification Table (TST) must be in line with the credit hours of subjects, and they also forgot to include the skills needed in their tasks. Job Specification Schedule developed will determine the results of students' learning outcomes.

The fourth sub-construct is the Concept of Assessment. Through these sub-construct, the experts listed the aspects that need to be measured, namely, knowledge of assessment methods, comparison of conventional assessments with constructive alignment assessments, the development of test and assignment tasks that are in line with learning outcomes and teaching activities, taxonomic level determination and development of Test Blueprint (TB) in line with the learning outcomes. The following statements are the interview findings that show the sub-constructs of the Assessment Concept knowledge.

Expert 1: This constructive alignment can be implemented for TEIs' lecturers. If it is carried out, it can help the them to better understand the relationship between the assessment conducted with the CLO and also the PEO. Once there are descriptions or constructive alignment, what is obvious is that, it may be of great help to the lecturers.

Expert 2: The second most important thing is the evaluation concept. How to evaluate the student.

Expert 3: Lecturers should understand that the questions asked should be measured in terms of their taxonomic level, achieved or otherwise, based on the CIS

Expert 4: What matters is their knowledge, in addition to their practice, how they practise their knowledge through teaching and assessment, the way they prepare Task Specification Table. does it tally with the objectives?

Expert 5: How do you apply those things? How they make references as guidelines for students' learning, course work implemented, learning activities and teaching activities, should also be in line with the assessment conducted.

The fifth sub-construct of knowledge construct is the Learning Context. Through this sub-construct, the lecturers should be aware of their roles as facilitators that influence students' achievement. They need to know some of the methods that need to be taken to increase students' motivation in driving them towards excellence. The following statements are the results of the interviews that show the sub-constructs of the Learning Context.

Expert 2: Lecturers also need to realize that they are not everything. They act as assistants and motivators and they must understand the learning objectives and outcomes.

The final sub-construct is Evaluation and Grading. Through this sub-construct, the lecturers need to clearly understand the development and use of Test Blueprint (TB). Lecturers should also ensure that TB is built in accordance with the CIS. The ability of lecturers to interpret the CIS and TST well, will enhance the understanding in the development of rubric. The compliance of the markers based on the rubric will improve the accuracy and consistency of student evaluation and grading. The following are statements which show interviews with the experts related to the Evaluation and Grading sub-construct.

Expert 1: Another concern is that, rubrics are developed by the lecturers based on the CIS for course work or examination questions that are not standardized to all TEI's. Lecturers need to understand the construction and use of rubrics, often the mistakes made by lecturers in building rubrics are when assigning the range of scores. It's like giving A, A- A + things like that.

Expert 2: Another problem is that the lecturers do not fully utilize the Job Specification Table, in assignment questions, sometimes rubrics are not fully used, only to fullfil the criteria of Task Specification Table provider, but they are marking the paper still based on their own interpretations.

Expert 3: Lecturers need to refer to the Test Blueprint (TB) and also to read and understand it. See if the TB is aligned or otherwise. Is in line with the CIS to be measured. The weightage also needs to be referred to. It needs to be well organized, it requires the lecturer's skills to provide questions. CIS, TB and rubrics must be understood.

Expert 4: Lecturers need to understand the process of preparing Task Spesification Table (TST) and Test Blueprint (TB) to be provided to students. TST and TB are prepared, then only we will be explaining them to all students. The lecturers will come to the classroom and reveal them to the students.

Expert 5: When generated, TST also needs to match its rubrics. Through this TST there are coursework questions for students available as well as rubrics.

4.2 Second Construction: The Practice of Constructive Alignment

In addition to the elements of knowledge, the experts also pointed out that aspects of constructive alignment practice are also among the constructs that must be measured, so that their implementations can be improved and corrected over time. The elements that need to be measured in the form of practice constructs highlighted by the experts were recorded and are listed in Table 3 below.

