

**Development of Practicum Assessment Rubric Assisted
by Google Spreadsheet in Basics Electronics Material**

Muh. Syihab Ikbal*, Belinda Dwi Utami, and Andi Halimah
Universitas Islam Negeri Alauddin Makassar, Makassar, Indonesia
*syihab.ikbal@uin-alauddin.ac.id

Abstract

The implementation of practicum assessment rubrics in the Physics Education Laboratory of UIN Alauddin Makassar has fallen short of its full potential. Thus, it is critical to develop a standardized rubric. The practicum assessment rubric is utilized to assess the proficiency of students during their practicum. This research aims to (1) describe the procedure for developing a practicum implementation assessment rubric for Basic Electronics courses with the assistance of the Google Spreadsheet application; and (2) describe the quality of the practicum implementation assessment rubric based on validity and practicality for Basic Electronics courses with the assistance of the Google Spreadsheet application. The utilized development model is Tessmer's formative research model, which comprises two stages: preliminary and formative evaluation. The formative evaluation stage incorporates self-evaluation, prototyping (including expert reviews, one-on-one, and small group), and a field test. This research was conducted at the Physics Education Laboratory of UIN Alauddin Makassar. The research subject comprised two individuals: the main subject and the trial test subject. The main subject comprised two individuals who subsequently formed the product validator team. The trial test subject comprised seven individuals who were employed as assistants for the Electronics practicum in 2022/23. The research results indicated that the validity of the developed product is deemed valid with the validity value of 1. Based on the practicality analysis results, which indicated that 29% of users provided practical responses and 71% provided very practical responses regarding the developed products, it can be inferred that the developed assessment rubric satisfied the practicality criteria. The results of this study suggest that the developed assessment rubric facilitates the assessment administered by the practicum assistants. Additionally, the developed assessment rubric is applicable to all practicum titles pertaining to Basic Electronics.

Keywords: Assessment rubric; Basics electronics; Google spreadsheet; Practicum

Received: 31 July 2023

Accepted: 10 November 2023

Published: 31 December 2023

DOI : <https://doi.org/10.20527/jipf.v7i3.9698>

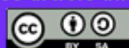
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How to cite: Ikbal, M. S., Utami, B. D., & Halimah, A. (2023). Development of practicum assessment rubric assisted by google spreadsheet in basics electronics material. *Jurnal Ilmiah Pendidikan Fisika*, 7(3), 471-486.

INTRODUCTION

Education, as per Law No. 20 of 2003, is defined as a deliberate and structured endeavor to establish an environment and learning process, with the intention of

enabling students to actively cultivate their inherent capabilities, including religious and spiritual fortitude, self-discipline, intellect, noble character, and proficiencies required by themselves, the



society, the state, and the nation (Ikbal et al., 2020). According to Lengeveld in the book Kamaruddin et al. (2023) education is an endeavor to influence, protect, and offer support with the ultimate goal of fostering students' maturity, equipping them with the necessary skills to independently navigate life's responsibilities without assistance from others.

Education and evaluation are not separable. Evaluation is the process of assigning a value to something in regard to its quality. The concept of evaluation lies in its systematical process to ascertaining the extent to which educational objectives can be accomplished. Evaluation is connected to the learning process. A teacher is required to possess the capability of organizing the complete learning sequence throughout the learning process. This entails developing learning designs, carrying out learning activities, and performing evaluations that encompass both the process and learning outcomes in the context of teaching impacts (Ismail, 2019). The extent to which students are succeeding cannot be ascertained in the absence of evaluation, and improvement is impossible due to the impossibility of assessing that success (Qodir, 2017). Less consideration to the evaluation process may result in issues that impede a program's effectiveness. Consequently, it is necessary to optimize evaluation (Alsyabany, 2019).

An assessment is comparable to evaluation, in which the former is defined as a process for gathering data pertaining to the performance or accomplishments of students. An evaluation is conducted to determine the extent to which students have achieved learning completion and to gauge the effectiveness of the implemented learning process (Sartika et al., 2020). While assessment is a component of education at all levels, each level employs a unique system and level of evaluation based on its specific

requirements. It is imperative that universities, being the highest level of education, employ the assessment that accurately reflect students' abilities (Irwan et al., 2018).

Scientific disciplines, particularly physics, are intricately intertwined with laboratory activities, pertaining to the observation, research, research, experiments, and practicum. As stated by Sutami (2014), the purpose of practicum is to provide students with the chance to apply and validate the theoretical knowledge they have acquired in a real-world setting. Students serve as subjects in the practicum method, which requires them to perform or experience a task themselves, follow a process, observe an object, analyze, prove and draw their own conclusions regarding a situation, object, or process (BalRam, 2017).

The four primary stages that must be completed in the realm of practicum are preparation, demonstration, application, and evaluation stage. Process skills in practicum implementation are elements of an integrated scientific approach aspect during the demonstration and application stages (Syahputra et al., 2018). Consequently, an assessment rubric is required to ascertain the degree of practicum implementation success, as it can serve as a benchmark for evaluating practicum implementation. The implementation of the practicum performance assessment rubric will ensure an impartial evaluation of students' abilities. The practicum performance assessment rubric can increase motivation and facilitate opportunities for students to tailor their work to their unique characteristics (Hartanti, 2016).

The evaluation rubric serves as a guideline for assessing the executed performance. Information may be extracted from the assessment rubric in order to facilitate formative functions, thereby enhancing the learning process. Summative functions, such as evaluating the attainment of learning competencies,

can also benefit from data derived from rubrics (Tim Pusat Penilaian Pendidikan, 2019). Utilizing an assessment rubric is necessary to ensure objectivity in the evaluation process. The assessment rubric comprises a list of work criteria, concepts or aspects to be evaluated, and quality grades (Asrul et al., 2022).

A practicum is an essential component of the Physics Education Study Program's Basic Electronics course, which is designed to facilitate students' comprehension of basic physics concepts via laboratory exercises. The performance assessment is required for these laboratory procedures, encompassing the preparation, process, and final product. The assessment of student performance is conducted by lecturers with the support of practicum assistants, who are responsible for individually monitoring each student. Due to the constraints of observation and the considerable mass of students, this circumstance presents an inherent challenge in carrying out an assessment. Consequently, there are occasions when student performance seems to be less conspicuous. In fact, students' complaints regarding this evaluation are frequent, as they frequently perceive the value awarded to be disproportionate to their capabilities, particularly when considering the varying standards applied by each assistant.

