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# DEVELOPMENT OF RESEARCH-BASED TEACHING MATERIALS TO INCREASE INDEPENDENT LEARNING FOR STUDENTS MAJORING IN INDONESIAN LANGUAGE AND LITERATURE

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**Abstract.** This research aims to develop research-based teaching materials to increase independent learning for students majoring in Indonesian language and literature. In this research, the development model used as a reference is using the 4D model. The 4D model is a learning device development model and an abbreviation for Define, Design, Development and Disseminate developed by Thiagarajan (1974). Based on the results of the feasibility test assessment that was carried out on research-based teaching materials, an assessment of the feasibility of the material was 88.98%, the feasibility of the media was 85.46%, and the student response test was 90.5%. The three of them got an average score of 88.31%. So, based on the percentage obtained by the three, the research-based teaching materials developed have met the requirements and received the status of appropriate teaching materials to be used as teaching materials for courses in writing scientific articles and publications in the Indonesian Language and Literature Education Study Program. An assessment of the student article writing component was obtained with an overall average score of 81.17 in the "very good" assessment category. This proves the success of research-based teaching materials in supporting independent learners for students majoring in Indonesian language and literature.

Keywords**:** research-based teaching materials; independent learners; Indonesian language and literature students

## I. INTRODUCTION

The COVID-19 virus outbreak has passed. In line with that, everyone is forced to be able to adapt to new habits in all walks of life, including education (Nababan et al., 2022). Ferri et al. (2020) confirmed that apart from the negative impacts faced, there are lessons and benefits as there is an acceleration in building digital learning infrastructure at every level of education. Online learning during the COVID-19 pandemic should be able to form responsible student personalities, thereby giving birth to learning independence (Kadir et al., 2022). The main driving factor is the learning environment. Of course, the learning environment has a very strong impact on the practice process and teaching outcomes (Makransky et al., 2016).

The term independent learner was introduced in 1973 by Moore, M. G. in an article entitled Toward a theory of independent learning and teaching (Chen & Willits, 1999). Post-COVID-19, research related to analyzing, measuring and developing independent learning is once again busy appearing in periodic publications (Peters et al., 2022), both international scientific journals and national scale scientific journals. Independent learner is equated with the term MBKM *(Merdeka Belajar Kampus Merdeka)* or Independent Campus Learning Program which was launched by the Ministry of Education and Culture in 2020 (Fuadi & Irdalisa, 2022). Among them, Kamalia & Andriansyah (2021) describe students' perceptions of the technical, process and evaluation of independent learning in the Independent Learning program. The research findings stated that there were negative perceptions from respondents regarding independent campus learning which was held online. Sumbawati et al. (2020) researched student independence in learning foreign languages in online learning. In this research, the term independent teacher refers to the character of a learner who actively participates in a series of learning activities such as attending lectures, discussing, researching, participating in scientific forums and reading books. Independent learning or free learning is a learning activity where the learning goals and how to achieve those goals are

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determined by the learner themselves (Moore, 1973). Therefore, students are said to have learning independence if they have their own will to learn, are able to solve problems in the learning process, have responsibility in the learning process, and have self-confidence in every learning process.

Various research results have shown that efforts to shape students to become strong independent learners are important. This is important because it turns out that independent learners have a direct relationship with students' commitment to doing lecture assignments. Febriani et al. (2022) also found that learning independence is influenced by digital literacy skills. Blended learning also has a role in increasing learning independence (Hasudungan et al., 2022).

The development of independent learners can also be created through the creation of teaching materials that are able to support students' active learning activities. Related research was conducted by (Hung, 2015). From these various findings, the teaching materials that have been developed and used to increase student learning independence have not been developed based on a research-based activity approach, especially in the Department of Indonesian Language and Literature. Even though research is the heart of a university. Thus, students who are accustomed to conducting research will influence their critical thinking skills and be able to create independent learners. Toom et al. (2010) emphasize that implementation of research-based learning must be strengthened for learning that produces prospective teachers.

