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The Validity of the Competency Instrument for Construction Technology Program Lecturers in the Practice of Outcome-based Education (OBE)

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Abstract

This research aims to evaluate the validity of the Competency Instrument for lecturers in the Construction Technology program in the context of Outcome-Based Education (OBE) at Malaysian Vocational Colleges. This evaluation measures the instrument's effectiveness in assessing the three elements of competence: knowledge, skills, and attitudes. Outcome-based education has been adopted by the Vocational College since the introduction of the diploma program in 2014. Seven experts reviewed each item of the instrument, and the Fleiss Kappa coefficient value was used to analyze the findings. The resulting Kappa values were k=0.83 for the knowledge construct, k=0.83 for the skills construct, and k=0.91 for the attitudes construct, with an overall Fleiss Kappa value of k=0.85, indicating that the instrument is at a good level. The study's findings suggest that the instrument is suitable for implementing a pilot study and can effectively measure the competence of lecturers in the Construction Technology program within the OBE framework. Furthermore, this instrument can serve as a useful reference for evaluating lecturer practices in other Higher Education Institutions.

Keywords: Outcome-based Education (OBE), Lecturer Competency, Instrument Validity, Vocational Education, Fleiss Kappa

Introduction

Outcome-based education (OBE) has emerged as the primary paradigm in Technical and Vocational Education and Training (TVET) under the Ministry of Education Malaysia (MOE), especially in Vocational Colleges (VC), since its introduction a decade ago (MOE, 2017). This approach focuses on achieving learning outcomes that encompass curriculum, teaching and learning, assessment, and continuous quality improvement. These components are designed to ensure that students in diploma programs achieve the intended outcomes. The Ministry of Higher Education requires Vocational Colleges as providers of higher education to adhere to

its guidelines. This involves coordinating their programs and curricula according to the standards established by the Malaysian Qualifications Agency (MQA) and the Malaysian Board of Technologists (MBOT). Additionally, Vocational Colleges must evaluate and monitor the quality of their program offerings through accreditation to maintain high standards. There is a need to assess and monitor the quality of program offerings at Higher Education Institutions (HEIs) through accreditation to uphold higher standards (Dayananda et al., 2021; Halibas, 2020; Hapinat, 2023). In this context, the role of lecturers extends beyond merely imparting knowledge and skills. It also includes considering the aspect of attitude to facilitate the learning process and ensure result-oriented assessment. The competence of vocational college lecturers can significantly impact the quality of TVET programs (Omar et al., 2021).

Ismail et al (2018) conducted research on the competence of TVET educators, highlighting the importance of increasing educators' efforts in facing the challenges of globalization. They emphasized building educator competencies that include personal characteristics and professionalism, teaching and learning, as well as technical skills and innovation. A deep understanding and implementation of what makes an effective lecturer is crucial in supporting the achievement of desired learning outcomes. This competency typically encompasses various aspects starting from knowledge, teaching skills, and attitude (Kob et al., 2018) and is an important component of high-level teaching competency (Osman et al., 2019). The need for continual development and assessment of competency in response to changing environments and work contexts is evident (Wong, 2020). Therefore, developing and validating an instrument capable of accurately measuring these competencies is of great importance.

The goal of this study is to assess the validity of the Lecturer Competency Instrument in the Construction Technology Program with respect to the OBE practice. Through careful analysis and expert input, this study aims to determine the extent to which the developed instrument is reliable in measuring the three main competency elements: knowledge, skills, and attitude of lecturers (Omar et al., 2020). Consequently, the findings of this study are expected to contribute significantly to the enhancement of teaching quality in Vocational Colleges in line with OBE principles.

Literature Review

The evolution of Outcome-based Education (OBE) in vocational educational institutions marks a significant shift in the educational paradigm, focusing on student outcomes as the primary measure of success (Raof et al., 2022). Elements of OBE implementation include the development of assessments, grading, student performance evaluation, and practices of continuous improvement in assessment (Agir et al., 2023). Stemming from the need to align educational objectives more closely with the demand for skilled labour and industry needs, OBE has been continually integrated into the vocational education system worldwide. This academic reform, focusing on the quality of higher education and the employability of graduates, underscores the necessity for higher education institutions to prepare students for professional practice or employment (Halibas, 2020). The need for vocational colleges to focus on enhancing the quality of teaching and curriculum to better equip graduates with employability skills is highlighted. It suggests the integration of relevant technology in the teaching and learning process and collaboration with the industry to align the curriculum with market needs (Saibon & Kamis, 2019).

The importance of lecturer competency in achieving OBE goals is undeniable. Within the OBE framework, lecturers are not just knowledge conveyors but play a role in shaping the

environment and learning outcomes. The emphasis is on educating students to understand the significance of OBE in enhancing skills and knowledge in their field of study (Cabaces et al., 2014; Laguador & Dotong, 2014). The ability to effectively deliver content, engage students, and foster an outcome-focused learning culture is essential to realizing OBE objectives. The importance of lecturer competency is emphasized due to their critical role in enhancing the quality of education in vocational colleges (Ismail et al., 2019). The vocational education system's need to adapt to evolving industry demands and the Ministry of Education's focus on developing teacher competencies aligned with societal and economic needs is noted (Arifin & Rasdi, 2017).