The interview with one of the Basic Electronics practicum assistants of 2021/2022 in January 2022 indicated that the reutilization of the evaluation system, which comprised performance assessment and assessment instruments, commenced again during the 2021/2022 Basics Electronics practicum. However, the system remained ambiguous and failed to operate optimally. The performance assessment is exclusively determined by the preferences of individual practicum assistants, who assign high or low grades in accordance with their own desires. This was also

corroborated by the researcher who is a practicum assistant for Basic Electronics in 2020/2021. In addition, lecturers in Physics Education and the Head of the Physics Education Laboratory provided details concerning the manual character of the practicum assessment instruments. Manual in the sense that paper and stationery in the form of pens or pencils are utilized for the filling system. With the assistance of technology, the Head of Physics Education expects that the manual form of practicum assessment instruments can be transformed into a digital form in order to increase efficiency and usability.

The criteria for rubrics as stated by Widayanti (2016) include the following: a collection of indicators to evaluate the competencies to be assessed; sequential indicators that correspond to the order of work steps on the instrument or systematics on student work; the capability to measure the assessed abilities (valid); the capability to map student abilities; and clear scoring in conjunction with the assessment. Setiadi (2016) further stated that the creation of rubrics requires three essential elements: keywords, scores assigned to each keyword, and maximal scores. Dawson (2017) identifies three essential components that must be included in a rubric: evaluative criteria, the quality of the definition for criteria at a specific level, and the assessment approach.

Suwarno & Aeni (2021), stated that rubrics serve as a beneficial pedagogical tool, enabling students to enhance their comprehension of assigned tasks and concentrate more intently on learning. This is due to the fact that students will perceive the scores they receive as more meaningful and the assessment as more consistent. Panadero & Jonsson (2020) further stated that rubrics are extensively utilized as a form of summative and formative assessment across all educational levels worldwide. Despite ongoing criticism, the benefits of

utilizing rubrics are substantial, particularly in the context of formative assessment.

Previous research by (Irwan et al., 2018) titled "Development of Basic Physics Practicum Attitude Assessment Instrument I for Students of Physics Education Department of UIN Alauddin Makassar" determined that the results obtained from the development of the aforementioned instrument fell in the category of valid and reliable. Furthermore, the instrument met the criteria for validity and reliability, resulting in the feasible and standard assessment instrument. Based on those results of the research, the developed product by Irwan et al. has satisfied the validity and reliability criteria. However, there are a number of limitations to the developed product. For instance, the field trial was conducted in a single group, when in order to obtain more suggestions for development, multiple groups should have been involved. Furthermore, the developed assessment instrument remains in paper format and has not been converted to digital format, which hinders its usability and efficacy. As a result, the researchers intend to undertake a redevelopment of the practicum assessment instrument, with a particular focus on the practicum implementation assessment rubric assisted by Google Spreadsheet application tailored for Basic Electronics courses.

Google Spreadsheet is one of the freely accessible tools provided by Google at any time and from any location. Offline accessibility of Google Spreadsheet is possible on a computer, tablet, or mobile device (Handayani et al., 2017). The web-based application Google Spreadsheet enables users to generate and edit spreadsheets. Compatibility with Microsoft Excel and CSV (comma-separated values) files has been established. Additionally, spreadsheets can be exported to HTML format. This application facilitates real-time

collaboration on spreadsheets among multiple users who are geographically dispersed or not in the same region (Fernando, 2018).

The usage of Google Spreadsheet is still uncommon, and it is considered to be an identical application to the Microsoft Excel programme that is already installed on computers and laptops. Individuals' confidence in their ability to utilize Microsoft Excel diminishes their reliance on Google Spreadsheets, despite the fact that Google Sheets offers more practical functionalities that are not presently present in Microsoft Excel (Cahyono et al., 2022). Working with Google Spreadsheet, an application built upon cloud computing, is a breeze due to its lightweight design and practicality. It is unnecessary to obtain the application as it is already accessible on all websites (Sulistiani et al., 2022).

The researchers are interested to develop practicum assessment instrument for the Physics Education Study Program, particularly on the Basic Electronics practicum according to the observation and preliminary research that have been conducted. Thus, the researchers conducted the research titled "Development of Practicum Assessment Rubric of Basic Electronics Assisted by Google Spreadsheet Applications".

METHODS

Research and development (R&D) was employed in this research. The research design implemented is Tessmer's model for the development of formative research types. The evaluation stages of this development model consist of the following: self-evaluation, expert reviews, one-on-one evaluation, small group evaluation, and field test. This model is well-suited for the evaluation of products across multiple stages, as it can be essentially inferred that the results will improve with increased evaluation frequency. Furthermore, the development of such products may

endow them with practical, valid, and effective qualities (Wijaya & Vidianti, 2019).

The subject of this research was divided into two groups: the main subject and the trial test subject. The main subject comprised two validators, whereas the trial subject comprised seven practicum assistants in basic electronics in 2022/2023. The research was carried out at the Electronics Laboratory of the Physics Education Study Program at UIN Alauddin Makassar in November 2022. The development of the assessment rubric consists of the stages illustrated in Figure 1.

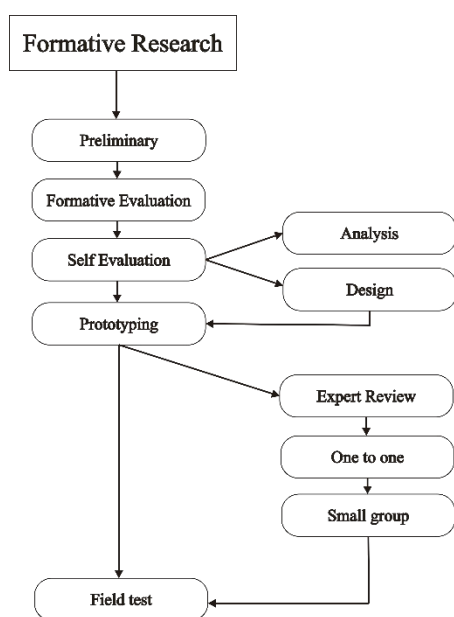


Figure 1 Diagram of Tesser's formative research development procedures

The introduction and design of the initial prototype were carried out during the preliminary stage. At this stage, the research setting and subject were established. Additional preparations were undertaken, including the establishment of a research schedule and procedures for collaboration with the parties who serve at the research setting.

