

## A CHARACTER-BASED ASSESSMENT MODEL FOR VOCATIONAL HIGH SCHOOLS

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**Abstract:** The competencies of Vocational High School (VHS) graduates, especially in terms of character have not met its standards. This study aims to develop a character-based assessment model for VHS in the form of a guide and procedure. Borg & Gall's (1989) model with the following stages was utilized: (1) needs analysis, (2) planning, (3) development, (4) phase I trial, (5) phase II trial, (6) evaluation of model effectiveness, and (7) final product development. This study involved some experts in the model validation. Trials were done to teachers and principals in eight VHSs in Yogyakarta Special Province, Indonesia in 2017 (first trial), and those from 42 VHSs throughout Java island, Indonesia in 2018 (second trial). Data were collected by questionnaires and interviews and analysed by quantitative and qualitative descriptive statistics. This study suggests that, overall, the model is appropriate and feasible to use, proven by (1) the assessment guide is categorized as 'very appropriate' (Mean 3.55; SD .52); (2) assessment procedure is an 'very appropriate' category (Mean 3.60; SD .51); and (3) effectiveness of the assessment model in trial 1 is in the 'very appropriate' category (Mean 3.43; SD .51), and in trial 2 is in the 'appropriate' category (Mean 3.38; SD .53).

**Keyword:** *assessment, character-based, vocational high school*

### MODEL PENILAIAN BERBASIS KARAKTER UNTUK SEKOLAH MENENGAH KEJURUAN

**Abstrak:** Kompetensi lulusan Sekolah Menengah Kejuruan (SMK), terutama dalam hal karakter belum memenuhi standar seperti yang diharapkan. Penelitian ini bertujuan untuk mengembangkan model penilaian berbasis karakter untuk SMK dalam bentuk panduan dan prosedur. Penelitian pengembangan ini menggunakan model Borg & Gall's (1989) yang dimodifikasi dengan tahapan (1) analisis kebutuhan, (2) perencanaan, (3) pengembangan, (4) ujicoba tahap I, (5)ujicoba tahap II, (6) evaluasi efektivitas model (7) pengembangan produk akhir. Studi ini melibatkan beberapa ahli dalam validasi model. Ujicoba dilakukan terhadap guru dan kepala sekolah di delapan SMK di Provinsi Daerah Istimewa Yogyakarta, Indonesia pada 2017 (Ujicoba Pertama), dan dari 42 SMK di seluruh pulau Jawa pada 2018 (Ujicoba Ke dua). Data dikumpulkan dengan kuesioner dan wawancara dan dianalisis dengan statistik deskriptif kuantitatif dan kualitatif. Hasil penelitian menunjukkan bahwa, secara keseluruhan, model tersebut layak untuk digunakan, dibuktikan dengan (1) Panduan Penilaian termasuk kategori 'Sangat Layak' (Rerata 3.55; SD .52); (2) Prosedur Penilaian termasuk kategori 'Sangat Layak' (Rerata 3.60; SD .51); dan (3) Efektivitas Model Penilaian dalam Ujicoba Pertamatermasuk kategori 'Sangat Layak' (Rerata 3.43; SD .51), dan dalam Ujicoba Ke dua termasuk kategori 'Layak' (Rerata 3.38; SD .53).

**Kata Kunci:** *penilaian, berbasis karakter, sekolah menengah kejuruan*

#### INTRODUCTION

Vocational education, including Vocational High Schools (VHSs) is an integral part of general education, a means of preparing students to enter the world of work (The UNESCO International Bureau of Education, 2013). In order for vocational graduates to have competencies according to the workforce

needs, the implementation of education in VHSs should be of high quality. There are several main elements of quality education, namely the learning environment, curriculum, teacher competency, learning activities, classroom management, and assessment of learning outcomes. The lack of one element will reduce the effectiveness of education (Tomlinson, Moon, & Imbeau, 2015).

As stated in standards, VHS graduates are expected to achieve various competencies in accordance with their fields of expertise. Vocational graduates will easily get jobs if their competencies meet the demands of the workforce. Nevertheless, those accepted in the world of work are still relatively small in number, especially in Indonesia. The highest number of unemployment in Indonesia was from VHS graduates. In February 2018, the open unemployed VHS graduates were the highest among others, amounted to 8.92 percent (Badan Pusat Statistik, 2018). The open unemployment rate is an indicator to measure the supply of labor that is not used or not accepted by the labor market. One of the reasons might be their low competencies and the incompatibility of VHS graduates' competencies with the qualifications required by the world of work. The gap is not only in basic competencies but also in soft skills or character. Some suspect that the applied curriculum might not address the needs of the world of employment, technological developments, and innovations in the field of education (LaRocque, 2015). The lack of soft skills is also one of the reasons why someone loses his/her job, such as inappropriate communication behavior, apathy, late attendance, and low adaptability (Spisak, 2015).

