



# Assessment As Learning in the Writing Process: Development of Self-Writing Assessment for Guiding Students in Scientific Writing

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Assessment as learning  
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## Abstract

Scientific writing is a challenge for students because the writing is bound by various scientific conventions in terms of content and grammar in each part. Following up on this condition, in this study, a self-writing assessment instrument was developed for guidance on writing research papers students. This study uses the ADDIE model with five stages of steps considering the practicality of the steps for developing learning products. During product development, data on content validity, interrater reliability, and user tests were collected for product application. The results were analyzed descriptively, quantitatively, statistically, and qualitatively, describing each product's feasibility qualifications obtained by collecting questionnaires, field notes, and documentation techniques. At the end of the study, it was found that the self-writing assessment instrument was successfully developed and could be used in guiding the writing of research papers, especially in the presentation of content and grammar. Furthermore, self-writing assessment instruments can be applied to maximize the writing process at the post-revising and editing stage.

## 1. Introduction

Writing research papers is a common thing for academics for students and teachers, in line with the trend of scientific writing research, which has increased among academics in recent decades (Dakhi & Hutabarat, 2018). The importance of achievements in this publication leads to the contribution of the dissemination of research results in the development and advancement of scientific fields in specific perspectives (Debnath, 2016). This is why topics related to teaching, as well as various tools for scientific writing, are widely researched. However, the importance of a scientific paper demands skills from its authors in meeting the scientific conventions of its writing.

This condition is supported by facts in the thesis guidance process of bachelor's degree students at Universitas Negeri Malang, which shows that most students have difficulty presenting papers from their research. Although mentoring has been done personally, the process is ineffective enough to produce sound scientific work. Of the 30 documents produced by student research, 67% of papers did not correctly present the content and grammar according to the results of the previous needs analysis. Furthermore, improper writing habits are also the main obstacle for students in writing research papers.

The information obtained from students states that generally, they write in a short time and once, meaning that the writing they have compiled does not go through the process of reviewing or editing. Improvement of writing is carried out only if notes are obtained during mentoring. This condition shows the urgency of a solution to overcome the problem of writing student scientific papers. Since writing is a personal skill, students must independently organize ideas, understand scientific conventions, and interpret criticisms and suggestions for writing improvement (Cho et al., 2014).

Accommodating these needs, in this study, a writing assessment instrument was developed that can be used independently in writing and improving research papers as a type of scientific writing. The right design used in creating this instrument will carry an assessment as a learning approach, so the developed instrument requires learning from the mistake process (Lam, 2020). Furthermore, in its application, assessment as learning with a type of self-assessment can stimulate

student involvement directly to assess their performance and use it as an improvement for completing the final project (Kostons et al., 2012; Lu et al., 2019).

Self-assessment design has also been widely researched before to streamline writing learning. Writing as a language skill requires more practice and self-reflection so that students are more skilled and master more writing techniques (Suastra & Menggo, 2020; Sun & Wang, 2020; Vasu et al., 2020). From this rationalization, the research aims to develop a self-writing assessment instrument for guidance in writing research papers. The instruments designed are expected to develop student's writing skills and form good self-regulation in writing research papers (Sun & Wang, 2020).

## 2. Method

This research uses the ADDIE model to consider its systematic stages for product development: analysis, design, development, implementation, and evaluation. In addition to having systematic steps, this model was also chosen because of its approach that focuses on providing feedback for gradual and continuous improvement of product development (Muruganatham, 2015).

Data collection is carried out with questionnaires and field notes to produce quantitative and qualitative data. Quantitative data will be processed with quantitative descriptive analysis techniques to assess expert validation results (content validity), user tests with percentage formulas, and product feasibility interpretation criteria in Formula 1 and Table 1.

$$P = \frac{f}{N} \times 100\%$$

**Table 1. Product Eligibility Qualifications**

Scale	Percentage	Qualification
5	91-100	Very feasible, without revisions
4	81-90	Feasible, without revisions
3	71-80	Simply feasible, minor revisions
2	61-70	Less feasible, major revisions
1	<61	Unfeasible, great revisions

Next, quantitative data are also processed by descriptive statistical analysis for the reliability of the assessment instrument from the results of user trials referring to the Cohens Kappa coefficient. Next, qualitative descriptive analysis describes qualitative data on product trial results in the form of field notes on product application results, criticisms, and suggestions from research subjects, both users and experts. The following is a description of the procedure from this study.