A literature review reveals that the implementation of the OBE system in Vocational Colleges is not comprehensive. Major issues include moderate awareness and understanding of the OBE-based curriculum among program leaders and teachers, and the need for improvements in the Continuous Quality Improvement (CQI) process (Damit et al., 2021). Challenges in implementing OBE include restructuring the entire education system, the need for different teaching and learning approaches, and ensuring continuous improvement in curriculum and pedagogy (Yusof et al., 2017). The importance of competency in various dimensions is highlighted as crucial for enhancing the quality of education and training in vocational institutions to effectively deliver their curriculum, including engaging with students and meeting the changing demands of the workforce (Sern et al., 2018). Therefore, the development of a valid and reliable instrument to assess lecturer competency in the context of OBE is an important step in elevating the quality and effectiveness of education in vocational institutions.

In academic terms, validity refers to the appropriateness of the research instrument within a study. In other words, validity is the concept of measuring what is intended to be measured (Berawi, 2018). An object or matter is considered valid if measured with the appropriate tool (Creswell, 2014). In this study, validity pertains to a testing process that can ascertain whether respondents are accurately answering questions or merely responding to the questionnaire without thoroughly reading or understanding the questions.

The validation process was conducted to ensure that the content, language use, and clarity of meaning for each item in the researcher's questionnaire align with the study's objectives before distribution to the actual study. This process also aims to address the research questions effectively. As (Luque-Vara et al., 2020) suggests, before conducting an actual study, researchers should seek expert or other individual opinions to critique and improve the questions. Therefore, the researcher proposed a panel of seven experts, comprising lecturers from Public Higher Education Institutions in Malaysia, officers from Technical and Vocational Education Division (BPLTV) and Trainers of the Diploma VC program, to ensure the questionnaire's alignment with the study's objectives and research questions.

Methodology

Figure 1 illustrates the systematic process of questionnaire validation. It begins with the development of the questionnaire instrument, followed by the selection and contacting of experts for their participation. The validity form is then distributed to these experts, either face-to-face or via email and is subsequently received back for analysis. The final step, as shown in the diagram, involves analyzing the expert agreement using the Fleiss Kappa coefficient, a statistical measure that assesses the level of agreement among experts. This process is essential in academic research to ensure the reliability and validity of the questionnaire tool used in studies.

Figure 1. Implementation Steps of Questionnaire Instrument Expert Validation

This study adopts a systematic approach in selecting and profiling experts involved in the validation process. According to (Creswell, 2014), selecting experts in specific fields is a critical aspect. Experts were chosen based on their extensive experience and knowledge in vocational education and the implementation of OBE, as shown in Table 1. Selection criteria included academic qualifications, experience in vocational education, and previous involvement in educational research or OBE-related projects. Yusof (2019) suggests that taking into account recommendations (5–8) and the author's experience, it is advised that the number of experts involved in content validation should be a minimum of six and should not exceed ten. Akbari & Yazdanmehr (2014) describe three characteristics of an expert: working in their field and profession for over 5 years, having specific experience, and being directly involved in related research. This diverse group of experts ensures a comprehensive and varied assessment of the instrument.

Table 1
Expert Evaluators

No.	Position	Experience	Expertise
1.	Senior Lecturer, Universiti Putra Malaysia	13 Years	Civil Engineering, Technical Advisory Committee (TAC) for Construction Technology Program, Malaysian Vocational Colleges.
2.	Senior Lecturer, Universiti Tun Hussein Onn Malaysia	20 Years	OBE Coordinator for the Faculty, Technical Advisory Committee (TAC) for Construction Technology Program, Malaysian Vocational Colleges.
3.	Senior Lecturer, Universiti Teknikal Malaysia Melaka	24 Years	Civil Engineering, Technical Advisory Committee (TAC) for Construction Technology Program, Malaysian Vocational Colleges.
4.	Assistant Director, TVET Curriculum and Program Development Cluster, BPLTV, MOE	10 Years	OBE Curriculum, Malaysian Vocational Colleges
5.	Department Head/Lecturer, VC Keningau	13 Years	Trainer for Diploma Curriculum in Construction Technology, Malaysian Vocational Colleges.
6.	Department Head/Lecturer, VC Seri Iskandar	10 Years	Trainer for Diploma Curriculum in Construction Technology, Malaysian Vocational Colleges.