The formative evaluation stage comprises self-evaluation, prototyping,

and field testing. The self-evaluation stage includes analysis and design. During the analysis stage, issues pertaining to and underlying the advent of product development were analyzed. Regarding the design stage, the product that is to be developed was conceptualized. The preliminary design was called prototype I.

Three stages included in the prototyping stage are expert review, one-on-one, and small group. During the expert review stage, the validator conducted an assessment and evaluation of the designed product. The validator examined the developed product's composition. The suggestions provided were implemented in the revision of the rubric. In this stage, the validator's recommendations were documented on the validation sheet as revision material and indicated the validity of the design. The one-to-one stage follows, during which the product was administered to a single user. The obtained results were utilized in the process of refining the developed product. Moreover, during the small group stage, the prototype is revised based on the challenges and results encountered during the one-on-one stage, and these modifications are administered to a small group. The implementation of product trials involved a small sample size of users. In the concluding stage of product development, known as field testing, the product was administered on the trial test to all users.

The research instruments employed in this research consisted of observation sheets and validation sheets. The purpose of the validation sheet is to determine the validity of the developed assessment rubric. The observation sheet is used to assess the developed product's degree of practicality.

The data acquired from the validators' validation results were analyzed in order to determine the feasibility and validity of utilizing the developed assessment

rubric. In order to assess the degree of validity, an agreement model based on the Gregory test or content validity test proposed by Gregory (2004) was utilized (see Figure 2).

		Validator 1	
		The weak relevance (score of 1 or 2)	The strong relevance (score of 3 or 4)
Validator 2	The weak relevance (score of 1 or 2)	A	B
	The strong relevance (score of 3 or 4)	C	D

Figure 2 Agreement model of Gregory test

Notes:

A = number of items in cell A (weak-weak relevance)

B = number of items in cell B (strong-weak relevance)

C = the number of items in cell C (weak-strong relevance)

D = number of items in cell D (strong-strong relevance)

The Gregory Test formula used is in accordance with equation 1.

$$V = \frac{D}{A + B + C + D} \dots (1)$$

An instrument is deemed valid according to the Gregory Test if $V \geq 0,75$ or $V \geq 75\%$. Experts have validated the developed product, and it has received a validity value of 1 in all three categories (language, display, and content/material), indicating that the instrument falls within the valid category.

The trial results were utilized to describe the product's usability. The data obtained from the observation sheet were analyzed using percentage formula introduced by Akbar (2013), in accordance with Equation 2.

$$P = \frac{f}{n} \times 100\% \dots (2)$$

P represents the practicality percentage, f denotes the number of positive responses for each aspect that manifests, and n signifies the quantity of practicum assistants for Basic Electronics. The practicality category is indicated in Table 1 in accordance with the category index.

Table 1 Practicality product criteria

Range	Practicality category
$P \geq 90$	Very practical
$80 \leq P < 90$	Practical
$70 \leq P < 80$	Moderate
$60 \leq P < 70$	Less practical
$P < 60$	Not practical

(Sudjana, 2016)

RESULT AND DISCUSSION

The procedure for developing an assessment rubric for practicum implementation assisted by the Google Spreadsheet application in this research are described as follows.

Preliminary Stage

The first stage, namely the preliminary stage which is the initial step to prepare technical matters related to the research conducted. The preliminary stage is the preparation stage in which the research subject analysis, material analysis, and product design to be developed are carried out (Harfian dan Fadillah, 2022).

The technical matters in question include the research location, schedule, and subjects. In addition, literature reviews related to assessment rubrics, especially in practicum implementation, were carried out. The literature review conducted by gathering information pertinent to the practicum implementation assessment rubric. For this purpose, two books and research publications were consulted.

The research location is in the Electronics Laboratory of the Physics Education Study Program, Faculty of Tarbiyah and Teaching UIN Alauddin Makassar. The research time is adjusted to the practicum implementation time of

the Basic Electronics course, which is November 2022. For research subjects who will become users, namely electronics practicum assistants who are selected through selection. The research schedule is modified to coincide with the November 2022 practicum implementation period for the Basic Electronics course. The research subjects and the users were the electronics practicum assistants who are chosen via a selection process.

Formative Evaluation Stage

Formative evaluation was conducted following the preliminary stage. During this stage, the product development procedure is executed in a series of steps as follow:

Self Evaluation

The term "self-evaluation" refers to the process of conducting problem analysis, student analysis, prerequisite analysis, material analysis, and an initial product design. The self-evaluation stage encompasses the verification of completed development products prior to their validation (Harfian & Fadillah, 2022).

The problem analysis yielded a result that a performance assessment instrument in accordance with practicum implementation indicators is required in the electronics laboratory. In order to facilitate the process, it is imperative to employ suitable technology during the performance assessment preparation stage. In student analysis, students who are chosen as research subjects are electronics practicum assistants via administrative selection, examinations, and interviews.

In regard to the prerequisite analysis, it is established that practicum assistants serving as research subjects are obligated to possess the following: a device in the form of an internet-connected mobile, computer, or laptop, a Google Spreadsheet application installed on said device, and a basic understanding of how

to operate the Google Spreadsheet application.

Material analysis encompasses eight experimental titles conducted during the practicum of Basic Electronics courses. These titles include the following: Introduction and Testing of Electronic Components, Cathode Ray Oscilloscope (CRO), Ammeter and Voltmeter, Voltage Measurement Error, Wheatstone Bridge and Delta-Y Transformation, Thevenin-Northon Equivalent Circuit, Charging and Discharging Capacitors, and Diode Characteristics. Each of the eight experiment titles possesses identical practicum implementation indicators.

The subsequent stage is design, which includes the design of an assessment rubric synopsis and an assessment rubric for practicum implementation. Adapted to the specifications of the Electronics Laboratory of the Physics Education Study Program, the devised assessment rubric synopsis comprised indicators that were mandatory for practicum implementation. The practicum assessment rubric was subsequently developed in accordance with the grid, comprising the primary indicators and corresponding assessment criteria for each indicator. Furthermore, comprehensive instructions were provided to facilitate the utilization of both the assessment instrument and the assessment rubric.