A character deals with how a person behaves and makes a relationship with other people. People who have good character may have the understanding of, love, and do goodness. Individuals who have good character are someone who tries to do the best things for God, himself, others, environment, nation and state and the international world in general by optimizing his potential and accompanied by awareness, emotions and motivations. In this regard, adequate character education is needed at all levels of education, including in VHS.

Character education can be defined as a process of developing values and behaviors so that one can determine the best choices in interacting with the community (Bialik, Bogan, Fadel, & Horvatova, 2015). In schools, it is carried out, some of which, through the learning process, extra-curricular activities, and habituation in every school activity. The school climate influences the planting of students' character. The schools' order, relationships in school and teaching and learning practices,

are each important within the school climate (Sampermans, Isac, & Claes, 2018).

The learning process integrated with character reinforcement is required to link educational moral values with various personal and social aspects of students in daily life (Gholar, 2004). Character education taught at school, additionally, seeks to equip students to exist and be able to overcome the problems of life. In accordance with the development in the demands of the world of work and the wider community, learning that is enriched with character values or that leads to professional ethics is very imperative in meeting such requirements. Professional ethics are significant components that graduates should possess at every level of vocational education (Jagger, 2013). In line with this idea, Goleman (1999) states that 80% of one's success is influenced by emotional intelligence and only 20% is predisposed by cognitive intelligence.

Assessment is an important component in the learning process. Quality of assessment is one of the key features of good teaching (Shihab, 2011). During the learning process assessment activities are carried out, both formative assessment and summative assessment. Through assessment, the extent to which the material discussed in learning can be understood by students. This can be used as feedback in improving learning activities. Concerning this, assessment improvement needs to be carried out in accordance with the development and demands of the education system and the world of work. It has been observed that some assessment misconducts include the lack of common understanding of teachers on the assessment system that should be carried out. Teachers tend to do what they wish or know rather than referring to some previous studies. The existing assessment system usually has not provided a real and operational picture of how assessment should be carried out properly.

There may be several methods of assessment in learning, such as authentic and performance assessment and portfolios, but in their implementation, there are no such guidelines that teachers have their own perceptions in implementing the assessment (Sugiyono, Lastariwati, & Yudianto, 2018). Efforts for providing sufficient instruments for these teachers also need to be arrived at. In the one hand, given the diversity of students' characteristics, choices

to determine how they can demonstrate their learning outcomes and competencies should be one of the other considerations. At the same time, any combination of assessment techniques or approaches chosen should still accommodate the achievement of learning objectives (Montenegro & Jankowski, 2017).

A character education must be well designed and organized through various activities, such as learning, assessment, extra-curricular activities, school management, and other related activities so that vocational graduates have the competence and noble character as expected. A character-based assessment is an assessment that can strengthen the planting of students' character. It is designed in an integrated manner with teaching activities, competences assessed and assessment strategies, and implemented in an integrated manner with the learning process.

A character-based assessment begins with developing a learning plan. In the learning plan, it is determined, among others, the objectives, materials, methods and media of learning, and assessment of learning outcomes. The entire component is related to strengthening the planting of student characters. Learning materials are arranged in an integrated manner with character values that will be embedded into students. Nugrahani's research results (2018) show that character integration in teaching materials is proven to be able to improve the character of students, especially for character values such as trustworthiness, caring, and citizenship.

Competencies assessed are integrated with the specific character values associated. For example, assessing student competencies in installing residential lighting installations, students are assessed not only to be associated with psychomotor skills, but also related character values, such as work safety, neatness, precision, cooperation, cleanliness, and other character values. Likewise, the assessment of knowledge competencies needs to be integrated with specific character values, such as honesty, politeness, respect for others, tolerance, and character values related to the material being tested.

In the aspect of assessment strategy, the process of assessing learning outcomes must be carried out with principles that prioritize character values. For example, at the beginning of learning (first week meeting) the teacher

presents a plan for assessing learning outcomes in these subjects, including time, scope of material, techniques, and testing. This reinforces the values of openness and honesty. When formative assessments are carried out, for example through quizzes during learning, the teacher must respect any student's answers, may not be reproachful, condescending or other things that can eliminate learning motivation and demean students. Tasks or homework must be examined and immediately returned to students on time. Granting student learning outcomes must be fair and objective. Teachers can look for different or varied strategies for groups of students in conducting assessments. The role of teacher is very important in learning and assessment. Teacher is a very influential on the attitudes and behavior of students, as well as their academic achievements (Blazar, 2016).