7.	Department Head/Lecturer, VC Alor Setar	8 Years	Trainer for Diploma Curriculum, Malaysian Vocational Colleges

Sekaran & Bougie (2016); Lam et al (2018) highlight the process of instrument validation, underscoring the significance of expert opinions in certifying that the items within the instrument accurately and comprehensively assess the intended competencies. It involves the appropriateness of items for the sample to determine the extent to which the questionnaire items represent the entire concept or domain being measured. Face validity is considered a basic and minimal index in content validity, providing an initial idea of how well the items appear to measure the intended concept. In the present study, the researchers selected the Semantic Differential scale, employing a 10-point rating system that spans values from 0 (disagree) to 10 (strongly agree), initially used in a seminal study by (Chráska & Chrásková, 2016). In alignment with this methodology, the expert validity form used in this research incorporates a similar 10-point agreement scale, following the format outlined by (Dawes, 2017).

To ensure the instrument's validity, the Fleiss Kappa coefficient was used for data analysis. This statistical measure was chosen for its effectiveness in determining the level of agreement among multiple evaluators, making it suitable for studies involving expert panel assessment (Moons & Vandervieren, 2023). It generalizes to situations involving more than two evaluators or different evaluators for different fields (Fleiss, 1971). Fleiss Kappa is introduced as a generalization of Cohen's Kappa for any number of fixed evaluators without requiring the same evaluators for each expertise. The use of Fleiss Kappa allows for a detailed analysis of expert opinion consistency for each instrument item. The resulting Kappa values provide a measurable scale for the instrument's validity in assessing lecturer competencies in the OBE context. The expert agreement review formula using Fleiss Kappa coefficient (Davies & Fleiss, 1982; Hassan et al., 2019; Stemler, 2001)

$K = (Fa-Fc)/(N-Fc)$

K = Kappa Agreement Coefficient Value

Fa = Agreement Units

N = Transcription Units

Fc = 50% of Expected Agreement

Based on Table 2, the Kappa agreement coefficient scale values are presented. The K values are used to determine the reliability level, as stated by (Landis & Koch, 1977).

Table 2

Kappa Agreement Coefficient Scale Values, K

Kappa Value	Level of Agreement
Below 0.00	Very Poor
0.01-0.20	Poor
0.21-0.40	Fair
0.41-0.60	Moderate
0.61-0.80	Good
0.81-1.00	Very Good

Analysis and Discussion

Table 3

Expert Agreement Scores for the Knowledge Construct

No.	Construct / Item	Expert Agreement Scores						
		E1	**E2**	**E3**	**E4**	**E5**	**E6**	**E7**
Curriculum Knowledge								
1.	Definition of OBE.	8	10	6	8	6	9	10
2.	Four main elements of OBE: OBC, OBTL, OBA, and CQI.	10	10	6	6	8	7	10
3.	Relationship between PEO and stakeholder requirements.	10	10	7	9	8	9	10
4.	Constructive alignment (CA) between PEO, PLO, and CLO.	10	10	7	8	8	10	10
5.	Cognitive, psychomotor, or affective domain in CLO.	10	10	7	8	7	10	10
6.	Constructive alignment (CA) between OBC, OBTL, and OBA in the curriculum.	10	10	10	8	9	10	10
Teaching and Learning Knowledge								
7.	Definition of student-centered learning (SCL).	10	10	9	8	9	10	10
8.	Teaching and learning strategies for courses.	10	10	6	9	7	10	10
9.	Approaches, methods, techniques, and strategies for outcome-based teaching and learning.	10	10	10	7	10	9	10
10.	Planning of teaching and learning processes based on course learning outcomes.	10	10	6	8	8	9	10
11.	Teaching and learning activities in the classroom or workshop.	10	10	9	8	7	9	10
Assessment Knowledge								
12.	Definition of outcome-based assessment.	10	10	10	9	10	10	10
13.	Types of assessment to measure learning outcomes.	10	10	6	9	6	10	10
14.	Time allocation for each type of assessment guided by student learning time (SLT).	10	10	10	9	9	10	10
15.	Taxonomy domain levels to be measured according to the Test Specification Table (TST).	10	10	7	9	7	9	10
16.	Assessment items based on the specified TST.	10	10	6	9	9	10	10
17.	Marks for items based on learning outcome mapping.	10	10	6	9	7	10	10
18.	Marks according to the assessment time burden.	10	10	6	9	6	10	10

19.	Marking method using rubrics.	10	10	8	9	6	10	10
20.	Rubrics based on criteria, levels, and descriptors.	10	10	8	9	10	9	10
21.	Marking method using holistic rubrics.	10	10	8	9	10	9	10
22.	Marking method using analytical rubrics.	10	10	8	9	10	9	10
23.	Vetting process for assessment papers.	10	10	9	9	10	10	10
24.	Main points to be checked during vetting.	10	10	9	9	10	10	10
25.	Moderation process for assessment papers.	10	10	10	9	10	10	10
Continuous Quality Improvement Knowledge								
26.	Definition of CQI.	10	10	8	9	8	10	10
27.	Key performance indicator (KPI) for CLO, PLO, and PEO in the program.	10	10	10	9	8	10	10
28.	Closing the loop (CTL) process to achieve program KPI.	10	10	10	9	10	10	10
29.	Closing the loop (CTL) involving CLO of taught courses.	10	10	9	9	7	10	10
30.	Review process at the improvement stage for CLO, PLO, and PEO.	10	10	6	7	6	9	10
31.	Planning process at the improvement stage for CLO, PLO, and PEO.	10	10	6	7	6	9	10
32.	Implementation process at the improvement stage for CLO, PLO, and PEO.	10	10	6	7	6	9	10
33.	Analysis process of comparative solutions at the improvement stage for CLO, PLO, and PEO.	10	10	6	7	6	9	10
34.	Follow-up actions at the program/department/VC level.	10	10	9	9	9	10	10
35.	Student feedback process on the taught course.	10	10	9	9	9	10	10
36.	Feedback process involving stakeholders.	10	10	9	9	10	9	10
37.	Aspects to be stated in CLO reporting.	10	10	10	9	10	9	10
Total Agreement Units (Fa)		368	370	292	313	302	352	370