The purpose of providing usage instructions for the assessment rubric is to facilitate user comprehension and engagement. The assessment rubric would be administered electronically through the Google Spreadsheet application, as opposed to being printed on paper. The assessment rubric for the developed practicum implementation was formulated and integrated utilizing the Google Spreadsheet application.

The utilization of the Google Spreadsheet application facilitates user experience by granting simpler access to

the assessment rubric file. Due to the similar algorithmic nature of the Google Spreadsheet application to that of Microsoft Excel, a formula is incorporated to facilitate the use of practicum assistants. This formula computes the practitioner's final score, enabling users to promptly observe the practitioner's final score after completing the assessment instrument.

The development products that have been created are inspected during the self-evaluation stage prior to validation (Harfian & Fadillah, 2022).

Prototyping

Prototyping is defined as the "preparation of prototypes", where this stage consists of expert review, one-to-one, and small group.

The prototype that has been designed went through the validation stage at the expert review stage. Researchers designed the initial product which was presented to the supervisor to be examined and modified so that later it produced an early-stage prototype (Prototype I). After going through several changes, Prototype I went through the validation stage for language, display, and content/material aspects. The prepared prototype I is illustrated in Figure 3-6.

PETUNJUK PENGGUNAAN INSTRUMEN & RUBRIK PENILAIAN PELAKSANAAN PRAKTIKUM	
MATA KULIAH ELEKTRONIKA DASAR	
TAHUN AKADEMIK 2022/2023	
1.	Asisten laboratorium mengakses link Google Spreadsheet Instrumen & Rubrik Penilaian Pelaksanaan Praktikum
2.	Di halaman awal, akan muncul Halaman atau Sheet 1 untuk Petunjuk Penggunaan dan Sheet 2 untuk Instrumen & Rubrik Penilaian
3.	Pada bagian Instrumen & Rubrik Penilaian, terdapat 2 tabel yakni tabel instrumen penilaian dan tabel rubrik penilaian
4.	Pada tabel instrumen penilaian, terdapat beberapa kolom (Nama, NIM, Indikator Penilaian, Jumlah Indikator yang Terpenuhi, Skor per Indikator, dan Nilai Akhir). Terlebih dahulu, asisten laboratorium mengisi identitas diri berupa nama lengkap dan judul praktikum yang dicobakan. Setelah itu, pada kolom Nama dan NIM, asisten laboratorium mengisi identitas praktikan yang mengikuti praktikum berupa nama lengkap dan NIM praktikan.
5.	Pada kolom Indikator Penilaian, terdapat kode-kode (A1, A2, A3, dst.) Asisten laboratorium dapat melihat arti dari tiap kode-kode tersebut pada tabel Rubrik Penilaian. Kemudian, asisten laboratorium dapat mengisi nilai yang diperoleh praktikan dengan menggunakan angka 1 jika indikator terpenuhi atau angka 0 jika indikator tidak terpenuhi.
6.	Pada kolom Jumlah Indikator yang Terpenuhi, akan muncul jumlah dari tiap indikator A, B, C, D, dan E yang terpenuhi. Misalkan pada indikator A ada 9 indikator dan semua indikator terpenuhi, maka akan muncul angka 9 pada kolom A.
7.	Pada kolom Skor per Indikator, akan muncul skor yang diperoleh berdasarkan jumlah indikator yang terpenuhi pada tiap indikator, yang mana skornya diperoleh berdasarkan rubrik penilaian. Misalkan pada indikator A terpenuhi 9 indikator, dan pada rubrik penilaian tertulis memperoleh skor 4 jika 7-9 kriteria penilaian terpenuhi, maka akan muncul angka 4 pada kolom A.
8.	Pada kolom Nilai Akhir, akan muncul nilai akhir yang diperoleh praktikan berdasarkan hasil perhitungan skor, dimana digunakan perhitungan : jumlah skor yang diperoleh dibagi jumlah skor maksimum dikali 100.
9.	Untuk kolom Jumlah Indikator, Skor per Indikator, dan Nilai Akhir, semuanya akan terisi otomatis berdasarkan rumus yang sudah ditetapkan. Oleh karena itu, asisten laboratorium cukup mengisi kolom Indikator Penilaian sesuai dengan data yang diperoleh selama pelaksanaan praktikum berlangsung, dengan mengacu pada indikator pada rubrik penilaian.

Figure 3 Usage instruction design

B. Petunjuk Setiap Indikator	
1. Indikator A (Kemampuan Mengetahui dan Mengidentifikasi Alat dan Komponen Praktikum)	
A1	(Mampu mengidentifikasi alat sesuai judul percobaan) = Praktikan mampu menunjukkan dan menentukan alat yang digunakan sesuai judul percobaan
A2	(Mampu mengidentifikasi komponen/ bahan sesuai judul percobaan) = Praktikan mampu menunjukkan dan menentukan komponen/bahan yang digunakan sesuai judul percobaan
A3	(Mampu mengetahui nama alat yang digunakan) = Praktikan mampu menyebutkan nama alat yang digunakan sesuai judul percobaan
A4	(Mampu mengetahui nama komponen/ bahan yang digunakan) = Praktikan mampu menyebutkan nama komponen/ bahan yang digunakan sesuai judul percobaan
A5	(Mampu mengetahui fungsi alat yang digunakan) = Praktikan mampu menyebutkan dan menggambarkan fungsi alat yang digunakan
A6	(Mampu mengetahui fungsi komponen/ bahan yang digunakan) = Praktikan mampu menyebutkan dan menggambarkan fungsi komponen/ bahan yang digunakan
A7	(Mampu mengetahui spesifikasi alat yang digunakan) = Praktikan mampu menyebutkan dan menggambarkan ciri-ciri alat yang digunakan
A8	(Mampu mengetahui spesifikasi komponen/ bahan yang digunakan) = Praktikan mampu menyebutkan dan menggambarkan ciri-ciri komponen/ bahan yang digunakan
A9	(Mampu mengklasifikasi antara alat dan komponen/ bahan yang digunakan) = Praktikan mampu membedakan dan mengelompokkan alat dan komponen/ bahan sesuai spesifikasinya
2. Indikator B (Kemampuan Mengidentifikasi Variabel Percobaan)	
B1	(Mampu mengidentifikasi variabel manipulasi secara tepat sesuai dengan judul percobaan dan rumusan masalah) = Praktikan mampu menunjukkan dan menentukan variabel yang akan diubah-ubah nilainya pada percobaan
B2	(Mampu mengidentifikasi variabel ukur secara tepat sesuai dengan judul percobaan dan rumusan masalah) = Praktikan mampu menunjukkan dan menentukan variabel yang akan diukur atau dicari nilainya pada percobaan
B3	(Mampu mengidentifikasi variabel kontrol secara tepat sesuai dengan judul percobaan dan rumusan masalah) = Praktikan mampu menunjukkan dan menentukan variabel yang nilainya akan dibuat tetap atau tidak diubah-ubah pada percobaan
B4	(Mampu mengklasifikasi variabel dalam percobaan ke dalam kelompok variabel manipulasi, ukur, dan kontrol) = Praktikan mampu membedakan dan mengelompokkan variabel manipulasi, ukur, dan kontrol secara tepat

