

Developing a Web-Based Accounting Competence Performance Assessment Rubric Among Vocational High School Students

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Abstract— This study aimed at generating valid and reliable web-based accounting competence performance assessment among vocational high school student. In general, the development procedures that had been implemented were classified into two parts. The first part is rubric development, while the second part is web development. The procedures that had been performed consisted of four stages namely: preliminary study, design, experiment and revision, and implementation. The subjects in the study were 12 Accounting teachers, who also served as the raters for this study, from private vocational high schools. All raters were debriefed regarding the use of the assessment rubric. In performing data analysis for measuring the content validity, the researchers implemented an index that had been proposed by Aiken. Then, in measuring the reliability the researchers implemented the intraclass correlation coefficient (ICC). Due to the fact that the calculation results have been above the table results, the researchers would like to conclude that the rubric that has been developed has met the content validity. If the rubric is estimated by Alpha Coefficient, then its reliability will be excellent. If the rubric is analyzed by ICC, then it is reliable and it has high stability.

Keywords: *development, rubric, web-based*

I. INTRODUCTION

In the Minister of National Education Regulation Number 16 Year 2007 regarding Academic Qualification and Teacher's Competence Standards, it is mentioned that the teacher's core competence is conducting assessment and evaluation toward the learning process and results. This core competence is elaborated into seven competencies namely: (1) understanding the principles of assessing and evaluating the learning process and results in accordance to the characteristics of the subjects that have been taught; (2) determining the aspects of learning process and results that will be important for the assessment and evaluation in accordance to the characteristics of the subjects that have been taught; (3) determining the process of assessing and evaluating the learning process and results; (4) developing the instrument of assessing and evaluating the learning process and results; (5) administering the assessment toward

the learning process and results by implementing various instruments; (6) analyzing the learning process and results for various objectives; and (7) evaluating the learning process and results.

When a teacher seriously performs assessment in the learning activities, students' learning effectiveness will improve (Campbell & Collins, 2007, p.10). However, due to the fact teachers should be dealing with many students and are suppressed by their teaching schedules it is difficult for them to provide useful feedback (Wang, 2008, p.449). The positive impact of assessment toward the learning results mainly results in feedback (Wang, 2008, p.449). The feedback that students receive during the assessment will assist them to perform self- assessment, to perform self-reflection, to perform self-improvement, and to improve their self- esteem (Marriott, 2009, p.239). The content of the feedback can also inform the students about what they have to do. With meaningful feedback, students can improve their weakness in terms of learning, reasoning, learning transfer, and mutual respect (Wang, 2007, p.175). With assessment feedback, teachers will identify the success of the learning process that has been conducted, the students' capabilities in absorbing the learning materials that have been taught, and the very useful information as feedback for teachers in improving their learning activities.

In the reality, teachers less understand the appropriate assessment for classroom management (Mertler, 2001, p.3). The main reason that has caused teachers to have less understanding toward the assessment lies in the teacher education programs (Stiggins, 2002, p.762). Teachers learn educational assessment concepts and practices only in several sessions (Popham, 2009, p.5). Therefore, teachers should understand the assessment that refers to the students' competencies.

Performance assessment is a systematic description about the strengths and the weaknesses that have been related to the employment of an individual or a group of individuals (Cascio, 1992, p.267). Performance assessment is

basically a key factor for developing students in effective and efficient manner. Performance assessment is very useful for the students' growth dynamism in overall. Through performance assessment, teachers will learn the actual condition of their students' performance. Performance assessment is a way of measuring the contribution of individuals to their organization (Bernardin & Russell, 1993, p.379). Therefore, performance assessment is a process that has been implemented by institutions in evaluating the students' job implementation.

Performance assessment has two basic characteristics namely: (1) students are asked to demonstrate their capabilities in creating a product or to be involved in manufacturing activities; and (2) the product of performance assessment is more important than the process itself. In terms of selection, whether the product or the performance that will be assessed depends on the characteristics of the domains under measurement.

Rubric is a text that has agreeable value signs (Callison, 2000, p.36). Bresciani, Zelna, and Anderson (2004) asserted that rubric is designing core competence that the students might use in developing, revising, and assessing their own performance. Rubric provides detailed description of what students have learned and what students do not learn. These descriptive data might be implemented in order to document how to improve the instructions in learning process. The data of the assessment rubric are very detailed and well defined (Bresciani et al., 2004, p.30). Rubric is an assessment guideline that describes the criteria that have been used in assessing the students' performance results.