Table 2: Expert's View of Practice in the Implementation of Constructive Alignment

Construct	Sub-Construct	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
Practice	Teaching Activities	X	X		X	X
	Methods of Assessment	X	X	X		
	Implementation of Learning Context	X	X	X		
	Student Learning Time Compliance	X		X	X	X
	Alignment of Learning Outcomes	X				
	Evaluation and Grading	X	X	X	X	X

Based on Table 2 above, the first sub-construct identified by experts 1,2,4 and 5 is Teaching Activity Practice. Through interviews conducted, the experts revealed that, lecturers should conduct student-centered teaching activities to build knowledge. Students' activities should be aligned with the learning outcomes planned. The experts also pointed out the need to have the elements of High Order Thinking Skills (HOTS), such as problem solving skills, discovery activities etc., incorporated into teaching activities. The following statements are results of the interviews which indicate the need for teaching activities sub-construct in the Constructive Alignment Practice.

Expert 1: This construct is more about students gaining knowledge from the activities that they do, perhaps in practical forms, or maybe in terms of field work which they do and they will eventually come to one conclusion. for example in science or mathematics, where students can publish or produce something new or maybe a new formula, where they have to or they are required to conduct experiments, so that discoveries may be found.

Expert 2: When it comes to constructive alignment, it is about of restoring knowledge by the students through their own efforts and actions following what the lecturers do. This is necessary because, these days knowledge is not obtained through lectures, the real learning must take place through students' own initiatives

Expert 3: What matters is their knowledge, followed by the practice of lecturers in the way they conduct teaching activities.

Expert 4: Lecturers also need to look at High Order Thinking Skills in conducting constructive teaching activities.

The second sub-construct is the Methods of Assessment. Through this sub-construct, the experts stated that, every activity carried out needs to be assessed, and assessments are not done on paper only. Assessments should also be done in the practical form and external activities. Lecturers need to formulate assessments and examination questions in line with the taxonomic level planned in the CIS, where the tasks developed should be aligned with the learning outcomes. The assessment questions developed should also be in line with TST, rubric and taxonomic levels. All of the statements made by these experts refer to the need for the sub-construct of Assessment Methods Practice in measuring constructive alignment in TEIs. The statements below show the findings of the interviews conducted which form the Assessment Method sub-construct.

Expert 1: The same goes with practical activities, since in the coursework, the students are not necessarily involved with paperwork, there may be practical as well as external activities where marks are given.

Expert 2: Lecturers need to provide some questions that lead to skills or knowledge that should be achieved through the learning outcomes provided

Expert 3   The questions prepared by lecturers should also be measured in terms of their taxonomic level, whether it is achieved, based on CIS The third sub-construct is the Implementation of Learning Context. Learning context is all about actions taken by lecturers, which influence students' achievement [1,21]. A good learning context will influence students' motivation to continue learning even if the lecturers are not teaching well [22]. In interviews conducted with the experts, they stated that lecturers should encourage self-learning to motivate students. Lecturers also need to come up with various methods to increase the students' motivation. According to Hattie [22], self-learning and motivation are among the elements in the learning context that drive students' achievement. Thus the statements of these experts proved the need for the learning context sub-construct in measuring the implementation of constructive alignment. The following statements show the findings of the interviews study which proved the development of the sub-construct of Learning Context Implementation.

Expert 1: Awareness of all parties including lecturers, management and students about the current learning style is essential in developing constructive alignment. This collaborative effort will enhance the students' spirit to explore a given task.

Expert 2: Moreover, the facilities or infrastructure available in TEI, such materials as those in the resource centre must be complete, in terms of learning facilities to enhance students' interest in exploring the knowledge gained further.

Expert 3: First of all, we look at the background of the lecturers, whether their degrees are relevant with the course taught. for example, they have their degrees in science but they teach mathematics, this is surely not suitable. It's hard for them to motivate their students later.

The fourth sub-construct is Student Learning Time Compliance. This sub-construct was formed based on statements from the experts explaining about the implementation of student learning time, subject credit and learning load. The following statements are interview findings in support of the formation of Student Learning Time Compliance sub-construct.

Expert 1: Another thing is that, SLT is already in CIS, where we have time allocations. For example, every one-hour lecture must be accompanied with an additional hour for its preparation since there are time divisions. If there is a total of 30 hours of lecture, the students must be allotted 30 hours to make preparation.

Expert 3: In CIS, it has been written about the number of hours of teaching, total credits, prerequisites, learning outcomes. The learning outcomes must be in line with the vision and mission of TEIs.

Expert 4: The same goes with ISO, for example if the teaching time required is 30 hours, we need to deliver the weekly and semester plans for exactly 30 hours.