Table 4
Calculation of Agreement Coefficient Values for the Knowledge Construct

Expert	**E1**	**E2**	**E3**	**E4**	**E5**	**E6**	**E7**	
K = Kappa Agreement Coefficient	(368-185) / (370-185) = 0.99	(370-185) / (370-185) = 1.00	(292-185) / (370-185) = 0.58	(313-185) / (370-185) = 0.69	(302-185) / (370-185) = 0.63	(352-185) / (370-185) = 0.90	(370-185) / (370-185) = 1.00	**Average Value, K = 0.83**

Table 3 presents the expert agreement scores for the knowledge construct. The table displays scores provided by seven experts (P1 to P7) on various knowledge-related items within the questionnaire. These items cover key areas such as curriculum knowledge,

teaching and learning knowledge, assessment knowledge, and knowledge on Continuous Quality Improvement (CQI) (MOE, 2018). The scores range from 6 to 10, indicating varying levels of agreement among the experts.

Table 4 shows the calculation of agreement coefficient values for the knowledge construct. The Fleiss Kappa coefficient is calculated for each expert, with the values indicating the level of consensus. These coefficient values range from 0.58 to 1.00, demonstrating varying degrees of agreement among the experts. The average Fleiss Kappa coefficient value across all experts is 0.83, indicating a good level of agreement. This suggests that the items in the knowledge construct of the questionnaire are considered relevant and well-aligned with the evaluators' expertise. The high agreement scores for certain items, particularly those related to the definition of OBE and the understanding of CQI, underscore the importance of these concepts in vocational education (Latif & Nor, 2021; Syeed et al., 2022).

The variation in scores for some items may reflect differing perspectives or interpretations among the experts, emphasizing the need for clarity and consistency in the questionnaire items. The high Kappa values for most experts indicate a strong consensus, reinforcing the validity of the instrument in assessing the knowledge aspect of lecturer competency in the context of OBE. Overall, these findings suggest that the knowledge construct of the questionnaire is a reliable tool for evaluating the competency of lecturers in Outcome-based education within vocational education settings.

Table 5
Expert Agreement Scores for the Skills Construct

No.	Construct / Item	Expert Agreement Scores						
		E1	E2	E3	E4	E5	E6	E7
Curriculum Skills								
1.	Relationship between PEO and stakeholder requirements.	10	10	6	9	6	8	10
2.	Constructive alignment (CA) between PEO, PLO, and CLO.	8	10	9	9	10	10	10
3.	Cognitive, psychomotor, or affective domain in each course's CLO.	10	10	8	9	8	10	10
4.	Constructive alignment (CA) between OBC, OBTL, and OBA in the curriculum.	10	10	8	9	8	10	10
Teaching and Learning Skills								
5.	Teaching and learning strategies for courses.	10	10	6	9	7	10	10
6.	Approaches, methods, techniques, and strategies for outcome-based teaching and learning.	10	10	10	9	10	9	10
7.	Planning of teaching and learning processes based on course learning outcomes.	10	10	6	9	10	10	10
8.	Selection of teaching and learning activities in the classroom or workshop.	10	10	9	9	7	9	10
Assessment Skills								

9.	Time allocation for each type of assessment guided by student learning time (SLT).	10	10	10	8	9	10	10
10.	Taxonomy domain levels to be measured according to the Test Specification Table (TST).	10	10	7	8	7	10	10
11.	Assessment items based on the specified TST.	10	10	9	9	9	10	10
12.	Marks for items based on learning outcome mapping.	10	10	6	9	7	10	10
13.	Marks according to the assessment time burden.	10	10	6	9	6	10	10
14.	Marking method using rubrics.	10	10	8	9	10	9	10
15.	Rubrics based on criteria, levels, and descriptors.	10	10	8	9	10	10	10
16.	Marking method using holistic rubrics.	10	10	8	9	9	10	10
17.	Marking method using analytical rubrics.	10	10	8	9	10	10	10
18.	Vetting process for assessment papers.	10	10	9	9	10	10	10
19.	Main points to be checked during vetting.	10	10	9	9	10	10	10
20.	Moderation process for assessment papers.	10	10	10	9	10	10	10
Continuous Quality Improvement Skills								
21.	Key performance indicator (KPI) for CLO, PLO, and PEO in the program.	10	10	9	9	8	10	10
22.	Closing the loop (CTL) process to achieve program KPI.	10	10	9	9	7	10	10
23.	Review process at the improvement stage for CLO.	10	10	6	7	6	9	6
24.	Planning process at the improvement stage for CLO.	10	10	6	7	6	9	6
25.	Implementation process at the improvement stage for CLO.	10	10	6	7	6	9	6
26.	Analysis process of comparative solutions at the improvement stage for CLO.	10	10	6	7	6	10	6
27.	Follow-up actions at the program level.	10	10	9	9	9	10	10
28.	Student feedback process on the taught course.	10	10	9	9	9	10	10
29.	Feedback process involving stakeholders.	10	10	9	9	10	10	10
30.	Aspects to be stated in CLO reporting.	10	10	10	9	10	10	10
Total Agreement Units (Fa)		298	300	239	260	250	292	284