Because rubric is easy to use and to explain, it generates understandable and informative data (Andrade, 2000, p.14). The level of detail that is found in rubric helps improving validity (Popham, 2003, p.95). Assessment rubric is more possible to be quite objective and consistent from one subject to another and from one student to another and it is especially useful in team teaching that involves inter-teacher collaboration (Callison, 2000, p.35). Rubric will provide clear description regarding student performance with learning activities and yield accurate information in making decisions.

Rubric can be a holistic one, an analytical one, or the combination of both (Luft, 1999, pp.107-121). A holistic rubric is a construction that contains multiple level of performance that describes assignment quality, assignment

quantity, or both namely assignment quality and quantity. This type of rubric demands teachers to define the performance level.

Based on the background and the problem identification that have been provided, the main problem in this study will be formulated as follows: How is the valid and reliable web-based accounting competence performance assessment developed for the business and management major in vocational high schools? Operationally, the research problems might be formulated as follows. (1) What are the skills that describe the students' level of accounting competence in the business and management major of vocational high schools? (2) How is the valid web-based accounting competence performance assessment rubric for the business and management students of vocational high schools? (3) How is the reliable web-based accounting competence performance assessment rubric for the business and management students of vocational high schools?

II. METHOD

This study aimed at generating a web-based accounting competence performance assessment for vocational high school students whose major were Business and Management. The reason for developing this rubric referred to the opinion by Borg & Gall (1983), "Research and development is a powerful strategy for improving practice. It is a process used to develop and validate education product." This statement strengthened the reason why this method had been in accordance to the objective in conducting this study.

The development model adopted the parts that were in accordance to the development of accounting competence performance assessment. Therefore, the researchers simplified development model into four stages of accounting performance assessment rubric. The procedures that had been conducted in the preliminary study went through four stages namely: (1) preliminary study; (2) design; (3) experiment and revision; and (4) implementation. These stages were implemented in order to develop the rubric and the web.

Product Design Experiment

Limited Experiment

In this experiment, the researchers altogether with the laboratory practice teachers implemented the assessment

by means of rubric. Along with the assessment process, this instrument was implemented and was revised according to the field condition. Therefore, after the instrument had been put into the experiment, had been analyzed, and had been consulted to the experts, the researchers attained the design of accounting competence assessment rubric that would be ready for the expanded experiment. In this limited experiment, the rubric along with its instrument was implemented toward six teachers (raters) who taught Accounting in public and private vocational high schools. Three teachers were selected from each public and private vocational high school and each teacher rated 5 results from the accounting competence performance assessment.

Expanded Experiment

The next stage in this study was the expanded experiment or the main field testing. In this stage, the objective that the researchers would like to achieve was defining whether the product that would be resulted met its performance objectives or not and whether the design was experiment or not.

In this main field testing, the rubric along with its instrument was administered toward 12 teachers (raters) who taught Accounting in six vocational high schools around the Regency of Klaten, namely SMK N 4 Klaten, SMK N Jogonalan, SMK N Pedan, SMK Muhammadiyah 2 Klaten Utara, SMK Muhammadiyah 1 Jatinom, and SMK PGIR Pedan. Two teachers (raters) were elected from each vocational high school and each teacher rated 5 results of accounting competence performance assessment.

a. Subjects

The subjects in this study were Accounting teachers in Business and Management major of vocational high schools. In the limited experiment, 6 teachers (raters) were elected from the public vocational high schools and 3 teachers (raters) were elected from the private vocational high schools. On the contrary, 12 teachers (raters) were elected from 3 public vocational high schools and 3 private vocational high schools; in other words, two teachers (raters) were elected from each vocational high school. All teachers (raters) who had been elected as the subjects in this study were debriefed by the researchers regarding the use of assessment rubric.

b. Data Gathering Technique

In gathering the data for this study, the researchers implemented observation technique, validation sheet, and validation assessment.

c. Data Analysis Technique

Based on the data gathering technique, the data gathering instruments that had been implemented were observation sheet, validation sheet, and assessment sheet.

III. RESULTS AND DISCUSSION

The accounting competence performance assessment rubric is developed in order to assist both the teachers and the students to attain more objective, reliable, and practical assessment. The assessment process was conducted in order to attain, to analyze, and to interpret the data regarding the students' learning process and results; the assessment process was conducted systematically and continuously so that it provides meaningful information for decision-making activities.

The assessment is conducted according to the assessment function namely: describing the students' mastery in the competence achievement; assisting the students in understanding themselves; making decisions regarding the subsequent steps; solving problems in relation to learning program plan, to personality development, and to major/department categorization; defining learning difficulties, possibility of developing achievement, and use of the instrument as a diagnostic tool for assisting educators in determining whether an individual should attend remedial activities or not; defining weaknesses in the teaching-learning process that have been taking place in order to revise the following teaching-learning process; controlling the students' developmental progress; and motivating the students to improve their learning achievement.