Expert 5: They forgot that the Job Specification Table must be in line with the credit hours of subjects, and they also forgot to include the skills needed in their tasks. Task Specification Table developed will determine the results of students' learning outcomes

The fifth sub-construct is the Alignment of Learning Outcomes. Through this sub-construct, the experts gave much input about lecturers' abilities in aligning CLO, PLO and PEO in the development of coursework questions, examination questions and references in designing teaching activities. The following statements are interview findings in support of the construction of the Alignment of Learning Outcomes sub-construct.

Expert 1: If we are to assess the constructive alignment among the lecturers, one of the things that I think is important is to measure their ability to relate CLO and also PEO with the coursework questions as well as the questions and examination questions which they prepare

The final sub-construct is Evaluation and Grading. Through this sub-construct, the experts emphasized much on the provision of accurate TST, compliance to the TST developed in evaluating students, soft skills to be assessed in each task, evaluation of cognitive domains, affective and psychomotor, regular references to rubrics during marking, consistent marking and high validity, rubrics generated in line with CIS and many more. The following statements are findings obtained through interviews which support the formation of the Evaluation and Grading sub-construct.

Expert 1: Another concern is that, rubrics are developed by the lecturers based on the CIS for course work or examination questions that are not standardized to all TEIs.

Mistakes in rubrics will cause mistakes in marking and grading.

Expert 2: Another problem is that the lecturers do not fully utilize the TST, in assignment questions, sometimes rubrics are not fully used, only to fullfil the criteria of TST provider, but they are marking the paper still based on their own interpretations.

Expert 3: How lecturers align their evaluation with CIS, is it suitable, is it accurate, this should be measured.

Expert 4: It seems that soft skills are not included in TST.

Expert 5: Even for TST, there are lecturers who still do not understand soft skills and HOTS which need to be incorporated into the rubric elements
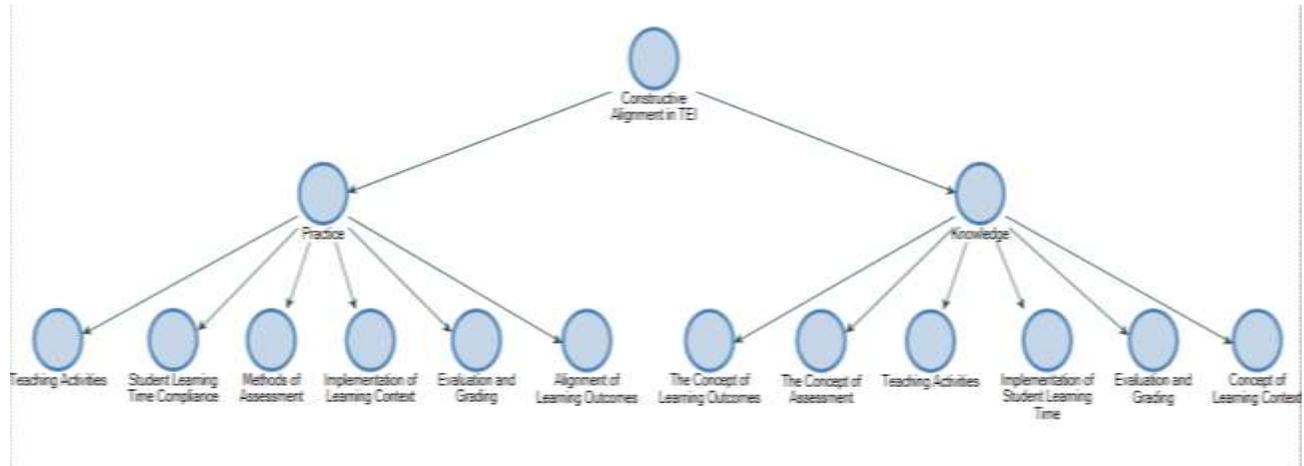
V.   DISCUSSION