Table 6
Calculation of Agreement Coefficient Values for the Skills Construct

Expert	**E1**	**E2**	**E3**	**E4**	**E5**	**E6**	**E7**	
K = Kappa Agreement Coefficient	(298-150) (300-150) = 0.99	(300-150) (300-150) = 01.00	(239-150) (300-150) = 0.59	(260-150) (300-150) = 0.73	(250-150) (300-150) = 0.67	(292-150) (300-150) = 0.95	(284-150) (300-150) = 0.89	**Average Value, K = 0.83**

Table 5 presents the expert agreement scores for the skills construct. This table lists the scores given by seven experts (P1 to P7) for various skill-related items in the questionnaire. These items encompass curriculum skills, teaching and learning skills, assessment skills, and skills in Continuous Quality Improvement (CQI). The experts' scores range from 6 to 10, reflecting differing levels of consensus on each item.

Table 6 shows the calculation of agreement coefficient values for the skills construct. The Fleiss Kappa coefficient is calculated for each expert, with the values indicating the level of agreement. The coefficients vary from 0.59 to 1.00, demonstrating a range of agreement levels among the experts. The average Fleiss Kappa coefficient value across all experts is 0.83, indicating good agreement. This suggests that the items in the skills construct of the questionnaire are relevant and align well with the expertise of the evaluators. High agreement scores for specific items, particularly those related to implementing curriculum requirements and CQI processes, highlight the significance of these skills in vocational education (Raof et al., 2022).

Variations in scores for certain items may indicate differing expert perspectives or interpretations, underscoring the need for clear and consistent item phrasing in the questionnaire. The high Kappa values for most experts signal a strong consensus, reinforcing the validity of the instrument in assessing the skills aspect of lecturer competency in the context of OBE. Overall, these findings imply that the skills construct of the questionnaire is a reliable tool for assessing lecturers' competency in Outcome-based Education within vocational education settings.

Table 7

Expert Agreement Scores for the Attitude Construct

No.	Construct / Item	Expert Agreement Scores						
		E1	E2	E3	E4	E5	E6	E7
Motive								
1.	Organizing my daily schedule.	10	10	8	9	9	10	10
2.	Using any available teaching and learning resources.	10	10	6	9	10	10	10
3.	Conducting extensive reading about the OBE approach.	10	10	10	9	9	7	10
4.	Attending seminars and training on preparation and implementation of OBE.	10	10	10	9	10	10	10
5.	Transitioning from the traditional to the OBE approach.	10	10	10	9	10	10	10
6.	Formulating course and program outcomes in line with the mission and vision of VC.	10	10	6	9	10	9	10
7.	Delivering the curriculum outlined in the course syllabus.	10	10	9	9	9	10	10
8.	Using varied assessments.	10	10	8	9	9	10	10
9.	Evaluating student performance using rubrics.	10	10	8	9	9	10	10
Traits								
10.	OBE requires more lecturer responsibility.	10	10	8	9	10	10	10
11.	OBE will not waste time.	10	10	8	9	10	10	9
12.	Traditional assessment does not always benefit students.	8	10	7	9	9	10	9
13.	OBE is the best learning approach.	10	10	9	9	10	10	10
14.	OBE ensures all students achieve learning outcomes.	10	10	9	9	9	10	10
Self-Concept								
15.	OBE will improve student academic achievement.	10	10	10	9	10	10	10
16.	OBE requires more interaction and communication with industry.	10	10	10	9	10	10	10
17.	OBE allows me to be more flexible.	10	10	10	9	10	10	10
18.	OBE will provide equal educational opportunities.	10	10	10	9	9	10	10
19.	OBE prepares students for the workforce.	10	10	10	9	8	10	10
20.	My teaching experience helps adapt to OBE.	10	10	10	9	10	10	10
Total Agreement Units (Fa)		198	200	176	180	190	196	198