The preliminary product design is conducted through several stages and is adjusted to the actual situations and conditions in this study. These stages are namely: (1) defining the competence standards that will be assessed; (2) defining the concepts and the skills that will be assessed through the definitions that describe the cognitive aspects and the performance aspects; (3) defining the most important skills in the task that should be accessed; (4) defining the scales that will be used; (5) describing the quality gradation; (6) elaborating the template; (7) elaborating the achievement

of students' competence based on the score intervals; and (8) designing the assessment rubric.

The competence standards are related to the skills, the performance, and the job attitude that will be necessary in accordance to the procedures that the company has designed.

The Competence Standard in Managing Petty Cash Administration is related to the skills, the knowledge, and the job attitude that will be necessary in processing the petty cash documents according to the procedures that a company has designed. The capability that will be assessed in this aspect is implementing petty cash administration tasks both for fixed and not fixed fund according to the standards that have been stipulated. The basic competence in this competence standard is namely recording on: petty cash formation, petty cash expenditure, petty cash refill, and petty cash physical calculation.

The Competence Standard in Managing Bank Fund Administration is related to the skills, the knowledge, and the job attitudes that will be necessary in processing the bank fund documents according to the procedures that a company has designed. The capability that will be assessed in this aspect is performing bank fund administration tasks according to the standards that have been stipulated. The basic competence in this competence standard is recording on the savings of company's bank fund, the use of check for payment; the acceptance of check for settlement, the presence of debit memo, the presence of credit memo, and the cause of differences on cash balance between the company's note and the bank's note.

The Competence Standard in Managing Debtors Account is related to the skills, the knowledge, and the job attitudes that will be necessary in managing the debtors accounting according to the procedures that a company has designed. The capability that will be assessed in this aspect is performing debtors account administration tasks according to the standards that have been stipulated. The basic competencies in this competence standard are namely recording on receivables mutation into the debtors account, composing confirmation letter for the receivables balance, compiling receivables recapitulation report, recording on the unsettled receivables through direct method, recording on the readmission of the unsettled receivables that have been omitted but that still might be charged, calculating the forecast of unsettled receivables amount based on the

receivables percentage (both through balance approach and cost-benefit approach), and analyzing the receivables period.

The Competence Standard in Managing Creditors Account is related to the skills, the knowledge, and the job attitudes that will be necessary in managing the creditors account according to the procedures that a company has designed. The capability that will be assessed in this aspect is performing the creditors account administration tasks according to the standards that have been stipulated. The basic competencies in this competence standard are namely identifying the credit data, recording credit mutation into the creditors account, and compiling credit report.

The Competence Standard in Managing Merchandise Supply Card is related to the skills, the knowledge, and the job attitudes that will be necessary in managing the merchandise supply card according to the procedures that a company has designed. The capability that will be assessed in this aspect is performing the merchandise supply card administration tasks according to the standards that have been stipulated. The basic competencies in this competence standard are namely identifying the merchandise classification and its administration system, calculating the merchandise value through periodical administration system for any cost of goods sold price fixing method, and calculating the merchandise value through perpetual administration system for any cost of goods sold price fixing method.

The competency of managing petty cash administration is important to observe thoroughly in order to be able to apply the competence into the changing situations and to respond to the different situations on several aspects as follows: the available petty cash administration documents, the identified petty cash mutation, the recorded petty cash mutation, and the presented petty cash mutation report.

The competency of managing bank fund administration is important to observe thoroughly in order to be able to apply the competence into the changing situations and to respond to the different situations on several aspects as follows: the available bank fund administration documents, the identified bank fund mutation, the recorded bank fund mutation, and the presented bank fund reconciliation.

The important competencies that should be assessed in managing creditors account are namely: the knowledge of

accounting administration system in relation to journal and subsidiary ledger recording, the identified credit mutation data, the recorded credit data in each creditors account, the confirmed credit balance, the presented credit recapitulation report, the accuracy of data input in the journal and the subsidiary ledger, the reconciliation between the subsidiary ledger system and the data from the journal and the subsidiary ledger, and the systematic error trace.

The competencies of managing merchandise supply card administration are important to observe thoroughly in order to be able to apply the competence into the changing situations and to respond to the different situations on several aspects as follows: the available merchandise supply card documents, the identified merchandise supply mutation data, the recorded merchandise supply in the merchandise supply card, the presented merchandise supply report, and the finished merchandise supply physical calculation.