Figure 4 Instruction for each indicators design

INSTRUMEN & RUBRIK PENILAIAN PELAKSANAAN PRAKTIKUM
MATA KULIAH ELEKTRONIKA DASAR
TAHUN AKADEMIK 2022/2023

JUDUL PERCOBAAN : PENGISIAN DAN PENGOSONGAN KAPASITOR
ASISTEN : CINDY FEBRIANA PRATIWI

No.	Nama Praktikan	Kelompok	Indikator Penilaian																								Jumlah Indikator yang Terpenuhi					Skor per Indikator					Nilai Akhir													
			A1	A2	A3	A4	A5	A6	A7	A8	A9	B1	B2	B3	B4	C1	C2	C3	C4	C5	C6	C7	D1	D2	D3	D4	D5	D6	E1	E2	E3	E4	E5	E6	E7	A		B	C	D	E	A	B	C	D	E				
1.	Nurhalisa	5	1	1	1	1	1	1	0	0	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	7	1	6	6	4	4	1	4	4	3	80				
2.	Nur Aisyah Ramadhani	5	1	1	1	1	1	1	0	0	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	7	1	6	6	4	4	1	4	4	3	80				
3.	Ayu Wandira	5	1	1	1	1	1	1	0	0	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	7	1	6	6	4	4	1	4	4	3	80				
4.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
5.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
6.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
8.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
9.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
10.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
13.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15.			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 5 Assessment instrument design

No.	Indikator	Kode	Kriteria Penilaian	Kriteria Penskoran	Skor per Indikator
1.	Kemampuan Mengetahui dan Mengidentifikasi Alat dan Komponen Praktikum	A1	Mampu mengidentifikasi alat sesuai judul percobaan	Memenuhi 7-9 kriteria penilaian Memenuhi 5-6 kriteria penilaian Memenuhi 3-4 kriteria penilaian Memenuhi 1-2 kriteria penilaian	4 3 2 1
2.		A2	Mampu mengidentifikasi komponen/bahan sesuai judul percobaan		
3.		A3	Mampu mengetahui nama alat yang digunakan		
4.		A4	Mampu mengetahui nama komponen/bahan yang digunakan		
5.		A5	Mampu mengetahui fungsi alat yang digunakan		
6.		A6	Mampu mengetahui fungsi komponen/bahan praktikum		
7.		A7	Mampu mengetahui spesifikasi alat yang digunakan		
8.		A8	Mampu mengetahui spesifikasi komponen/bahan yang digunakan		
9.		A9	Mampu mengklasifikasi antara alat dan komponen/bahan yang digunakan		
10.	Kemampuan Mengidentifikasi Variabel Percobaan	B1	Mampu mengidentifikasi variabel manipulasi secara tepat sesuai dengan judul percobaan dan rumusan masalah	Memenuhi 4 kriteria penilaian Memenuhi 3 kriteria penilaian Memenuhi 2 kriteria penilaian Memenuhi 1 kriteria penilaian	4 3 2 1
11.		B2	Mampu mengidentifikasi variabel ukur secara tepat sesuai dengan judul percobaan dan rumusan masalah		
12.		B3	Mampu mengidentifikasi variabel kontrol secara tepat sesuai dengan judul percobaan dan rumusan masalah		
13.		B4	Mampu mengklasifikasi variabel dalam percobaan ke dalam kelompok variabel manipulasi, ukur, dan kontrol		
14.	Kemampuan Memahami Praktikum/ Percobaan yang Akan Dilakukan	C1	Mampu memahami judul praktikum yang akan dipercoba	Memenuhi 6-7 kriteria penilaian Memenuhi 4-5 kriteria penilaian Memenuhi 2-3 kriteria penilaian Memenuhi 1 kriteria penilaian	4 3 2 1
15.		C2	Mampu memahami latar belakang dilakukannya praktikum yang akan dipercoba		
16.		C3	Mampu memahami rumusan masalah praktikum yang akan dipercoba		
17.		C4	Mampu memahami tujuan praktikum yang akan dipercoba		
18.		C5	Mampu merumuskan prosedur kerja secara berurutan		
19.		C6	Mampu memahami prosedur pengambilan data praktikum		
20.		C7	Mampu memahami tentang keselamatan kerja praktikum		
21.	Kemampuan Melakukan Percobaan secara Sistematis	D1	Mampu merangkai alat dan komponen/bahan percobaan sesuai dengan prosedur kerja	Memenuhi 5-6 kriteria penilaian Memenuhi 3-4 kriteria penilaian Memenuhi 2 kriteria penilaian Memenuhi 1 kriteria penilaian	4 3 2 1
22.		D2	Mampu membaca penunjukan alat ukur saat melakukan pengukuran dalam percobaan		
23.		D3	Mampu mengkalibrasi alat ukur yang digunakan dalam percobaan		
24.		D4	Mampu menggunakan alat ukur untuk mengukur dalam percobaan		

Figure 6 Assessment rubric design

Sugiyono (2014) defined the term "valid instrument" as the instrument that is capable of collecting data for the intended purpose of measurement, with regard to the instrument's conformity with the capacity to be assessed. Additionally, Yusuf (2014) stated that the validity of an instrument is determined by the extent to which it accurately measures the subject or object being assessed. To illustrate, in the case of assessing

students' proficiency in physics, the test instrument's content should primarily comprise physics-related material. It is imperative to avoid overloading the exam with foreign terms to the point where it becomes a foreign language examination rather than one on physics.

The results pertaining to the relevance of two experts concerning language, display, and content/material are detailed in tables 2, 3, and 4.