Table 8
Calculation of Agreement Coefficient Values for the Attitude Construct

Expert	E1	E2	E3	E4	E5	E6	E7	
K = Kappa Agreement Coefficient	(198-100) (200-100) = 0.98	(200-100) (200-100) = 1.00	(176-100) (200-100) = 0.76	(180-100) (200-100) = 0.80	(190-100) (200-100) = 0.90	(196-100) (200-100) = 0.96	(198-100) (200-100) = 0.98	**Average Value, K = 0.91**

Table 7 presents the expert agreement scores for the attitude construct, categorizing the items into themes such as motive, traits, and self-concept (Spencer & Spencer, 1993). These themes encompass various attitude-related aspects in the context of Outcome-based Education (Ortega & Cruz, 2016; Baguio, 2019). The table lists scores provided by seven experts (P1 to P7) for items such as preparing a daily schedule for sufficient pedagogical development, utilizing available resources for OBE teaching, attending OBE-related seminars and training, and transitioning from traditional to OBE approaches. The scores range from 6 to 10, reflecting varying levels of agreement among experts.

Table 8 shows the calculation of agreement coefficient values for the attitude construct. The Fleiss Kappa coefficient is calculated for each expert, indicating the level of consensus. The coefficients vary from 0.76 to 1.00, demonstrating a range of agreement levels among the experts. The average Fleiss Kappa coefficient value across all experts is 0.91, indicating a high level of agreement. This suggests that the items within the attitude construct are considered highly relevant and align well with the expertise of the evaluators. High agreement scores for items, especially those related to embracing OBE and its implications for teaching methodologies and student assessment, highlight the importance of attitudinal aspects in vocational education (Mohamad et al., 2021).

The variation in scores for certain items may reflect different expert perspectives or interpretations, emphasizing the need for clear and consistent wording in questionnaire items. The high Kappa values for most experts signal a robust consensus, reinforcing the validity of the instrument in assessing the attitude aspect of lecturer competency in the context of OBE. Overall, these findings suggest that the attitude construct of the questionnaire is a reliable tool for evaluating lecturers' competency in Outcome-based Education within vocational education settings.

The overall average Fleiss Kappa value for the study stands at 0.85, signifying a strong overall agreement and validating the reliability of the instrument (Landis & Koch, 1977). These results collectively affirm the instrument's capability in providing a comprehensive and accurate assessment of lecturer competency in the context of OBE, encompassing the crucial domains of knowledge, skills, and attitudes.

Conclusion

In summary, this study aimed to validate a Competency Instrument for lecturers in Construction Technology programs within the framework of Outcome-based Education (OBE). Through a systematic process involving expert evaluation, the study assessed the instrument's ability to measure key competency elements: knowledge, skills, and attitudes. The findings, derived from the Fleiss Kappa coefficient analysis, indicate a high level of consensus among experts, reflecting the instrument's robustness and relevance.

The results revealed Kappa values of 0.83 for both knowledge and skills constructs and a higher value of 0.91 for the attitudes construct, emphasizing the significance of attitudinal aspects in OBE implementation. The overall Fleiss Kappa value of 0.85 for the study suggests a strong agreement among experts, reinforcing the validity and reliability of the instrument. These outcomes highlight the instrument's potential as an effective tool for measuring lecturer competencies, encompassing the comprehensive dimensions of knowledge, skills, and attitudes essential for the successful practice of OBE in vocational education settings.

Contribution

This study contributes to the field by providing instruments that have been validated for use in other higher education institutions, offering a framework for improving lecturer competence in line with Outcomes-Based Education (OBE) principles. It emphasizes the need for a holistic approach in competency assessment, combining cognitive dimensions, skills and attitudes to ensure the effectiveness of educational delivery and achievement of desired learning outcomes. Furthermore, this study improves educational practice, particularly within the OBE context and offers new insights into the assessment of lecturer competence that other higher education institutions can adapt to enhance education quality and learning outcomes. Additionally, it aids in understanding expert validity through the renewed use of Fleiss Kappa, providing strong evidence of this tool's effectiveness in assessing expert consensus, strengthening qualitative research methodology and offering practical guidance for using this statistical technique to ensure analysis reliability.

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References

Raof, S. A., Jamal, A. H. M. @., & Saipudin, N. A. (2022). Analysis on the readiness of Vocational college lecturers to implement OBE approach. *International Journal of Academic Research in Business & Social Sciences*, *12*(1), 1489-1505. https://doi.org/10.6007/ijarbss/v12-i1/12061

Damit, M. A. A., Omar, M. K., & Puad, M. H. M. (2021). Issues and Challenges of Outcome-based Education (OBE) Implementation among Malaysian Vocational College Teachers. *International Journal of Academic Research in Business & Social Sciences*, *11*(3), 197-211. https://doi.org/10.6007/ijarbss/v11-i3/8624

Agir, N., Effendi, M., Matore, M. E. E. M., Faamanatu-Eteuati, N., & Márquez, N. (2023). Outcome-Based assessment in the evaluation of education Programs through a systematic literature review. *International Journal of Academic Research in Progressive*

