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ELECTRONIC RUBRIC: EVALUATION TOOL IN THE ASSESSMENT PROCESS IN VOCATIONAL EDUCATION

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Abstract

Integrating technology in the assessment process facilitates the overall education process, both for teachers, students, and educational institutions. In this research, we analysed the use of electronic rubric *(e-rubric)* to assess learning process. In this research, electronic rubric was applied in Vocational Education in the implementation of Serving Procedure practicum courses. In this study used a qualitative approach to lecture and students. The survey used to obtain information using the form Use Questionary which Likert scale consists of four components, namely the quality of usefulness, satisfaction, ease of use and ease of learning given to the two lecturers, and the questionnaire was given to 14 students to collect their perceptions regarding the use e-rubric on practicum ratings. The results showed that the *performance assessment* instrument in the form of *electronic rubric* in the Serving Procedure course could provide convenience to lecturers in measuring students' skills in practicum activities. Through satisfaction survey, the research concluded that electronic rubric is a resource that facilitates assessment for students as participants in the assessment process. Students tend to be satisfied with the use of electronic rubric in the assessment process. Students tend to be satisfied with the use of electronic rubric in the assessment, a student can monitor the process and the progress of competence to be achieved and how to fix it when it has not been achieved competence. Electronic rubric to describe the specific characteristics of the learning outcomes achieved by students (products and tasks) as well as the level of performance that must be achieved by the students.

Keywords: Electronic rubric, Learning evaluation, Student competence.

1. Introduction

Rubric is an assessment criterion that is used as a guideline in conducting *performance assessment* or work results of students [1-3]. Rubric is specifically designed as a performance appraisal tool for students. In the development process, rubric is designed with the integration of technology. This can improve the learning capacity and assessment of all parties involved; for the students, teachers and educational institutions [4, 5]. One of the technology integrations in the assessment process is electronic rubric, a valid strategy to guide and follow up on students' work [6, 7]. The results of other research show that the use of rubric and especially electronic rubric in the process of assessing student performance is the most widely used alternative by teachers [6, 8].

The process of assessing students' skills using observation sheet is still not effective in monitoring all students in the class element. Rate manually observation sheet is relatively difficult. Apart from having to write on a sheet, the data still must be transferred to the software to archive database. Another difficulty is that the observer had to memorize all the indicators were observed. After the assessment process, the lecturers do not have quantitative and qualitative data from all the assessment results, making it less efficient. Therefore, tools that are easy, practical, efficient, accurate and responsive required to perform qualitative and quantitative assessment using electronic rubric. One of the alternatives that could be used in assessing the competence of the students in the food and beverage service practicum is to use electronic rubric [9, 10], The use of electronics in skills assessment rubric can provide convenience and time efficiency in the assessment process [11].

Electronic rubric is an alternative assessment tool used by teachers in determining and explaining what competencies students must achieve during the learning process. The teacher provides predetermined performance criteria about how the work will be assessed with a brief and specific example. Students can monitor their progress – in this case – competency and can find out what they have to achieve and how to do it [12]. The use of electronic rubric in the assessment process can describe specific characteristics from the learning outcomes (products, assignments, and practicums) and the level of performance that must be achieved by students. Before being given tasks, students are given direction and information about the criteria they have to achieve, the assessment process used and the tasks they have to complete, all these elements are contained in *task assessment* [11, 13, 14].

The integration of electronic rubric in the assessment process has a positive impact; electronic rubric provides more interaction and helps students to become more independent in the project evaluation process and skills. Furthermore, electronic rubric provides detailed information in identifying competencies that are difficult to achieve [15]. At the level of vocational education, assessment rubric provides a variety of possibilities and can be used for various purposes: as a resource for comprehensive and formative assessment [16, 17], as a guideline [18], as a work tool [19, 20] and as a set criterion for achieving predetermined standards [21].