Table 2 Results of language component validation analysis

Assessment aspect	v ₁	v ₂	V	Desc.
Using Indonesian language that is in accordance with the Refined Spelling (EYD)	3	4	1	Valid
Using language that is easy to understand	3	4	1	Valid
Using simple and clear language	3	4	1	Valid
Avoids the use of words with multiple meanings	4	3	1	Valid

Table 2 shows that there are four items validated by two experts for the language component. The analysis revealed that the two experts' relevance to the four components fell within the range of strong-strong relevance. Since

relevance corresponds to a validity score of $V = 1$, the language component can be demonstrated to be valid. This signifies that revisions or enhancements to the language component have ceased.

Tabel 3 Analysis results of display component validation

Assessment aspect	v ₁	v ₂	V	Desc.
The font utilized is legible.	3	4	1	Valid
Appropriateness of display color	4	3	1	Valid
Instructions for utilizing the assessment rubric are provided	4	4	1	Valid
Coherent presentation of the display is achieved	4	3	1	Valid
Presentation consistency	3	4	1	Valid
Selection simplicity of the serving menu	3	4	1	Valid
Freedom to choose the serving menu	3	4	1	Valid

Table 3 shows that there are 7 items validated by two experts for the display component. The results of the analysis indicate that the two experts' relevance to the seven components falls within the range of strong-strong relevance. As the

relevance corresponds to a validity score of $V = 1$, the display component's validity can be demonstrated. This signifies that there is no need for further revisions or enhancements made to the display component.

Table 4 Results of content/material component validation analysis

Assessment aspect	v ₁	v ₂	V	Desc.
The suitability of the rubric content with practicum implementation indicators	4	4	1	Valid
Includes all indicators that must be present in the practicum implementation	4	4	1	Valid
All indicators are sorted based on the work steps in the practicum implementation	4	3	1	Valid
The practicum assessment rubric has shown the competencies to be measured	4	4	1	Valid
The practicum assessment rubric has shown objectivity	4	4	1	Valid
There are scoring guidelines	4	4	1	Valid
Scoring guidelines are easy to understand	4	3	1	Valid
An assessment instrument is available	4	3	1	Valid

Table 4 presents the results of two experts' validations for eight items comprising the content/material component. The results of the analysis indicate that the two experts' relevance to the eight components falls within the range of strong-strong relevance. Since

the relevance score corresponds to a validity score of $V = 1$, the content/material component is valid. This signifies that there is no need for further revisions or enhancements made to the display component.

The overall outcomes of the two expert validations are presented in Table 5.

Table 5 The average of 3 aspects in validation stages

Aspect	V	Desc.
Language	1	Valid
Display	1	Valid
Content/Material	1	Valid
Average	1	Valid

Table 5 shows the results of the average value of 3 aspects, namely language aspects, display aspects, and content/material aspects, whose value is 1 which is in the valid category. Thus, the product is no longer assessed by the validator and is ready to be tested.

Sugiyono (2014) stated that the purpose of the validation test is to ascertain the degree of confidence that can be placed in the data provided by researchers and the authentic data obtained from the object of study. Therefore, valid data is defined as information that is consistent with both the researcher's assertions and the actual phenomena under the research object. Additionally, Hayati & Lailatussaadah (2016) emphasized the criticality of accurately acquiring and inputting research data, as an error in either of these aspects can influence the validity of the research results.

Despite the instrument having been utilized and validated by prior researchers, a high validation value signifies the instrument's reliability and validity. However, further testing of the instrument is necessary as the obtained conclusions may only align with the objectives of the previous researcher. Consecutive testing will enhance the instrument's quality.

The recommendations provided by the validators regarding the product that was developed are detailed in Table 6.

Table 6 Validators' suggestions

Validators' suggestions
1. It is necessary to add an explanation of each assessment criterion on the assessment rubric
2. Improvement of consistency in word arrangement
3. Still using one background color (not varied)
4. Still using commonly used writing fonts (not varied)
5. Some assessment criteria are not in accordance with the rubric synopsis of practicum implementation assessment rubrics
6. The assessment instrument still has to be filled in manually (for the calculation of the final score)

The prototype that had been validated was subsequently assessed in small groups and one-on-ones. One user, who was an electronics practicum assistant, was chosen to evaluate the developed assessment rubric during the one-on-one stage. The practicum assistant has confirmed the readability of the developed product at this stage, as the product has undergone validation by domain experts (Ningsih et al., 2020). In order to prevent any potential confusion or overwhelmingness on the day of the practicum, the practicum assistants were provided with instructions and information pertaining to the utilization of the assessment rubric prior to conducting the trial. A hyperlink directing practicum assistants to the practicum assessment rubric within the Google Spreadsheet was provided to facilitate the assessment of practicum skills. After using the Google Spreadsheet, the practicum assistant completed the observation document which was utilized to assess the ease of use of the assessment rubric. The validated and verified prototypes are illustrated in figures 7-10.