Education and Development, *12*(2), 2662-2677. https://doi.org/10.6007/ijarped/v12-i2/18095

Akbari, R., & Yazdanmehr, E. (2014). A critical analysis of the selection criteria of expert teachers in ELT. *Theory and Practice in Language Studies*, *4*(8), 1653-1658. https://doi.org/10.4304/tpls.4.8.1653-1658

Ortega, R. A. A., & Cruz, R. A. O. (2016). Educators' Attitude towards Outcomes-Based Educational Approach in English Second Language Learning. *American Journal of Educational Research*, *4*(8), 597–601. https://doi.org/10.12691/education-4-8-3

Arifin, M. A., & Rasdi, R. M. (2017). The Competent Vocational College Teacher: A proposed model for Effective Job performance. *International Journal of Academic Research in Business and Social Sciences*, *7*(2), 829-837. https://doi.org/10.6007/IJARBSS/v7-i2/2719

Baguio, J. B. (2019). Outcomes-Based Education: Teachers' attitude and implementation. *Academe*, *7*(1), 110–127. https://doi.org/10.15631/ubmrj.v7i1.113

Berawi, F. M. (2018). *Metodologi Penyelidikan: Panduan Menulis Tesis* (1st ed.). Universiti Utara Malaysia.

Cabaces, J., Blanco, A. J. S., Cabanas, J. E. A., Casapao, C. G., Guzman, J. P. De, Villa, M. A. C. De, & Derla, R. V. R. (2014). Perception and Awareness of Nigerian Students towards Outcome-Based Education. *International Journal of Academic Research in Progressive Education and Development*, *3*(1), 208–219. https://doi.org/10.6007/ijarped/v3-i1/761

Chráska, M., & Chrásková, M. (2016). Semantic Differential and its Risks in the Measurement of Students' Attitudes. *Procedia - Social and Behavioral Sciences*, *217*, 820–829. https://doi.org/10.1016/j.sbspro.2016.02.155

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Method Approaches* (4th ed.). SAGE Publications.

Davies, M., & Fleiss, J. L. (1982). Measuring agreement for multinomial data. *Biometrics*, *38*(4), 1047-1051. https://doi.org/10.2307/2529886

Dawes, J. (2008). Do data characteristics change according to the number of scale points used? An experiment using 5-point, 7-point and 10- point scales. *International Journal of Market Research*, *50*(1). https://doi.org/10.1177/147078530805000106

Dayananda, P., Latte, M. V., Raisinghani, M. S., & Cn, S. (2020). New approach for target setting mechanism of course outcomes in higher education accreditation. *Journal of Economic and Administrative Sciences*, *37*(1), 79–89. https://doi.org/10.1108/jeas-03-2020-0024

Fleiss, J. L. (1971). Measuring nominal scale agreement among many raters. *Psychological Bulletin*, *76*(5), 378–382. https://doi.org/10.1037/h0031619

Halibas, A. S., Mehtab, S., Al-Attili, A., Alo, B., Cordova, R. S., & Cruz, M. E. L. T. (2020). A thematic analysis of the quality audit reports in developing a framework for assessing the achievement of the graduate attributes. *International Journal of Educational Management*, *34*(5), 917–935. https://doi.org/10.1108/ijem-07-2019-0251

Hapinat, H. L. (2023). Practices on the outcomes-based education (OBE) implementation in select HEI graduate school programs in the Philippines as input to institutionalizing mandatory accreditation. *International Journal of Advanced and Applied Sciences*, *10*(3), 167–182. https://doi.org/10.21833/ijaas.2023.03.021

Hassan, N., Puteh, S., & Sanusi, A. B. M. (2019). Fleiss's Kappa: Assessing the concept of Technology Enabled Active Learning (TEAL). *Journal of Technical Education and Training*, *11*(1), 109-118. https://doi.org/10.30880/jtet.2019.11.01.014

Ismail, A. E., Hassan, R., Bakar, A. A., Hanipah, H., Hanafiah, M. A. M., & Asary, L. H. (2018). The development of tvet educator competencies for quality educator. *Journal of Technical Education and Training*, *10*(2), 38-48. https://doi.org/10.30880/jtet.2018.10.02.004

Ismail, K., Omar, M. K., & Abdullah, A. (2019). Professional management competency for TVET teachers in Engineering faculty at vocational college. *International Journal of Academic Research in Progressive Education and Development*, *8*(4), 33-46. https://doi.org/10.6007/ijarped/v8-i4/6433

Lam, K. W., Hassan, A., Sulaiman, T., & Kamarudin, N. (2018). Evaluating the face and content validity of an instructional Technology competency instrument for university lecturers in Malaysia. *International Journal of Academic Research in Business & Social Sciences*, *8*(5), 376-385. https://doi.org/10.6007/ijarbss/v8-i5/4108

Kob, C. G. C., Osman, M. Z., & Ghafar, N. F. A. (2017). Kompetensi tenaga pengajar dalam pengajaran Amali pembuatan perabot di Malaysia. *The Emerging Trends of TVET and Social Sciences in Asia Pacific Countries*, *10*(3–3), 25-32. https://doi.org/10.11113/sh.v10n3-3.1512