The use of rubric in the assessment process has been examined in previous research, in recent years a number of research have focused on the use of rubric in assessing student performance [22], and about how assessment rubric as an evaluation tool supports the learning process and the achievement of student competencies [14, 23]. The process of assessing student competence has an

important role in the evaluation process [24]. In this context, independent learning for students becomes an important part, students need to develop competencies that exist within themselves, teachers as facilitators facilitate students with the help of procedures or guidelines for learning *(task assessment)* [25].

Electronic rubric as a technology-based evaluation tool can improve the process of assessing student competence [26, 27]. Some research show that the use of electronic rubric can help students analyze competencies that have not been achieved during the learning process, this has a positive impact on improving student competence [26]. This means that electronic rubric is an evaluation tool that is integrated with a technology that is useful for regulation and help students' independence in developing the competencies they must achieve in the learning process [27].

The use of electronic rubric in the world of education contributes positively to teachers, students and educational institutions [28]. The use of electronic rubric can be implemented in a variety of disciplines, and for various purposes, such as for developing student performance assessments or for improving teaching and assessment programs. They noted that students' perceptions of rubric were generally positive. In general, in the design process of a rubric, there are no significant differences between conventional rubric and electronic rubric, except the education method (online education, mixed, or classroom education) or the support and availability of facilities and infrastructure. Electronic rubric promotes greater interaction and help students become more independent when assessing their own competencies [12]. At the same time, they provide information to the teachers in detail, allowing them to develop which competencies that are difficult to obtain and allowing them to work faster in the teacher-student communication process.

A research was carried out in the undergraduate program by implementing an electronic semi-automated rubric through the Learning Management System to provide formative feedback [29]. They confirmed the availability of rubrics and online related feedback promoting communication and interaction with students regarding their learning progress and that is supported by rubric-based assessment reports. This encouraged researchers to further examine the response of teachers and students to the use of electronic rubric in the assessment process on the competency of *food and beverage service*, as one of the competencies in a Serving Procedure course.

The purpose of this research in general is to find out the response and opinions of teachers and students regarding the use of electronic rubric in the learning evaluation process, specifically to describe the teacher's response to the use of electronic rubric in the process of assessing student competency, to illustrate students' response to the use of *task assessment* as a guide in practicum implementation and the use of electronic rubric in the learning evaluation process, to determine the advantages and disadvantages of electronic rubric as a technology-based evaluation tool. Participants provide overall ratings for electronic rubric evaluation, which allows researchers to consider and analyze teacher and student opinions on the use of electronic rubric in the evaluation process.

2. Method

The development of this research focuses on technology-based assessment using electronic rubric with a group of students who use technology in the learning

process. The research method used is a survey; satisfaction survey on the use of electronic rubric as an evaluation tool in the assessment process. Lecturers use the Smart Rubric application to help assess competencies in practicum implementation.

Data collection techniques in this study used questionnaires to collect data related to testing electronic rubric. Student response to the assessment task and electronic rubric. The instrument used in this study consists of instruments for usability, the response to the assessment task and electronic rubric.

2.1. Instruments for usability testing

Tests carried out on the usability aspect which courses food and beverage service Lecturer in Education Culinary Art Universitas Pendidikan Indonesia. The testing used *USE Questionnaire* in the form of a *checklist*. Table 1 shows the results of *usability* testing for the rubric electronic system:

Table 1. Instrument for usability aspect testing.

Indicator	No.	Statement
Usefulness	1	Helps me to be more effective in assessing student
	2	Helps me to be more productive in inputting grades
Usefulness	3	Useful for the implementation of administrative practice with various competencies.
	4	Helps me to better control the achievement of student competencies
	5	Makes it easier for me to analyse the competencies of each student
	6	Saves my time in the process of evaluating practicum.
	7	Fulfils my Learning Evaluation needs.
	8	Can be used as I expected.
Ease of use	9	Can help me analyse student competencies.
	10	Practical to use.
	11	User friendly/easy to operate.
	12	Has a few stages in application.
	13	Flexible/can be used as needed.
	14	Consistency in application.
	15	Can be accessed by lecturers as needed.
	16	Ease in overcoming difficulties.
	17	Can be used smoothly at any time as needed.
Ease of Learning	18	Can be quickly learned.
	19	Easily be remembered.
	20	Easy to learn.
Satisfaction	22	Gives satisfaction in its implementation.
	24	Fun to use.
	23	Recommended to other users.
	26	Interesting.
	27	Convenient to use.