The character education program, as one of the very essential efforts to equip VHS graduates with looked-for qualities, is being carried out mainly through extra-curricular activities, school management, and learning processes. The character that is integrated with assessment, additionally, needs to be done. In this regard, the development of character-based assessment models that are suitable to be applied in VHSs was developed under this study.

## METHOD

This is research & development in which adapted Borg & Gall's (1989) model with the following stages was utilized: (1) needs analysis, (2) planning, (3) development, (4) phase I trial, (5) phase II trial, (6) evaluation of model effectiveness, and (7) final product development.

The needs analysis was carried out by interviews, questionnaires, and document analysis techniques, including analyses of the results of the preliminary studies. The respondents were teachers, principals, and supervisors of VHS. Planning was carried out by preparing reference books and legal regulations related to the assessment of learning and educational outcomes, determining experts and practitioners involved in the model development and trials, arranging schedules, and determining schools for the trials.

Model development was carried out through the stages of model design, discussion

and study of model design through FGD 1 and FGD 2. The participants of both FGD consisted of eleven people, namely two teachers, one principal, one VHS supervisor, one experts in vocational education, two experts in learning, two experts in assessment, and two expert in the field of character education. The assessment model developed was validated by experts, consisting of those of vocational education, learning, assessment, and character education. The products of the development of the assessment model include (1) assessment guide, and (2) procedure for character-based assessment. Model validity criteria for both products are presented in Table 1.

**Table 1. Model Validity Criteria**

Score	Category
$X > 3.4$	Very Appropriate
$2.8 < X \leq 3.4$	Appropriate
$2.2 < X \leq 2.8$	Slightly Appropriate
$1.6 < X \leq 2.2$	Inappropriate
$X \leq 1.6$	Very Inappropriate

The instruments used for validation and trials of the assessment model were questionnaires and interview guidelines. The instruments developed were validated by vocational learning experts, learning outcomes assessment experts, and experts in character education. The content validity of the instrument was calculated by Aiken's V coefficient. The criteria for validating the contents of the instrument are presented in Table 2. The reliability of the instrument was examined by the Intraclass Correlation Coefficient (ICC). Reliability criteria for the instrument are presented in Table 3.

**Table 2. Instrument Content Validity Criteria**

Aiken's V Coefficient	Category
$.75 < V \leq 1.00$	Very Good
$.50 \leq V \leq .75$	Good
$V < .50$	Very Poor

**Table 4. Model Effectiveness Criteria**

Score	Category	Description
$X > 3.4$	Very Appropriate	Applicable and Adaptable
$2.8 < X \leq 3.4$	Appropriate	Applicable
$2.2 < X \leq 2.8$	Slightly Appropriate	Applicable with minor revision
$1.6 < X \leq 2.2$	Inappropriate	Applicable with major revision
$X \leq 1.6$	Very Inappropriate	Inapplicable

**Table 3. Instrument Reliability Criteria**

ICC	Category
$.75 < V \leq 1.00$	Very Good
$.50 \leq V \leq .75$	Good
$V < .50$	Very Poor

Model trials were done twice. Phase I trial was conducted in July-September 2017 in which 40 teachers and eight principals from eight VHSs in the Yogyakarta Special Province. Phase II trial was conducted in July-September 2018 with 96 teachers and 42 principals in 42 VHSs in Java Island as its respondents. The model improvement was carried out based on the results of the model trials. Assessment of the effectiveness of the model was carried out after the trial. The final product development was carried out based on the assessment of the effectiveness analysis results. The collected data were analyzed in quantitative and qualitative descriptive. The effectiveness criteria of the developed model are presented in Table 4.

## FINDINGS AND DISCUSSION

### Findings

#### Model Criteria

The criteria of the model were developed as a reference in developing the model of learning outcomes assessment that strengthen students' character. The model criteria were developed through FGD 1 and was later discussed more comprehensively in FGD 2. The agreed model criteria include comprehensiveness, relevance, and feasibility. The criteria for the assessment model and their description are presented in Table 5.