### Analyze

In this stage of analysis of needs related to the specifications of the instrument self-writing assessment product, which will be developed based on the findings presented in the background by exploring users' responses.

### Design

At this stage, the product design of the self-writing assessment instrument is carried out in several phases. The phase contains (a) conducting theoretical studies and preparation of instrument grids, (b) development of assessment indicators, (c) determination of self-writing assessment procedures, (d) preparation of assessment guidelines, and (e) compilation of the final product.

### Develop

A self-writing assessment instrument product was developed at this stage, designed in the previous step. The product is created by a research team that includes the parts of writing research papers.

### Implementation

In this stage, the product of the instrument self-writing assessment will be tested for the validity of its contents by two thesis supervisors as validators. From the validation results, the product developed will be used between appraisers by involving two validator lecturers to assess ten student writing samples. Next, this product is applied to user trials of 30 PGSD S1 Study Program students who take thesis courses in 2022/2023. The results will be processed to describe the applicability and assessment of users on the product being developed.

**Evaluation**

In this stage of evaluation of the process and research results from the results of tests for validity, reliability, and application of the product. Then, the results are used to improve further the self-writing assessment instrument developed until it reaches the criteria worthy of use.

**3. Results and Discussion**

**Results**

The self-assessment writing instrument is developed as a complete guide to writing research papers with an assessment as a learning approach. Assessment as learning is an assessment concept intended as learning for the assessor by learning from mistakes and improving. Applying this concept, the right instrument is needed to conduct a self-writing assessment so that the assessment process can be carried out appropriately. The results of this assessment can then be used as a foothold by the author to make improvements to his writing. An example of the assessment rubric is shown in Table 2.

The developed instrument is compiled complete with a guide to writing each part of the research paper with the aim of self-assessment carried out by students or users who have a guide for them to make improvements to their writing. The instrument compiled consists of ten chapters: (a) writing research papers, (b) self-writing assessment, (c) writing introductions, (d) writing literature reviews, (e) research methods, (f) writing research results, (g) writing discussions, (h) writing conclusions & suggestions, (i) writing reference lists, (j) writing abstracts. The final product link of the self-writing assessment instrument can be accessed at <https://bit.um.ac.id/inSWA>, as shown in Figure 1.

**Table 2. Self-Writing Assessment Rubric**

Introduction/Background Section Substance	Notes
Reveals phenomena/overviews related to the topic under study as an introduction	.....
Reveal specific phenomena/images related to the topic under study, more specifically	.....
Reveals theoretical foundations (juridical foundations) related to the topic under study	.....
Etc.	

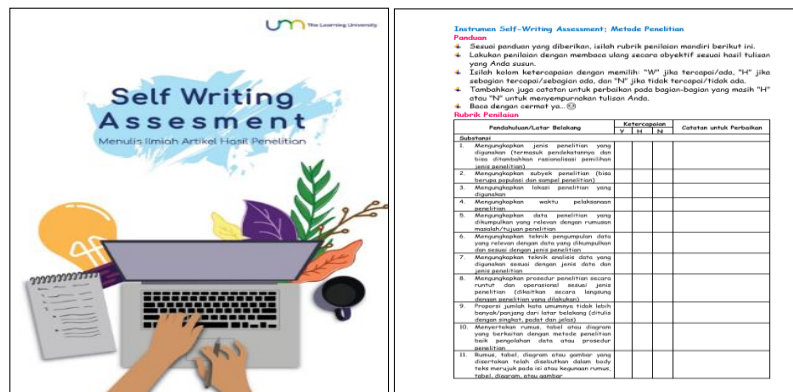


Figure 1. Product Display

Meeting the criteria of the assessment instrument, the product developed is tested for the validity of its contents by the expert referring to the four aspects of the assessment consisting of the material, objectives, readability, and practicality of the instrument with the results shown in Table 3.