2.2. Instrument to test the response to the assessment task

Instruments to test the student's response to the task sheet as a guide on practical subjects sequences competence food and beverage service. Instrumen to test the student's response to the task sheet at Table 2, the scale used in this questionnaire is a Likert scale of four points to get data that is ordinal. The scale includes Strongly Agree (SA), Agree (A), Less Agree (LS), Disagree (D) [30].

Table 2. Instrument to test the response to the assessment task.

No.	Statement
1	I think the task sheet serves as a practical guide on food and beverage service practicum
2	In my opinion the use of task sheets can provide a quick understanding and overview of the practical steps.
3	According to my practice measures that exist in the task Sheet according to Standard Operating Procedures (SOP).
4	I think the task sheet can be used as a guide to the proper practice, especially for participants who first practice.
5	I use the task sheet according a solution when experiencing difficulties or are oblivious to the SOP stage during implementation food and beverage service practicum.

2.3. Instrument to test the response electronic rubric

Instrument to test the response of students to electronic rubric an evaluation tool at the practicum course sequences competence food ande beverage service. The scale used in the questionnaire consists of two points that is yes and no.

2.4. Participants

Participants in this study comprised of lecture and students in Culinary Art Universitas Pendidikan Indonesia. The lecturer is an expert courses food and beverage service. Participants student with the number of 14 student participants is a 4th semester student who is contracting a Course food and beverage service. The group of students has diverse characteristics in terms of intelligence, which consists of upper class, middle class, and lower class. Students voluntarily filled out surveys about the use of electronic rubric as an evaluation tool in the competency assessment process. In this research, data analysis was first obtained by ranking the level of student satisfaction with an electronic rubric-based assessment (scale 0-4), the second was an open question about the advantages and difficulties they faced encountered in the use of electronic rubric.

2.5. Data analysis

Descriptive analysis was carried out on closed questions, while open questions were subjected to content analysis [31]. Topic analysis is intended to compile rankings and opinions of students about the use of electronic rubric as well as advantages or disadvantages and positive aspects or negative aspects associated with the use of electronic rubric as an evaluation tool in the assessment process.

3. Results and Discussion

3.1. Electronic rubric design in this research

Electronic rubric application that is implemented as *electronic rubric* by the researcher is SmartRubric. Online Evaluation System is an e-learning application in the context of *"Learning Evaluation System"* designed to facilitate the evaluation process. SmartRubric is a formative assessment application designed to facilitate the teacher's workload in carrying out the evaluation process.

SmartRubric contains an assessment guide, which consists of predetermined performance criteria, which is used to evaluate student performance. SmartRubric as a platform for teachers to assess student performance has interactive features and has *grades* so that teachers can determine the maximum and minimum limit of assessment used. SmartRubric has a simple feature, *user-friendly interface* that makes it easy to show progress in achieving student competencies, and can report student performance individually as a feedback to students in seeing their progress of performance and competencies that must be achieved in accordance with the objectives of learning.

To access this application, visit https://www.smartrubric.com/. This system is equipped with several main features, namely: login, Assessment, Rubrics, Classes, Students, Admin. Along with technological developments, ICT devices are more mobile. This system can also be used using mobile applications, such as: mobile phone, smartphone, Tablet PC, in various platforms such as Mac, Android, BB and other devices limited to having Browser applications for internet access.

- **Login:** Login in this application uses an account created previously by the lecturer, so that in this system there is a special facility for registering / joining. The *login* that is used uses a username that is in the form of an email address that has been registered first. After the login is successful, it will enter the main system. It contains Home, Assessment, Rubrics, Classes, Students, Admin. The *Login* page display can be seen in Fig. 1.

Fig. 1. Login page.

- **Assessment:** Assessment consists of assessments that have been prepared beforehand to be used in the evaluation process. Before starting, rubric is compiled after adjusting it to the competencies that must be achieved by

students, then inputting the ones that are then applied when the assessment process takes place. The *Assessment* page display can be seen in Fig. 2.