#### The Character-Based Assessment Guide

Based on the agreed criteria as presented in Table 5, eleven FGD 1 participants discussed and agreed on the main components of how the contents of the assessment guide were assessed, and the regulations referred. The agreed main

**Table 5. The Model Assessment Criteria**

No.	Criteria	Description
1.	Comprehensive	<ul style="list-style-type: none"> <li>- The guide has comprehensive contents</li> <li>- The contents are properly arranged</li> <li>- The procedure has complete and well-arranged contents</li> </ul>
2.	Relevant	<ul style="list-style-type: none"> <li>- The guide suit the applicable regulations</li> <li>- The guide meets the user's needs</li> <li>- The guide suits the assessment goals and scopes</li> <li>- The procedure suits the applicable regulations</li> </ul>
3.	Feasible	<ul style="list-style-type: none"> <li>- The guide is simple and practical to apply</li> <li>- The guide is intelligible</li> <li>- The procedure is user-friendly</li> </ul>

**Table 6. Main Components of the Guide for Character-Based Assessment Model**

Component	Referred Regulations
- Preface	- Regulation of Minister of Education and Culture No. 20 Year 2016 on Graduate Competence Standards
- VHS Curriculum	
- Character	- Regulation of Minister of Education and Culture No. 21 Year 2016 on Content Standards for Primary and Secondary Education
- Character-Based Learning Outcome	- Regulation of Minister of Education and Culture No. 22 Year 2016 on Process Standards
- Assessment Concepts	
- Character-Based Learning Outcome	- Regulation of Minister of Education and Culture No. 20 Year 2018 concerning Character Education Enforcement in Formal Education Institutions
- Assessment by Teachers	
- Character-Based Assessment of Attitudes	- Guideline for Enforcement of VHS Character Education, Directorate of Vocational Education and Training, Ministry of Education and Culture, 2017
- Character-Based Assessment of knowledge	- Regulation of Minister of Education and Culture No. 23 Year 2016 on Educational Assessment Standards
- Character-Based Assessment of Skills	- Regulation of Minister of Education and Culture No. 3 Year 2017 on The Government and School Initiated Assessment of Learning Outcomes
- Character-Based Assessment by School	- Guideline for Assessment of VHS Learning Outcomes, Directorate of Vocational Education and Training, Ministry of Education and Culture
- Conclusion	
- Appendix: Instruments	

components of the guide are specified in Table 6.

Based on the key components of the assessment guide contents, the first draft of character assessment guide was developed. Later, it was discussed in the FGD 2. FGD 2 participants were 11 participants, consisting of two VHS teachers, two principals, two VHS supervisors, one vocational education expert, two experts on learning outcome assessment, one character education expert, and one expert in learning. The results of the discussion indicated that in general the assessment guide was good, but needed some improvement. It includes the addition of some materials related to character and its reinforcement, concepts of character-based assessment, and character-based assessment of learning outcomes in terms of knowledge

and skills, as well as some improvement for its presentation (layout).

After the guide was improved, a validation was carried out. The validation of the assessment guide was carried out by experts and practitioners, consisting of one senior teacher, one principal, one VHS supervisor, one vocational learning expert, two experts on learning outcome assessment, and one expert in character education. Additionally, the validation utilized an instrument which was developed and validated by three assessors or raters. The three assessors are experts on assessing learning outcomes, learning experts, and character education. The content validity of the instrument was calculated by the Aiken's V coefficient, and it was revealed that the guide was in the "good" category, with coefficients ranging between .66 and .75, with a total mean

of .71. Estimated reliability of the instrument was analyzed by means of ICC technique using SPSS. The results of the ICC analysis of the three raters (assessors) were .73, thus the instrument has been in the “good” category. The results of the validation of the contents of the assessment guide are presented in Table 7. Based on the validation of the guide, the mean is 3.55 or “very appropriate”.

### **The Character-Based Assessment Procedure**

A character-based assessment procedure was developed through FGD 1. Based on the results of the discussion, then the draft of the procedure was then reviewed and revised in FGD 2. The revised assessment procedure is presented in Figure 1.

A character-based assessment is an assessment strengthening students' character. It is designed in an integrated manner with teaching and learning activities, competences assessed and assessment strategies, and implemented in an integrated manner with the learning process. It is focus on assessment for learnin and assessment as learning rather than assessment of learning.