PETUNJUK PENGGUNAAN INSTRUMEN & RUBRIK PENILAIAN PELAKSANAAN PRAKTIKUM									
MATA KULIAH ELEKTRONIKA DASAR									
TAHUN AKADEMIK 2022/2023									
1. Asisten laboratorium mengakses link Google Spreadsheet Instrumen & Rubrik Penilaian Pelaksanaan Praktikum									
2. Di halaman awal, akan muncul Halaman atau Sheet 1 untuk Petunjuk Penggunaan dan Sheet 2 untuk Instrumen & Rubrik Penilaian									
3. Pada bagian Instrumen & Rubrik Penilaian, terdapat 2 tabel yakni tabel instrumen penilaian dan tabel rubrik penilaian									
4. Pada tabel instrumen penilaian, terdapat beberapa kolom (Nama, NIM, Indikator Penilaian, Jumlah Indikator yang Terpenuhi, Skor per Indikator, dan Nilai Akhir). Terlebih dahulu, asisten laboratorium mengisi identitas diri berupa nama lengkap dan judul praktikum yang dicobakan. Setelah itu, pada kolom Nama dan NIM, asisten laboratorium mengisi identitas praktikan yang mengikuti praktikum berupa nama lengkap dan NIM praktikan.									
5. Pada kolom Indikator Penilaian, terdapat kode-kode (A1, A2, A3, dst.) Asisten laboratorium dapat melihat arti dari tiap kode-kode tersebut pada tabel Rubrik Penilaian. Kemudian, asisten laboratorium dapat mengisi nilai yang diperoleh praktikan dengan menggunakan angka 1 jika indikator terpenuhi atau angka 0 jika indikator tidak terpenuhi.									
6. Pada kolom Jumlah Indikator yang Terpenuhi, akan muncul jumlah dari tiap indikator A, B, C, D, dan E yang terpenuhi. Misalkan pada indikator A ada 9 indikator dan semua indikator terpenuhi, maka akan muncul angka 9 pada kolom A.									
7. Pada kolom Skor per Indikator, akan muncul skor yang diperoleh berdasarkan jumlah indikator yang terpenuhi pada tiap indikator, yang mana skornya diperoleh berdasarkan rubrik penilaian. Misalkan pada indikator A terpenuhi 9 indikator, dan pada rubrik penilaian tertulis memperoleh skor 4 jika 7-9 kriteria penilaian terpenuhi, maka akan muncul angka 4 pada kolom A.									
8. Pada kolom Nilai Akhir, akan muncul nilai akhir yang diperoleh praktikan berdasarkan hasil perhitungan skor, dimana digunakan perhitungan : jumlah skor yang diperoleh dibagi jumlah skor maksimum dikali 100.									
9. Untuk kolom Jumlah Indikator, Skor per Indikator, dan Nilai Akhir, semuanya akan terisi otomatis berdasarkan rumus yang sudah ditetapkan. Oleh karena itu, asisten laboratorium cukup mengisi kolom Indikator Penilaian sesuai dengan data yang diperoleh selama pelaksanaan praktikum berlangsung, dengan mengacu pada indikator pada rubrik penilaian.									

Figure 7 Usage instructions of practicum assessment rubric

B. Petunjuk Setiap Indikator									
1. Indikator A (Kemampuan Mengetahui dan Mengidentifikasi Alat dan Komponen Praktikum)									
A1 (Mampu mengidentifikasi alat sesuai judul percobaan) = Praktikan mampu menunjukkan dan menentukan alat yang digunakan sesuai judul percobaan									
A2 (Mampu mengidentifikasi komponen/ bahan sesuai judul percobaan) = Praktikan mampu menunjukkan dan menentukan komponen/bahan yang digunakan sesuai judul percobaan									
A3 (Mampu mengetahui nama alat yang digunakan) = Praktikan mampu menyebutkan nama alat yang digunakan sesuai judul percobaan									
A4 (Mampu mengetahui nama komponen/ bahan yang digunakan) = Praktikan mampu menyebutkan nama komponen/ bahan yang digunakan sesuai judul percobaan									
A5 (Mampu mengetahui fungsi alat yang digunakan) = Praktikan mampu menyebutkan dan menggambarkan fungsi alat yang digunakan									
A6 (Mampu mengetahui fungsi komponen/ bahan yang digunakan) = Praktikan mampu menyebutkan dan menggambarkan fungsi komponen/ bahan yang digunakan									
A7 (Mampu mengetahui spesifikasi alat yang digunakan) = Praktikan mampu menyebutkan dan menggambarkan ciri-ciri alat yang digunakan									
A8 (Mampu mengetahui spesifikasi komponen/ bahan yang digunakan) = Praktikan mampu menyebutkan dan menggambarkan ciri-ciri komponen/ bahan yang digunakan									
A9 (Mampu mengklasifikasi antara alat dan komponen/ bahan yang digunakan) = Praktikan mampu membedakan dan mengelompokkan alat dan komponen/ bahan sesuai spesifikasinya									
2. Indikator B (Kemampuan Mengidentifikasi Variabel Percobaan)									
B1 (Mampu mengidentifikasi variabel manipulasi secara tepat sesuai dengan judul percobaan dan rumusan masalah) = Praktikan mampu menunjukkan dan menentukan variabel yang akan diubah-ubah nilainya pada percobaan									
B2 (Mampu mengidentifikasi variabel ukur secara tepat sesuai dengan judul percobaan dan rumusan masalah) = Praktikan mampu menunjukkan dan menentukan variabel yang akan diukur atau dicari nilainya pada percobaan									
B3 (Mampu mengidentifikasi variabel kontrol secara tepat sesuai dengan judul percobaan dan rumusan masalah) = Praktikan mampu menunjukkan dan menentukan variabel yang nilainya akan dibuat tetap atau tidak diubah-ubah pada percobaan									
B4 (Mampu mengklasifikasi variabel dalam percobaan ke dalam kelompok variabel manipulasi, ukur, dan kontrol) = Praktikan mampu membedakan dan mengelompokkan variabel manipulasi, ukur, dan kontrol secara tepat									

Figure 8 Instructions for each indicator of practicum assessment rubric

INSTRUMEN & RUBRIK PENILAIAN PELAKSANAAN PRAKTIKUM																																								
MATA KULIAH ELEKTRONIKA DASAR																																								
TAHUN AKADEMIK 2022/2023																																								
JUDUL PERCOBAAN : PENGISIAN DAN PENGOSONGAN KAPASITOR																																								
ASISTEN : CINDY FEBRIANA PRATIWI																																								
No.	Nama Praktikan	Kelompok	Indikator Penilaian																	Jumlah Indikator yang Terpenuhi	Skor per Indikator					Nilai Akhir														
			A1	A2	A3	A4	A5	A6	A7	A8	A9	B1	B2	B3	B4	C1	C2	C3	C4		C5	C6	C7	D1	D2		D3	D4	D5	D6	E1	E2	E3	E4	E5	E6	E7			
1.	Nurhalisa	5	1	1	1	1	1	0	0	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	7	A	B	C	D	E	80	
2.	Nur Aisyah Ramadhani	5	1	1	1	1	1	0	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	7	A	B	C	D	E	80	
3.	Ayu Wandira	5	1	1	1	1	1	0	0	1	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	7	A	B	C	D	E	80	
4.	Rabiatul Adawiyah	4	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	A	B	C	D	E	95	
5.	Fitri Andriani, S	4	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	A	B	C	D	E	95	
6.	Nur Annisa Jamal	4	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	A	B	C	D	E	95	
7.	Rezky Amaliah Hamzah	3	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	9	A	B	C	D	E	90		
8.	Rizki Julianti Kisamir R.	3	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	9	A	B	C	D	E	90		
9.																																		A	B	C	D	E		
10.																																			A	B	C	D	E	
11.																																			A	B	C	D	E	
12.																																			A	B	C	D	E	