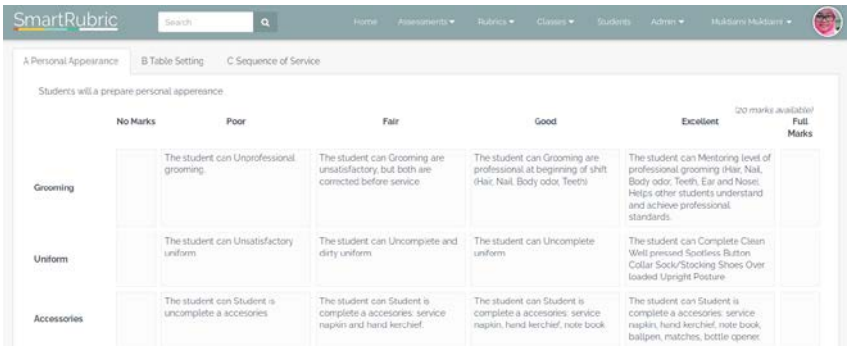

Fig. 2. Assessment page.

- **Rubrics:** Rubric facilitates the development of rubric which will be adjusted according to the competencies and initial objectives in the learning process. In this page, users can create new rubrics, modify it from existing templates or use what is already available on this feature. The *Rubric* page display can be seen in Fig. 3.

Fig. 3. Rubrics page.

- **Classes:** The *Classes* feature contains the classes that we have created before. This *Class* is adjusted to the data inputted in the *Student* feature. The *Classes* page display can be seen in Fig. 4.

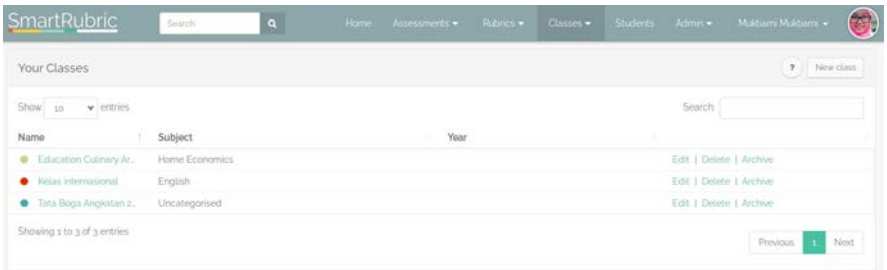

Fig. 4. Classes page.

- **Student:** *Student* feature is the names of students who participate in enrolling the course which was previously inputted by the lecturer. If the student's name is clicked, brief information will be displayed about the student and the student's online evaluation recap. The *Student* feature page display can be seen in Fig. 5.

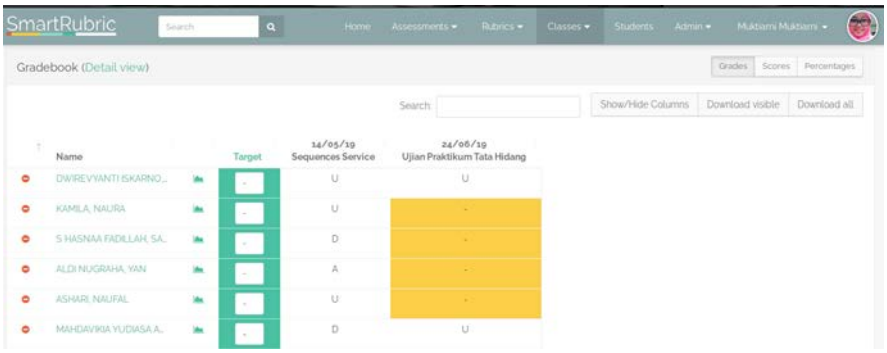

Fig. 5. Student page.

3.2. Usability aspect testing

Assessment is done by trying to operate the *e-rubric* application, after observing the contents of the *e-rubric* assessment and aligning it with the competency units in the Serving Procedure course *sequences service* competency. Based on the calculation results of each assessment indicator, it can be seen that the respondents generally stated strongly agree on the *usability* aspect of the software.