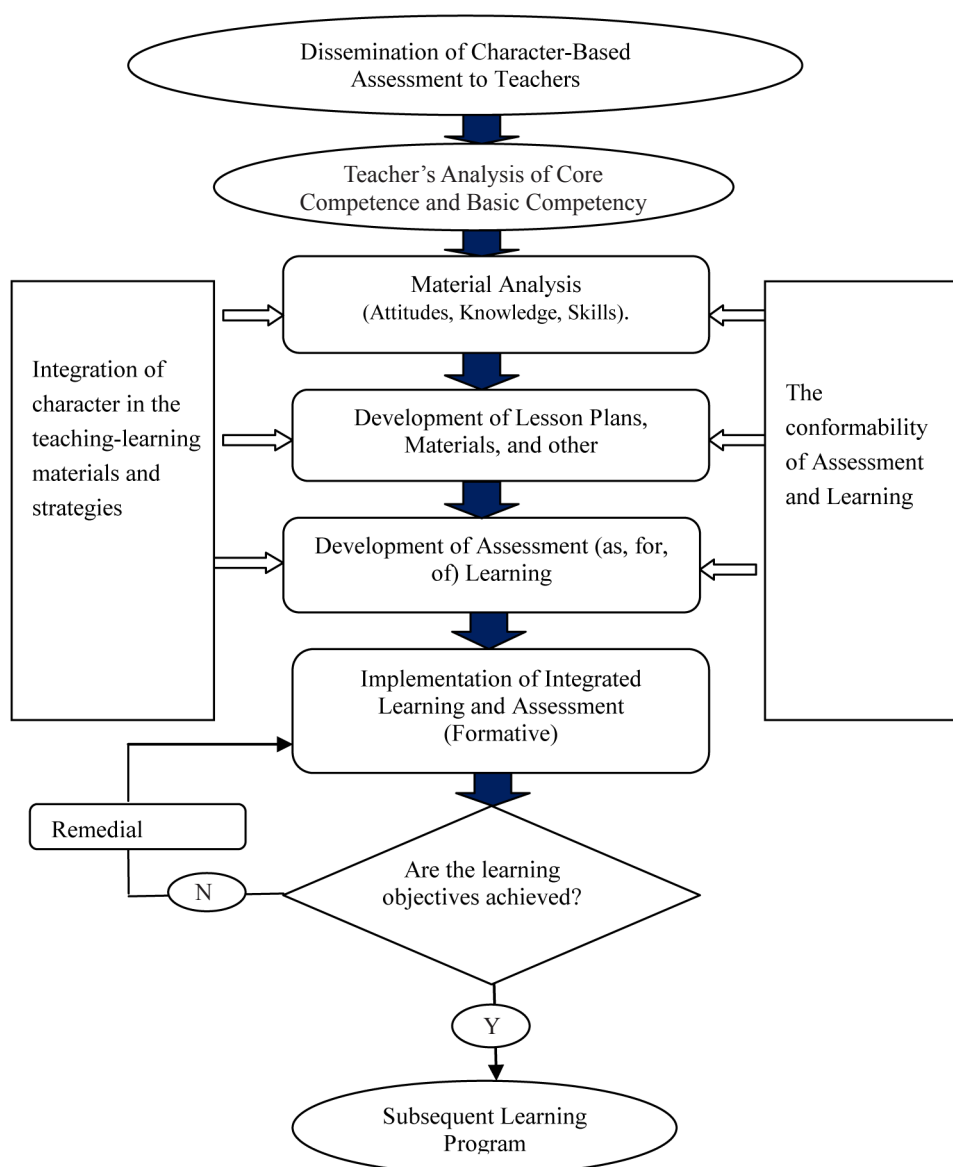
Overall, a character-based assessment consists of seven main steps. (1) The dissemination/workshop on character-based assessment for all schoolteachers and leaders. (2) The teachers conduct analysis on core competence and basic competency (*KI-KD*) according to the graduate competence standards of the respective school subject as the initial stage of the assessment. (3) Teachers conduct material analysis (attitudes,

knowledge, and skills). (4) Teachers develop lesson plans, learning materials, media, and other supporting learning facilities. (5) Teachers develop assessment instruments. (6) Teachers carry out integrated learning with character-based assessments. (7) Teachers carry out a remedial assessment if learning objectives have not been achieved, or proceed to the subsequent learning or conduct a summative assessment according as planned. The character is integrated through learning materials and strategies. The conformability of the assessment and learning process is utilized as a reference to conduct the steps, from the Analysis of *KI-KD* to the remedial assessment.

The procedure was then validated by experts or practitioners, consisting of one senior teacher, one principal, one VHS supervisor, one vocational learning expert, two experts on learning assessment, and one character education expert. This validation utilized an instrument that was developed and validated by three assessors or raters. The three assessors are experts on assessing learning outcomes, learning experts, and character education. The content validity of the instrument which was calculated by the Aiken's V coefficient is in a “good” category, with coefficients ranging between .66 and .83, with a total mean of .71. The results of the ICC analysis of the three raters (assessors) were .66, thus the instrument has been in the “good” category.