The assessment range on the level of competence achievement was described in quantitative and qualitative forms. The quantitative form referred to the number 1 until 4, while the qualitative form was as follows: 1 implied that the students had been able to provide the documents; 2 implied that the students had been able to perform the identification; 3 implied that the students had been able to perform the recording activities; and 4 implied that the students had been able to compose the reports according to the standard operating procedures (SOP).

Table 1. The Quality Gradation in Managing Petty Cash Administration

QUALITY GRADATION	EXPLANATION
4. Reporting	Student is able to report petty cash mutation
3. Recording	Student is able to record mutation and petty cash gap
2. Identifying	Student is able to identify petty cash initial balance, petty cash formation, petty cash expenditure, petty cash refill, petty cash physical calculation, and petty cash balance
1. Providing	Student is able to provide tools that will be necessary for petty cash administration and receipts of petty cash expenditure

Table 2. The Quality Gradation in Managing Bank Fund Administration

QUALITY GRADATION	EXPLANATION
4. Reporting	Student is able to present bank account report and company record along with bank reconciliation supporting data, gap between bank account and company record, and reconciliation/bank report.
3. Record	Student is able to verify bank receipt and expenditure and to record the amount of bank income and expenditure for each transaction.
2. Identification	Student is able to identify initial bank account balance, cash receipt, expenditure receipt, and amount of cash income and expenditure in

QUALITY GRADATION	EXPLANATION
	bank for every transaction.
1. Providing	Student is able to provide tools that will be necessary for bank cash administration and expenditure receipt.

Table 3. The Quality Gradation in Managing Debtors Account

QUALITY GRADATION	EXPLANATION
4. Reporting	Student is able to compile receivable period report according to the standard operating procedures.
3. Record	Student is able to verify receivable mutation data.
2. Identifying	Student is able to identify initial receivable balance, customer's receivable mutation data, and other receivable mutation data.
1. Providing	Student is able to provide tools that will be necessary for receivable administration and receivable receipt.

Table 4. The Quality Gradation in Managing Creditors Account

QUALITY GRADATION	EXPLANATION
4. Reporting	Student is able to compile credit period report according to the standard operating procedures.
3. Record	Student is able to verify credit mutation data.
2. Identifying	Student is able to identify credit initial balance, customer's credit mutation data, and other credit mutation data.
1. Providing	Student is able to provide tools that will be necessary for credit administration and credit receipt.

that will be necessary for merchandise card administration and merchandise transaction data.
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For the assessment scale, the scoring range was stipulated similar for each competency, namely Managing Petty Cash Administration, Managing Bank Fund Administration, Managing Debtors Account, Managing Creditors Account, and Managing Merchandise Supply Card Administration. The score ranged from 0 (the minimum score) to 100 (the maximum score). This stipulation was in accordance to the scoring that had usually been done in Indonesia, which had usually been provided in the form of cumulative score from 0 to 100.

The score interval for each quality gradation in the accounting competence assessment rubric was 20 with the following requirements: 0 until 20 implied the inability, 21 until 40 implied the capability in providing documents, 41 until 60 implied the capability to perform identification, 61 until 80 implied the capability to perform recording activities, and 81 until 100 implied the capability to compile reports according to the standard operating procedures.

The Web page that had been developed are as follows. Login page is the initial page that will be used for authenticating the user before he or she fully accesses the website of accounting competence performance assessment rubric. The login page is intended for administrators is shown at Figure 1.

Table 5. The Quality Gradation in Managing Merchandise Supply Card Administration

QUALITY GRADATION	EXPLANATION
4. Reporting	Student is able to compile merchandise supply report according to the standard operating procedures.
3. Record	Student is able to verify merchandise supply mutation data.
2. Identifying	Student is able to identify merchandise initial balance, merchandise income data, merchandise return data, merchandise procurement data, and merchandise expenditure data.

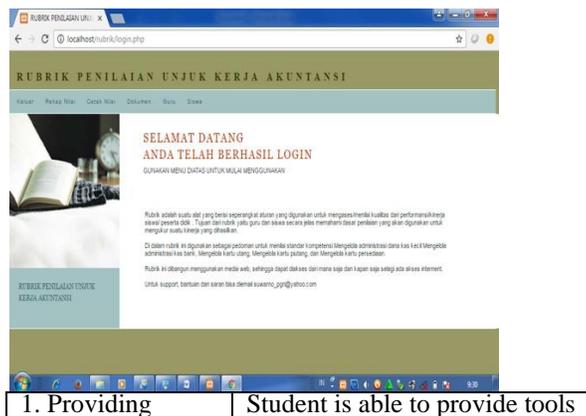


Figure 1. Login Page for Administrators

On the main page, several web facilities are displayed so that the user will understand web prior to using it. The main page is intended for administrators is shown at Figure 2.