Electronic rubric is an alternative assessment tools that help teachers determine and explain to students what must be achieved during the learning process using predetermined performance criteria. Students can monitor the process and progress of competencies they are going to achieve and how to improve when that competence has not been achieved [32]. Electronic rubric can describe specific characteristics of learning outcomes achieved by students (products and tasks) and the level of performance that must be achieved by students. Before the assessment process starts, the teacher or instructor provides information about what standards must be achieved, the process of performance assessment, and the feedback given by the teacher [10, 33, 34]. Electronic rubric can have the same content guidelines as conventional rubric, what distinguishes the two is that the assessment process is more efficient and electronic rubric uses more sophisticated special programs [35].

3.3. Student response to task assessment

In order to know the student response/opinions on *task sheet (task assessment)*, an instrument is used in this research. The instrument is described into 5 questions that must be answered by students on receiving of the *task sheet (task assessment)* as a guideline in the Serving Procedure course *sequences service* competence.

Based on the calculation results of each assessment indicator (Fig. 6), it can be seen that respondents generally agree to the use of *task sheet (task assessment)* as a guideline in the Serving Procedure course *sequences service* competence.

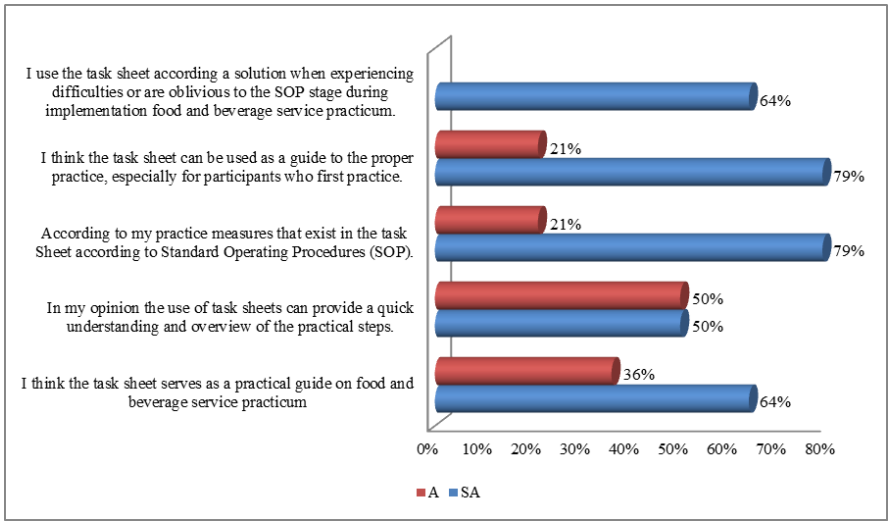

Fig. 6. Student response to task sheet.

From the results of data analysis, it can be explained that more than half (64%) of respondents agreed that *task sheet* functions as a practical guide to the Serving Procedure practicum, and the remaining less than half (36%) of respondents strongly agree that *task sheet* functions as a practical guide to the Serving Procedure practicum; more than half (79%) of respondents agree that the use of *task sheet* can provide a quick understanding and overview on practicum stage. The remaining, a small portion (21%) of respondents strongly agree that the use of *task sheet* can provide a quick understanding and overview on practicum stage. More than half (79%) of respondents agreed on how the practical steps in *task sheet* are in accordance to the *Standard Operating Procedure* (SOP), the remaining, a small portion (21%) of respondents strongly agreed on how the practical steps in *task sheet* are in accordance to the *Standard Operating Procedure* (SOP); each half of 50% respondents agreed and strongly agreed that *task sheet* could be used as a proper practical guide, especially for first-timers participants; most respondents (64%) agreed to use the *task sheet* as a solution when experiencing difficulties or forgetting the SOP stage during the implementation of Serving Procedure practicum, and the remaining, less than half (36%) of respondents used the *task sheet* as a solution when experiencing difficulties or forgetting the SOP stage during the implementation of Serving Procedure practicum.