**Table 7. The Results of the Validation of the Character-Based Assessment Guide**

<b>Component</b>	<b>Mean</b>	<b>SD</b>
<b>A. Content</b>		
Coverage	3.57	.53
Accuracy	3.71	.46
Conformability with the applicable regulations	3.57	.53
Conformability with the user's needs	3.28	.48
<b>B. Presentation</b>		
Material Coverage	3.57	.78
Material Arrangement	3.85	.37
Appropriate use of images/illustrations	3.57	.53
Layout	3.42	.53
<b>C. Language</b>		
Grammatical Accuracy	3.57	.53
Acceptable use of language	3.85	.37
Readability	3.14	.37
<b>Mean</b>	<b>3.55</b>	<b>.52</b>



**Figure 1. The Developed Character-Based Assessment Procedure**

The validation results of the assessment procedure are presented in Table 8. The validation results of the procedure obtain the overall mean of 3.24 with a “very appropriate” category.

### ***The Effectiveness of the Developed Assessment Model***

The trials of the developed model were done twice in a two-year period. Phase I trial was conducted in eight VHSs in Yogyakarta Special Province in July - September 2017, and Phase II trial was conducted in 42 Private VHSs Java Island in July - September 2018. The subjects of the trial were teachers and principals. They used the model (Guide and Procedure) in conducting learning assessments on school subjects they are teaching. Before the trials were carried out, the

research team provided an explanation of the character-based assessment of learning outcomes, including the development of assessment instrument development and procedures for carrying out assessments to teachers and principals. The trials were conducted for three months for each phase.

The instrument developed to determine the effectiveness of the assessment model was validated by three experts, namely one learning expert, one expert on learning outcome assessment, and one expert on character education. Its content validity is determined by the Aiken’s V coefficient which later found that it is “very good” with coefficient ranging between .66 and .83 and the overall mean of .78. Additionally, the reliability of the instrument is

**Table 8. The Validation Results of the Developed Character-Based Assessment Procedure**

No	Aspects	Mean	SD
1.	The procedure is comprehensive, covers all the required stages	3.67	.48
2.	The procedure is well arranged and systematic	3.60	.50
3.	The procedure is simple and practical	3.67	.48
4.	The procedure is feasible	3.67	.48
5.	The procedure enables teachers to apply the character-based assessment	3.60	.63
6.	The procedure is comprehensive, covers all the required stages	3.40	.50
<b>Overall Mean</b>		<b>3.60</b>	<b>.51</b>

**Table 9. Phase I Trial Results for the Validity of Developed Character-Based Assessment Model**

Aspects	Mean	SD
A. Appropriateness of Guide Contents		
- Comprehensiveness of Contents	3.42	.51
- Material Arrangement	3.24	.66
- Appropriateness of Contents	3.35	.49
- Comprehensiveness and Arrangement of the Procedure	3.57	.51
- Conformability of Guide with the Applicable Regulations	3.57	.51
- Conformability of Guide with Users' Needs	3.28	.51
- Layout, fonts, color, and illustration/images	3.42	.51
B. The Feasibility of Procedure		
- Comprehensibility	3.57	.51
- Applicability of the Procedure	3.42	.51
- Accommodation of User's Interest	3.42	.51
- Time Allocation	3.42	.51
- Supporting Facilities	3.42	.51
C. The Implementation Results		
- Reinforcement of Students' Character	3.50	.51
- Improvement of Students' Learning Outcomes	3.50	.51
<b>Overall Mean</b>	<b>3.43</b>	<b>.51</b>

analyzed by the results of the trials. Reliability in phase I trial obtained, a Cronbach's alpha value of  $\alpha = .74$ , and in phase II trial, Cronbach's alpha value is  $\alpha = .77$ , thus the instrument has been categorized as "good" in terms of its reliability. Based on the trials I, the effectiveness analysis of the assessment model can be seen in Table 9.

In general, the study suggests that the assessment model guide is classified as "very appropriate", and is applicable to be used as a guide in assessing students' learning outcomes, with a mean of 3.43 and SD .51. In addition to the quantitative data, several suggestions were obtained for the assessment guide, including the aspects of sentence clarity and grammatical accuracy, acceptable use of terminology, and layout of the guide. Based on these inputs, some improvement was made to the guide.