The results of the content validity test showed that the instrument was suitable for use (93.75%) with several notes of improvement, including (a) it was necessary to add a flow in the assessment process in writing, (b) there was a need for further explanation if the instrument was used for research with different methods, (c) the presentation of writing tips needed to be more condensed explanations, and (d) relevant examples were included so that they could guide students to make improvements to the process and results wrote it. These four suggestions are accommodated for the final refinement of the self-writing assessment instrument product. Next, the criterion that the assessment instrument must also have is the reliability of the results when used between raters/appraisers/users. The test results can be observed in Table 4, which shows that the self-writing assessment instrument product developed is reliable for use with a Kappa coefficient of 0.649.

**Table 3. Validity of the Content of the Assessment Instrument**

Aspects	Indicator	Average Score
Material	Suitability of the scope of the assessment material for scientific writing	5
	Compatibility of assessment content with scientific writing LO (learning outcome)	5
	Conformity of the assessment material with the theory/concept of the writing process approach	5
	Conformity of writing assessment instrument with assessment as a learning approach	5
Goal	Accuracy of assessment indicators with the construct of assessment of the results of scientific writing	4
	Accuracy of assessment indicators with constructs of the content of the research paper	5
	Accuracy of assessment procedures with the concept of self-assessment	5
	Accuracy of writing guides with the theory of writing scientific papers	3
Readability	Clarity of font size and format used	5
	Accuracy of linguistic rules (effective sentences and explanatory)	5
	Accuracy of graphical and informative presentation (tables, graphs, etc.)	3
	Clarity of presentation systematics (sequential and continuous material)	3
Practicality	Ease of assessment instrument format to fill in and use	4
	Ease of instruments for use in editing/revising processes	4
	Accuracy of instrument presentation size to be stored/carried	5
	Clarity of assessment guidelines to guide users	5
Total		75
Percentage		93.75

**Table 4. Reliability Interrater of Assessment Instruments**

	Value	Asymptotic Standard Error	Approximate Tb	Approximate Significance
The measure of Agreement Kappa	0.649	0.212	2.935	0.003
N of Valid Cases	10			

The self-writing assessment instrument product is applied in student guidance in three meetings with details of activities: (a) the first meeting is held to provide an explanation of the procedure for using the instrument with all students assessing the background part of a paper provided (the reliability tests that have been previously presented); (b) the second meeting is

conducted self-assessment practices on the background and assessment methods of the research papers that have been prepared (students involved in user tests are still in the process of preparing research designs to the research methods section); (c) the third meeting shall be held to discuss the results of the self-assessment and conduct self-guidance for improvement of the compiled section of the research results paper as shown in Figure 2.

From the trial application of the product, the results were obtained that 65% of students involved in the user test could use the instrument well and could make writing improvements from the results independently. However, some students have difficulty conducting self-assessments and need further assistance and explanation. Some of the notes obtained as a further improvement to the product are to add guidance in filling out rubrics and adding special marks to the intended section in the writing of the paper section, for example, for examples of paragraph coherence or drafting of the writing framework. From this application, student assessment of the self-writing assessment instrument developed with assessment indicators and the results in Table 5 are also obtained. From the assessment results, it can be stated that the average outcome of the assessment from users shows that the self-writing assessment instrument product is suitable for use (91.6%). Further analysis of the assessment results of the twelve indicators presented an assessment of each aspect, including accuracy, readability, practicality, and completeness, with the results in Figure 3.