Figure 2. Main Page for Administrators

A page intended for printing the recapitulated scores that



Figure 3. Score-Print Page

have been inputted can be seen at Figure 3.

Based on the results of the research and development on the web-based accounting competence performance rubric, the researchers gain the following results.

First, not all Accounting productive subject teachers have implemented assessment rubric in assessing their students' performance. From two teachers who had been involved in the study, the researchers found that the teachers have not designed and implemented the assessment rubric. The assessment method that the teachers perform is striking the incorrect answers. The teachers who have not developed the assessment rubric admit that they will have difficulties if they must perform assessment by means of rubric. The reason is that assessment by means of rubric will make things more complicated. However, these teachers still want to use the rubric in assessing their students' performance.

Second, the accounting competence performance assessment rubric helps the teachers to perform objective assessment. Based on the results of field preliminary study, the teachers have realized that the use of student's performance assessment rubric provides many benefits. One of the benefits in using the assessment rubric is that the rubric might serve as an evaluation guideline. The assessment rubric might also be used by the teachers as an instrument that might assess the students' capability, that might assist the teachers in providing information regarding the scoring load, that might serve as an effective reflection tool regarding the learning process that has taken place, and that might assist the teachers in defining the remedial activities.

Third, the teachers do not inform the assessment results to the students and, as a result, the students are unable to evaluate their performance. Not all students understand the assessment by means of rubric. Accounting teachers in this study do not inform the assessment criteria. The assessment criteria for accounting performance assessment are very necessary because they help teachers and students to improve the performance results.

Fourth, a web-based accounting competence performance assessment has been resulted. The web-based accounting competence performance assessment is in the form of assessment page that contains direction, scoring guidelines, assessment notes, rubric table containing assessment aspects, and accounting competence performance assessment guidelines containing criteria and indicators. The rubric is presented in the form of rating scale. The scale that has been implemented in the accounting competence performance assessment instrument ranges from 1 to 4.

Fifth, the web-based accounting competence performance assessment that has been developed in considered feasible for implementation based on the validation that has been provided by 1 material expert as the theoretical rater, 3 practitioners as the Accounting educator, and 6 Accounting teachers as the educational stakeholder rater

This study has limitations in competence standards, in method, and in implementation. The weakness of this study in the data gathering process is the respondents who complete the questionnaire without reading carefully the questions and who have less understanding toward the questions that have been given. Another weakness is the teachers who have not fully been able to operate the computer or the website. Apart of these weaknesses, the results of the study on developing the assessment rubric for the vocational high school students' accounting competence performance assessment might be benefitted as one of the information sources in supporting the students' academic activities.

IV. CONCLUSIONS

Based on the results of analysis and the discussions, the researchers would like to propose the following conclusions. First, the basic competencies that the students should master for the competence standard in managing petty cash administration consist of petty cash formation, petty cash expenditure, petty cash refill, petty cash physical

calculation, and petty cash adjustment. Second, the basic competencies that the students should master for the competence standard in managing bank fund administration consist of company cash saving record, check expenditure, check income, receivable memo, credit memo, and causes of different cash balance. Third, the basic competencies that the students should master for the competence standard in managing debtors account consist of recording mutation data, composing confirmation letter, compiling recapitulation report, calculating unsettled receivables by means of direct and indirect method, calculating forecast on the amount of unsettled receivables accumulation based on both the receivables percentage and the sale percentage, and analyzing receivables period.

Fourth, the basic competencies that the students should master for the competence standard in managing creditors account consist of identifying mutation, recording mutation, and compiling credit report. Fifth, the basic competencies that the students should master for the competence standard in managing merchandise supply card consist of identifying classification, calculating and recording merchandise value through periodical system, and calculating and recording merchandise value through perpetual system. Sixth, the analysis result toward the validity of student's accounting competence performance assessment that has been developed by means of Aiken's V is equal to 0.80, while the analysis result toward the web quality is equal to 0.89. Because the calculation results are above the table scores ($c = 5$, $n = 10$, 5% level = 0.70) and ($c = 5$, $n = 6$, 5% level = 0.79), the researchers would like to conclude that the rubric that has been developed meet the content validity. Seventh, the reliability of the web-based accounting competence performance assessment is estimated by means of alpha coefficient and the estimation is equal to 0.995; as a result, the rubric is considered excellent. On the other hand, the intra-class correlation coefficient (ICC) is equal to 0.947 and, as a result, the rubric has high stability.

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