Based on the trial II, the effectiveness of the assessment model can be seen in Table 10.

Overall, the model is in "appropriate" category with the overall mean of 3.38 and SD .53.

### Discussion

Based on the results of the study, in general, the effectiveness of the assessment model (the Assessment Guide and the Assessment Procedure), is classified as "appropriate" and feasible to be used in assessing the learning outcomes that promote students character. The effectiveness of the assessment model can be seen from several aspects, namely the appropriateness of the Guide Content, the feasibility of the Procedure, and the implementation results.

As mentioned, the assessment model developed in this study includes a guide and procedure. The assessment guide contains, among others, the curriculum, character, concept, and scope of assessment of learning outcomes, as well as a mechanism for evaluating



**Table 10. Phase II Trial Results for the Validity of Developed Character-Based Assessment Model**

Aspects	Mean	SD
A. Appropriateness of Guide Contents		
- Comprehensiveness of Contents	3.53	.51
- Material Arrangement	3.73	.45
- Appropriateness of Contents	3.60	.50
- Comprehensiveness and Arrangement of the Procedure	3.60	.50
- Conformability of Guide with the Applicable Regulations	3.53	.51
- Conformability of Guide with Users' Needs	3.40	.63
- Layout, fonts, color, and illustration/images	3.27	.59
B. The Feasibility of Procedure		
- Comprehensibility	3.40	.50
- Applicability of the Procedure	3.33	.48
- Accommodation of User's Interest	3.13	.51
- Time Allocation	3.20	.56
- Supporting Facilities	3.27	.59
C. The Implementation Results		
- Reinforcement of Students' Character	3.20	.41
- Improvement of Students' Learning Outcomes	3.13	.35
<b>Overall Mean</b>	<b>3.38</b>	<b>.53</b>

character. Based on the results of the trials, the guide and procedure can be well understood by the users and used as a reference in conducting the assessment (see Table 10). Through this model, the users at the same time can improve their understanding and skills in carrying out an assessment. This means that the assessment model is able to improve the ability of teachers' literacy in classroom assessment. This such literacy is the knowledge and skills needed to carry out an assessment on students' learning outcomes according to principles and ethics, and effectively utilize the process and results of the assessment to improve the learning outcomes. Teachers should have good literacy on assessment so that they can develop assessment instruments, carry out the appropriate assessment, and utilize it to support learning so that students' learning outcomes can be better (Popham, 2009).

The guide was developed for teachers and principals. The guide for assessment as literacy should be standardized and developed for all parties involved, namely teachers, principals, administration staffs, and policymakers. Assessment literacy standards are used to inform policy, program development, and decisions regarding assessment practices, teacher preparation, administration certification, educator evaluation, and school accreditation (Michigan Assessment Consortium, 2015). To be standard, this assessment model still needs

improvement through wider trials, including involving administrative staff and educational policy makers.

The results of the trials are proven to improve the character of students, with a mean of 3.20 and SD .41 (see Table 10). Student character development is believed to be, among others, related to dialogues or communication between teachers and students during learning. Dialogues with students were carried out during the assessment process, including those about goals, criteria, assignments, feedback, and follow-up assessments. Through these dialogues, assessment literacy may develop so that students may grow the more positive mind and play an active role in the assessment process (Spiller, 2015). If we can convince and prove that the assessment is very beneficial for students in learning, learners will appreciate and be positive about the assessment (Kivunja, 2015). A positive attitude towards assessment will stimulate their interest and motivation and strengthening these character values is directly or indirectly formed in themselves through a dialogical assessment process. However, strengthening student character is not solely due to an assessment. Several other factors influence the reinforcement of students' character, including school culture, family environment, and the surrounding community.

This model developed emphasizes the integration of assessment and learning. The results of phase II trial show that the assessment model allows teachers to carry out the assessment and learning well (the feasibility of procedure). Assessment and learning should be aligned and need to be done before, during, and after learning. This is in line with the notion that assessment should be directed as an integrated part of learning activities so as to support student learning activities (Lindstrom, Taylor, & Weleschuk, 2017). This such integration can be carried out especially from the beginning to the end of learning and can be carried out through observation, collecting periodic information to find out what students have known, understood, and worked on (Plessis, Diane, Schubert, Habib, & George, 2003). Through assessment, the teachers can find out what students have mastered and not so that they can adjust or improve their learning activities. In this case, if students' learning outcomes are not optimal, teachers can refine his learning plans, discuss materials that have not been mastered by students, give remedial learning activities, and do other efforts to consummate the learning activities (Muskin, 2017).