Figure 1: TEI Constructive Alignment Model Based on Expert Interviews

Figure 1 is a summary of findings based on interviews conducted with the experts. These findings indicate that, the majority of them agreed that, Constructive Alignment Instrument in TEIs should contain knowledge and practice constructs. For the construct of knowledge based on the constructive alignment in TEIs, the experts agreed that, lecturers need to master some of the concepts of constructive alignment first before they could implement it well. According to Biggs &Tang [1], the types of knowledge that needs to be mastered are descriptive knowledge and functional knowledge, the former focusing on the theory, topic and approach used while the latter on the knowledge of applying, analyzing, evaluating and creating something based on a given concept. The experts agreed that, in order to be successful in constructive alignment approaches in TEIs, lecturers need to be briefed regularly and to be constantly engaged in collaborative coordination to enhance their knowledge of constructive alignment. The experts stated that, knowledge that needs to be emphasized in constructive alignment is that related to the concept of learning outcomes, teaching activities, implementation of student learning time, the concepts of assessment, evaluation and grading, and concepts of learning context.

The second construct agreed upon by the experts was the practice of constructive alignment among the lecturers. This is in line with the findings by by Rusmawati et al [3], which revealed that, the aspects of constructive alignment practice among TEI lecturers are still at a moderate level and need to be focused. Among the practices that need to be measured in these TEI-CAI instruments, according to the experts, are the Teaching Activities, Methods of Assessment, Evaluation and Grading, Implementation of Learning Context, Student Learning Time Compliance, and Alignment of Learning Outcomes.

Both constructs were found to have sub-constructs that had similar aspects related to learning outcomes, teaching activities, assessment, student learning time, evaluation and grades, and learning contexts. The findings from this interview are in line with those obtained from the literature review related to the conceptual definition of

constructive alignment except the sub-construct of student learning time. Through the previous literature on constructive alignment, this approach requires constructive alignment of the following elements, such as learning outcomes [1,2,10–17], Teaching Activities[1,2,10–17], Assessment[1,2,10–17], Evaluation and Grading [1,2,10–13,15–17] and Learning Context [1,10,11,15].

Based on the finding, the contribution of new knowledge related to constructive alignment is the formation of sub-constructs of student learning time. This finding indicates the need for accurate alignment of student learning time to form constructive alignments in TEI. Based on the literature reviews, most researches define constructive alignment as a learning that emphasizes aspects of learning outcomes, provision of constructive teaching activities to achieve learning outcomes, assessment based on learning outcomes and evaluation of student achievement levels [1,2,10–17]. The definition of the concept of constructive alignment as stated by the researcher through a literature review does not emphasize the aspect of student learning times in shaping constructive alignment learning. The importance of student learning time in the constructive alignment approach is proven from the findings of several researchers who found a significant relationship between student achievement and learning time management [23–27]. The finding proved that students who have good time management for the courses attended will have great potential for their achievement. Student achievement is one of the most important aspects of constructive alignment, especially when evaluating the level of student achievement of a given learning outcome. Hence, the lecturers also need to focus on the sub-construct of student learning time in implementing their constructive alignment approach.

Based on the findings of the interviews with the experts, all sub-constructs need to be developed according to their respective constructs that focus on the knowledge of the lecturers and their implementation practices over the years. According to Expert 1, items built into the sub-construct for knowledge constructs should be in line with those built into the sub-construct for practice constructs. This is to test the level of implementation and mastery of lecturers' knowledge.

VI.   CONCLUSION

The development of constructive alignment instruments among TEIs' lecturers is a prerequisite for improving teaching and learning competencies among them. The constructive alignment in TIE is also an approach that supports the Malaysian Education Blueprint for Higher Education (MEB Higher Education). The quality of lecturers is one of the important factors in determining learning outcomes [28,29]. The learning outcomes that can be implemented through constructive alignment are expected to achieve the first shift inspiration of MEB Higher Education in producing holistic, entrepreneurial and balanced graduates. In addition, there are three more shifts in MEB Higher Education that require lecturers of high quality in higher education institutions. The transformations in the implementation of lecturers' learning are needed to achieve the second shift, which is to enhance talent excellence, the third shift on the appreciation of lifelong learning and the fourth shift on producing quality TVET graduates. Therefore, the development of this instrument is expected to improve the quality of lecturers to achieve the learning outcomes that support MEB Higher Education. The interviews with the experts were the first step in ensuring that the constructs and sub-constructs used to construct the CAI-TEI instrument are appropriate and valid.

ACKNOWLEDGEMENT

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