Figure 9 Practicum assessment rubric instrument

No.	Indikator	Kode	Kriteria Penilaian	Kriteria Penskoran	Skor per Indikator
1.	Kemampuan Mengetahui dan Mengidentifikasi Alat dan Komponen Praktikum	A1	Mampu mengidentifikasi alat sesuai judul percobaan	Memenuhi 7-9 kriteria penilaian Memenuhi 5-6 kriteria penilaian Memenuhi 3-4 kriteria penilaian Memenuhi 1-2 kriteria penilaian	4 3 2 1
2.		A2	Mampu mengidentifikasi komponen/bahan sesuai judul percobaan		
3.		A3	Mampu mengetahui nama alat yang digunakan		
4.		A4	Mampu mengetahui nama komponen/bahan yang digunakan		
5.		A5	Mampu mengetahui fungsi alat yang digunakan		
6.		A6	Mampu mengetahui fungsi komponen/bahan praktikum		
7.		A7	Mampu mengetahui spesifikasi alat yang digunakan		
8.		A8	Mampu mengetahui spesifikasi komponen/bahan yang digunakan		
9.		A9	Mampu mengklasifikasi antara alat dan komponen/bahan yang digunakan		
10.	Kemampuan Mengidentifikasi Variabel Percobaan	B1	Mampu mengidentifikasi variabel manipulasi secara tepat sesuai dengan judul percobaan dan rumusan masalah	Memenuhi 4 kriteria penilaian Memenuhi 3 kriteria penilaian Memenuhi 2 kriteria penilaian Memenuhi 1 kriteria penilaian	4 3 2 1
11.		B2	Mampu mengidentifikasi variabel ukur secara tepat sesuai dengan judul percobaan dan rumusan masalah		
12.		B3	Mampu mengidentifikasi variabel kontrol secara tepat sesuai dengan judul percobaan dan rumusan masalah		
13.		B4	Mampu mengklasifikasi variabel dalam percobaan ke dalam kelompok variabel manipulasi, ukur, dan kontrol		
14.	Kemampuan Memahami Praktikum/ Percobaan yang Akan Dilakukan	C1	Mampu memahami judul praktikum yang akan dipercobakan	Memenuhi 6-7 kriteria penilaian Memenuhi 4-5 kriteria penilaian Memenuhi 2-3 kriteria penilaian Memenuhi 1 kriteria penilaian	4 3 2 1
15.		C2	Mampu memahami latar belakang dilakukannya praktikum yang akan dipercobakan		
16.		C3	Mampu memahami rumusan masalah praktikum yang akan dipercobakan		
17.		C4	Mampu memahami tujuan praktikum yang akan dipercobakan		
18.		C5	Mampu merumuskan prosedur kerja secara berurutan		
19.		C6	Mampu memahami prosedur pengambilan data praktikum		
20.		C7	Mampu memahami tentane keselamatan kerja praktikum		

Figure 10 Practicum assessment rubric

Further information is available in the attachment or via the following link: <https://bit.ly/44ugoxf>

Three practicum assistants evaluated the product during the small group stage. Subsequently, the product that have been revised by the validators and a user in one-to-one stage was tested to a limited group of users (Novriany et al., 2023). Similar to the preceding stage (one-on-one stage), the practicum assistants were provided with guidance and information in advance during the small group stage concerning the utilization of the Google Spreadsheet application-assisted rubric for evaluating the practicum's implementation. This was done to prevent the practicum assistants from feeling overwhelmed when employing the rubric on the day of the practicum. A hyperlink providing practicum assistants with access to the practicum assessment rubric within the Google Spreadsheet is provided, with the purpose of assessing practicum skills. After that, the practicum assistant completed the observation document which was utilized to assess the ease of use of the assessment rubric.

*Field Test*The final stage, field testing, involves putting the completed prototype to the test on all seven electronics practicum assistants. Similar to the preceding stage (which consisted of one-on-one and small group discussions),

practicum assistants have been provided with information and instructions on how to utilize the Google Spreadsheet-assisted rubric for evaluating the practicum's implementation. This is done in order to prevent practicum assistants from feeling overwhelmed when using the rubric on the day of the practicum. A hyperlink providing practicum assistants with access to the practicum assessment rubric within the Google Spreadsheet is provided, with the purpose of evaluating practicum skills. After that, the practicum assistant completed the observation document which was utilized to evaluate the ease of use of the assessment rubric.

Sutami (2014), defines practicality as the quality of being efficient. Practicality can also be defined as the capacity to create and operate instruments effortlessly and arrive at decisions in an objective manner, thereby eliminating any uncertainty. Additionally, practicality pertains to the effectiveness and efficiency with which time and resources are utilized. Additionally, Van den Akker stated in Marlini's journal (2019) that the practicality of a product is determined by the opinions of users (or other experts) regarding whether or not the intervention is undesirable and usable in typical circumstances. The percentage of user responses to the developed assessment rubric is displayed in Table 8.

Table 8 Percentage of user responses

Practicality range	F	%	Category
$P \geq 90$	5	71	Very practical
$80 \leq P < 90$	2	29	Practical
$70 \leq P < 80$	0	0	Moderate
$60 \leq P < 70$	0	0	Less practical
$P < 60$	0	0	Not practical

The analysis of the practicality of utilizing the practicum implementation assessment rubric with the assistance of the Google Spreadsheet application yielded results ranging from 29% in the practical category to 71% in the very practical category, as indicated by the percentage of user responses in Table 8. According to Sujarwanto & Rusilowati (2015), an instrument is considered practical when it facilitates the operation, analysis, and storage of results in a manner that is easy to use. In addition to being based on the criterion for practicality value, Yusuf (2017) asserts that the developed product is practical due to its straightforward form and simple language, the instrument's ease of use, and the users' ability to comprehend it.

CONCLUSION

The development of a practicum implementation assessment rubric, facilitated by the Google Spreadsheet application, comprises two primary stages: preliminary and formative. During the preliminary stage, one conducts a literature review, establishes the research location and time, and determines the research subject. Formative evaluation comprises self-assessment (including problem analysis, student analysis, prerequisite analysis, material analysis, and design), prototyping (including expert review, one-to-one, and small group) and field testing.

The practicum implementation assessment rubric, which was facilitated by the Google Spreadsheet application, possesses a high validity and a practicality that fall within the category of being very practical.

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