The character integrated into learning developed in this study could improve students' learning outcomes. This can be seen in Table 10, with a mean of 3.13 and SD .35. Students might not thoroughly learn what is taught if they are not being assessed. Effective learning, thus, is very much influenced by assessment as it strengthens the learning process by the feedback used as considerations in perfecting the learning process (Wiliam, 2013). The character-based assessment model developed is a continuing assessment focusing more on formative assessment, especially Assessment for Learning (AfL) and Assessment as Learning (AaL). Through AfL teachers will also get accurate feedback on the condition and effectiveness of learning. Furthermore, they can design and implement learning better. Assessment as learning allows students to know what materials or competencies to learn, what materials have not been mastered, and how to effectively learn to master the materials.

The assessment of learning outcomes includes aspects of character, knowledge, and skills embedded in the learning objectives.

A character-based assessment is carried out informally through questions and answers, quizzes, tasks, daily assignments, and other formative forms. Informal formative assessments are supposed to be very essential during learning. Formative assessment through quizzes and simple questions, for example, will build students' motivation and sincerity, as well as a sense of comfort in learning. Assessment is not a matter of judgment on students' capability but helping them to overcome possible upcoming problems in learning. Teachers may not criticize or blame pupils, but they should appreciate any student response in the assessment. Therefore, the teacher should be kind and wise in carrying out the assessment. This later creates the learning atmosphere to be fun, mutual respective, and at the same time focus on achieving the learning goals.

Character values such as politeness, punctiliousness, cooperation, honesty will be automatically instilled by each student. Besides, an informal assessment that is appropriately designed and implemented has a significant effect on student learning outcomes as informal formative assessment conceptualizes the idea that daily learning activities can be seen as assessments that provide evidence of student learning progress (Maria & Erin, 2007). Almost everything teachers and students do in class can be described as an opportunity to gather evidence of student understanding.

A character-based assessment is given more on AfL and AaL. Mukhtar & Ahmad (2014) study shows that AfL contributes to achieving cognitive (intellectual), affective (emotional and mental), and psychomotor (physical) abilities of students according to the requirements of the National Education Philosophy. Students are no longer assessed at the end of the year or at the end of the lesson. Instead, they are assessed throughout the learning process. The implementation of AfL in vocational technical education is able to empower students to be responsible for their learning, emphasizing that each student has the potential to succeed, and encourages students to accept responsibility for their own development.

Based on the results of the trials, the implementation of the assessment model can strengthen the character of students. Most teachers are motivated to develop students' character.

Character development is formally carried out in all subjects and school activities by involving all parties. The focus of learning is on not only students' competence, but also the development of their character. Even though in dissimilar contexts, there is a simultaneously positive and significant effect of the implementation of character-based economic learning and teacher reinforcement on students' affective competencies (Prasetyono, Abdillah, Widiarto, & Sriyono, 2018) This means that efforts need to be made to increase teachers' understanding of character, and ways of strengthening students' character. In relation to this, this character-based assessment model would be one of the solutions to these problems.

## CONCLUSIONS

Character education in vocational schools carried out through learning, habitual behaviour in schools, and extra-curricular activities have not been as effective as expected. In an effort to increase its effectiveness, a character-based assessment model was developed. The model produced in this study is an assessment guide and procedure. This study suggests that the model proved effective to be used as a reference for teachers in conducting assessment integrated with character education. Through the guide, teachers can better understand and be skilled in developing assessment instruments and implementing learning-integrated assessment and utilizing assessment to improve students' learning and teachers' teaching so that learning objectives, including those of character, can be achieved.

As assessment and learning are integrated, both of which need to be designed from the beginning. Likewise, character values to integrate should be designed in learning and assessment. This can be done in two ways, namely those related to material aspects and strategy aspects. In the material aspect, character-based assessment combines specific character values into the materials discussed in classrooms. In the aspect of strategy, assessing learning outcomes should be carried out with principles prioritizing character values, such as openness, honesty, equality, objectivity and other values assessed before, during, and after learning. As more emphasis on assessment has been put on

formative one, AfL and AaL should be utilized for character development.

The Ministry of Education and Culture's Directorate of Vocational Education and Training and the Education Office in provinces Indonesia are expected to use this character-based assessment model as one of the materials in the implementation of technical guidance or vocational teacher training on learning and assessment. In addition, this assessment model can be used as a reference for developing technical guidelines for vocational learning and assessment. This assessment model can also be used as a reference for researchers or assessment experts in conducting studies related to learning, character, and assessment of learning outcomes.

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