Laguador, J. M., & Dotong, C. I. (2014). Knowledge versus Practice on the Outcomes-Based Education Implementation of the Engineering Faculty Members in LPU. *International Journal of Academic Research in Progressive Education and Development*, *3*(1), 66–79. https://doi.org/10.6007/ijarped/v3-i1/640

Sern, L. C., Hamisu, M., & Salleh, K. M. (2018). Determining the elements of TVET teachers competency for Nigerian higher learning institutions. *Journal of Physics: Conference Series*, *1049*, 012078. https://doi.org/10.1088/1742-6596/1049/1/012078

Landis, J. R., & Koch, G. G. (1977). The Measurement of Observer Agreement for Categorical Data. *Biometrics*, *33*(1), 159–174. https://doi.org/doi.org/10.2307/2529310

Latif, N. A. A., & Nor, M. Y. M. (2021). Continuous Quality Improvement (CQI) Practice in Vocational Colleges. *International Journal of Modern Education*, *3*(8), 211–225. https://doi.org/10.35631/ijmoe.380017

Luque-Vara, T., Linares-Manrique, M., Fernández-Gómez, E., Martín-Salvador, A., Sánchez-Ojeda, M. A., & Enrique-Mirón, C. (2020). Content Validation of an Instrument for the Assessment of School Teachers' Levels of Knowledge of Diabetes through Expert Judgment. *International Journal of Environmental Research and Public Health*, *17*(22), 8605. https://doi.org/10.3390/ijerph17228605

Syeed, M. M. M., Shihavuddin, A., Uddin, M. F., Hasan, M., & Khan, R. H. (2022). Outcome Based Education (OBE): Defining the process and practice for engineering education. *IEEE Access*, *10*, 119170–119192. https://doi.org/10.1109/access.2022.3219477

Ministry of Education. (2017). *Dasar pendidikan kebangsaan* (4th ed.). Kementerian Pendidikan Malaysia.

Ministry of Education. (2018). *Garis Panduan Pembangunan Program Akademik Universiti Awam* (2nd ed.). Kementerian Pendidikan Malaysia.

Mohamad, M. S., Lian, O. C., Zain, M. M., Yunus, B. M., & Sidek, N. (2021). Student Attainment Measurement System in Civil Engineering Undergraduate Programme: *Asian Journal of University Education*, *17*(2), 191-202. https://doi.org/10.24191/ajue.v17i2.13397

Moons, F., & Vandervieren, E. (2023). Measuring agreement among several raters classifying subjects into one-or-more (hierarchical) nominal categories. A generalisation of Fleiss' kappa. *arXiv (Cornell University)*. https://doi.org/10.48550/arxiv.2303.12502

Omar, M. K., Zahar, F. N., & Rashid, A. M. (2020). Knowledge, skills, and attitudes as predictors

in determining teachers' competency in Malaysian TVET institutions. *Universal Journal of Educational Research*, *8*(3C), 95–104. https://doi.org/10.13189/ujer.2020.081612

Osman, M. Z., Kob, C. G. C., & Abdullah, S. S. S. (2019). Competency of teachers in teaching practical implementation of subject Furniture Manufacturing for Malaysian Skills Certification Program. *International Journal of Academic Research in Business & Social Sciences*, *9*(5), 78-89. https://doi.org/10.6007/ijarbss/v9-i5/5841

Saibon, R. A., & Kamis, A. (2019). Employability Skills in Business Management Graduate and Role of Malaysian Vocational College. *International Journal of Academic Research in Business and Social Sciences*, *9*(2), 1175–1192. https://doi.org/10.6007/ijarbss/v9-i2/5674

Sekaran, U., & Bougie, R. (2016). *Research Method for Business: A Skill Building Approach* (7th ed.). John Wiley & Sons Ltd.

Spencer, L. M., & Spencer, S. M. (1993). *Competence at Work*. Wiley.

Stemler, S. (2001). An overview of content analysis. *Practical Assessment, Research, and Evaluation*, *7*(17), 1–6. https://doi.org/doi.org/10.7275/z6fm-2e34

Wong, S.-C. (2020). Competency Definitions, Development and Assessment: A Brief Review. *International Journal of Academic Research in Progressive Education and Development*, *9*(3), 95–114. https://doi.org/10.6007/ijarped/v9-i3/8223

Yusof, M. S. B. (2019). ABC of Content Validation and Content Validity Index Calculation. *Education in Medicine Journal*, *11*(2), 49–54. https://doi.org/10.21315/eimj2019.11.2.6

Yusof, R., Othman, N., Norwani, N. M., Ahmad, N. L., & Jalil, N. B. A. (2017). Implementation of Outcome- based Education (OBE) in accounting programme in higher education. *International Journal of Academic Research in Business & Social Sciences*, *7*(6), 1186-1200. https://doi.org/10.6007/ijarbss/v7-i6/3352