Performance task is used by the practitioner when working on practical work or practicum to make it easier for the practitioner to achieve what has to be done in accordance with the instructions that have been determined [36].

3.4. Student response to electronic rubric

Students response to electronic rubric is obtained using an instrument. Students response to use electronic rubric (e-rubric) as an assessment tool in the Serving Procedure practicum sequences service competence can be seen in Table 3.

Table 3. Student opinions about electronic rubric as a tool to assess serving procedure practicum.

No.	Statement	Yes	No.
1	This *E-Rubric* helps me become more productive in accessing information on the Serving Procedure practicum assessment.	14	0
2	This *E-Rubric* helps me to better control the activities related to the Serving Procedure practicum (achievement of competence).	14	0
3	This *E-Rubric* is useful for the implementation of Serving Procedure practicum.	14	0
4	This *E-Rubric* makes it easier for me to achieve matters related to tests in the Serving Procedure practicum (achievement of various competencies).	14	0
5	The *E-Rubric* implemented in the assessment of Serving Procedure practicum provides a sense of satisfaction.	14	0

The results of students' response/opinions to use *electronic rubric (e-rubric)* as an assessment tool in the Serving Procedure course *sequences service* competence are obtained using a questionnaire in the form of a checklist. Based on the testing results in Table 3, it can be seen that all students agree to use *electronic rubric* as an assessment tool in the practicum of Serving Procedure course *sequences service* competence. Students feel help and become more productive in accessing information practicum assessment, so the student can control the achievement of competence.

Electronic rubric is an alternative assessment tool that helps teachers determine and explain what students must achieve and the performance criteria that have been determined in achieving competence. Students can monitor the progress of the competencies they have achieved. They will know their weaknesses and how they can achieve these competencies [37]. The use of electronic rubric is important in the process of evaluating student competencies and performance. Electronic rubric can describe characteristics that are more specific from learning outcomes and the level of performance that must be achieved. Before working on tasks, they provide information about what standards must be met, how to assess performance, and they provide feedback after completing the given tasks [8].

The assessment rubric aims to foster and organize students by guiding them through the stages of goal-setting, planning, self-monitoring and self-reflection. Assessment factors are identified as things that affect the effectiveness of students' self-assessment [38].

Electronic rubric produces feedback on skills, and students feel more prepared for practicum implementation [39]. The main feature of electronic rubric is that the implementation process is a key factor in terms of timeliness, user-convenience, simplicity, objectivity, is in accordance with its use in improving qualitative and quantitative learning and training, self-assessment, and in fostering responsibility [40].

Electronic rubric promotes greater interaction and help students become more independent in the learning process and in improving competence. At the same

time, they provide teachers with detailed information, enabling them to carry out and establish which competencies are difficult to obtain, and allow faster communication between teachers and students [12, 41].

Until now we have seen the main contribution of electronic rubric to both students and teachers. But from the results of several research, it was explained that teachers did not feel the same thing felt by students. Rubric can be used in various disciplines and for various purposes, such as to further develop student performance or to improve teaching and assessment programs. They noted that students' perceptions of rubrics are generally positive [28].

The implementation of electronic rubric is designed semi-automatically through Learning Management System to provide formative feedback [29]. Availability of rubrics and online feedback promotes communication and interaction with students regarding their learning progress [42]. However, it should be noted that the majority of students like the structure, detail, and clarity of the rubric, and most students are more supportive of having freedom when handling difficult questions. Therefore, given the inequality that applies in the students' opinions, teachers must be careful when determining the extent to which the criteria and the level of performance must be structured.

4. Conclusions

Performance assessment instrument in the form of electronic rubric on Serving Procedure course practicum can provide convenience to lecturers in measuring students' skills in practical activities. This design can produce a comprehensive assessment starting from preparation, implementation, and evaluation, in order to produce a more accurate assessment. Looking at the students' response to the use of task sheet, respondents generally agreed to use task sheet (task assessment) as a guideline in the Serving Procedure practicum sequences service competence. In students' response regarding the use of electronic rubric, all students agreed to use electronic rubric as an evaluation tool in competency assessment.

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