Figure 2. Mentoring Process with Self-Writing Assessment Instrument

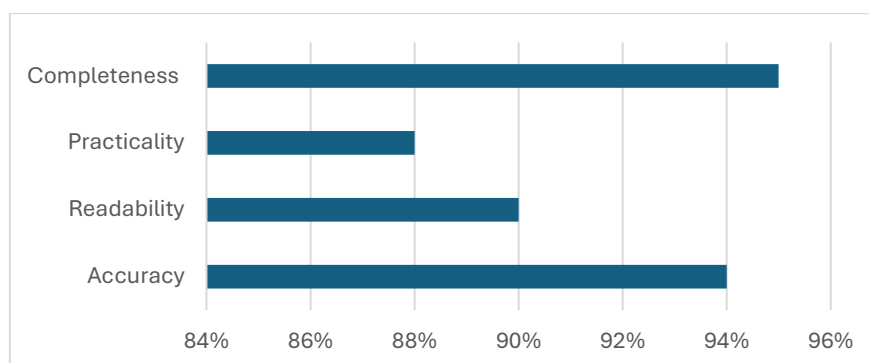


Figure 3. Product Assessment of Self-Assessment Instruments for Users

**Table 4. User ratings for Instrument Self-Writing Assessment**

Indicators	Average Score
The whole instrument presents an assessment rubric/research paper section	5
The instrument appropriately presents the discussion of each section	5
The instrument presents assessments and discussions systematically	4
Instruments can be used for self-assessment	4

The instrument is equipped with a discussion of the results for improvement	5
Instruments can be used for paper refinement (revision/editing)	5
The instrument clearly outlines each assessment indicator	4
The instrument is equipped with a clear guide to the assessment procedure	5
The instrument is equipped with a convenient charging format	4
Instruments are presented in easy-to-understand language	4
Instruments are presented in an easy-to-use/file format	5
The instrument is presented in a writing format (font & graphic) that supports	5
Total	55
Percentage	91.6%

### Discussion

Self-writing assessment instruments have been developed and equipped with rubrics and writing guides. This completeness refers to assessment as learning, which emphasizes that the assessment is part of the student learning process (Abdel Latif, 2021; Xiang et al., 2022). In this learning process, the self-writing assessment instrument is used with a self-assessment rubric to analyze and evaluate the written work compiled. During this process, it is believed that in the assessment as a learning approach, individuals can standardize the writing process and results by marking and making improvements to parts that are not quite right (Chen & Zhang, 2019).

In its application, self-writing assessment is applied during the post-writing stage after the writing prototype exists. Writing itself is a complex language skill regarding the process and results. Writing skills are formed through prewriting, drafting, and post-writing stages with revising, editing, and publishing (Abas & Abd Aziz, 2018; Rini & Cahyanto, 2020). Writing involves receptive activity by reading or listening to input and processing information so that ideas or thoughts are produced productively, especially in writing research papers that have many scientific conventions in writing each part.

In practice, individuals need to assess each part of the research paper to evaluate their writing skills. For example, writing the background part requires systematic organization of ideas to build rationalization for conducting research. On the other hand, in writing the methods section, it is necessary to organize the completeness of the procedures and technicalities of data collection to its presentation and other parts. Through this self-writing assessment process, students can recognize the location of their mistakes and make improvements and self-development in writing (Fahimi & Rahimi, 2015). This process causes the individual to be skilled in organizing his ideas, mastering grammar, and thinking creatively and innovatively (Hoehn & Lewandowski, 2020).

The writing process that requires personal skills also requires good learning independence from students. The findings at the time of application of the instrument suggest that this product can be used by students with good learning independence in the sense of those who desire to learn. Indeed, self-assessment has been widely studied as a strategic solution to involve student activity in regulating their learning or self-regulated learning (Brandmo et al., 2020; Panadero et al., 2017).

Furthermore, the results showed an autoregressive relationship between self-assessment and self-reflection, strengthening feedback, and critical thinking (Yan, 2020). This process is then widely researched, showing a significant influence on developing writing skills by learning by practicing (Mazloomi & Khabiri, 2018; Nielsen, 2021).

### 4. Conclusion

This research shows that the results of developing self-writing assessment instruments have been carried out with valid, reliable, and applicable results to guide students to write research results. Its validity was tested with the validity of the contents, with valid results reaching 93.75%. Reliability was tested with an interrater, with a score of 0.649 referring to the Kappa coefficient. Its application shows the result that the self-writing assessment instrument can be used by students (91.6%), although its application requires prerequisites for learning independence from students. This application is also shown by assessing students as users regarding the accuracy, practicality, readability, and completeness of assessment instruments for writing research results. Although in terms of the impact of its effectiveness, it still needs to be tested again in depth.

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