Developing research-based teaching materials for students has a number of urgency and significant benefits (Kortz & van der Hoeven Kraft, 2016). Research-based teaching materials help improve the quality of learning by providing up-to-date and relevant information in students' fields of study. Students will be able to develop critical and analytical research skills, which are indispensable in the academic and professional world. Students who are familiar with the latest research methods and understanding in their field of study will have a competitive advantage in the ever-changing job market (Zhuang et al., 1999). Research-based teaching materials can stimulate students' interest and motivation because they are involved in solving real problems and exploring relevant topics (Beringer, 2007). Students will learn to question, analyze, and evaluate information in a more critical way, which is an important skill in decision making. Research-based teaching materials enable contextual learning, where theoretical concepts are applied in practical situations, helping students link theory with real-world applications (Laurens et al., 2017). Involving students in research allows them to gain a deeper understanding of a particular topic, as they are actively involved in data collection and analysis. Involving students in research allows them to gain a deeper understanding of a particular topic (Nicol et al., 2014), as they are actively involved in data collection and analysis. Involving students in research allows them to gain a deeper understanding of a particular topic, as they are actively involved in data collection and analysis. Involving students in research allows them to gain a deeper understanding of a particular topic, as they are actively involved in data collection and analysis (Van den Beemt et al., 2020). Research-based teaching materials create opportunities for collaboration between students and lecturers, between fellow students, or even with researchers or professionals outside the academic environment. By presenting research-based teaching materials, universities or educational institutions can play a key role in preparing students to become lifelong learners and leaders in various fields. Developing research-based teaching materials for students is a very positive step because it can improve the quality of learning and build research skills in students (Khwanchai et al., 2017).

The various research findings presented previously increasingly emphasize the importance of research-based learning. The success of implementing research-based learning is greatly influenced by various supporting learning tools, one of which is teaching materials. Therefore, this research intends to develop research-based teaching materials to increase independent learning for students majoring in Indonesian language and literature.

## II. METHODS

In this research, the development model used as a reference is using the 4D model. The 4D model is a learning device development model and an abbreviation for Define, Design, Development and Disseminate developed by Thiagarajan (Afrizon et al., 2019; Nurmala, 2021). This 4D model was then prepared based on this model by considering their actual experience in the field in designing, developing, evaluating and disseminating training materials for educators in the world of education (Ramdani, 2020; Nurbayti et al., 2023; Fatimah et al., 2023). The research will be conducted at the Indonesian Language and Literature Education Study Program, Faculty of Languages and Arts, Medan State University. The research design can be seen in the following flow chart.

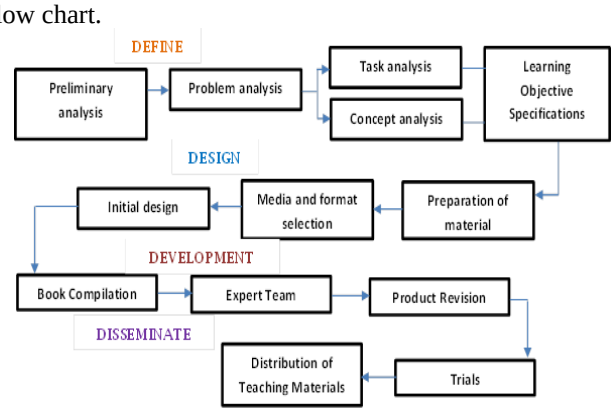


Fig 1. Flow of Research Stages

Carrying out Research and Development (R&D) research, researchers will use two types of data collected, namely quantitative data, namely data that is processed using numerical formulation and quantitative data obtained from

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expert validation scores in stages. The data collection techniques in this research are:

a) Questionnaire.

A questionnaire is a data collection technique that is carried out by giving respondents several questions or written statements during the needs analysis and evaluation process (Saragih & Prawiyata, 2023).

b) Validation Instrument.

The validation instrument consists of material experts and media experts. The material validation instrument is in the form of a validation questionnaire regarding appropriateness of content, appropriateness of presentation and appropriateness of language. Meanwhile, the media validation instrument is in the form of a validation questionnaire related to graphics (Arizona & Tambusai, 2023). These two instruments function to provide input and validate the feasibility in developing research-based teaching materials to support independent learners in students majoring in Indonesian language and literature.

Data analysis in this research is descriptive qualitative. After all the data has been collected, the final stage is data analysis with reference to the scoring criteria in the validation instrument data analysis Patrick et al. (2011) which can be seen in table I below:

Table I
Expert Assessment Criteria

| Assessment criteria | Symbol |
|---|---|
| Very Good (SB) | 4 |
| Good (B) | 3 |
| Less (K) | 2 |
| Very Poor (SK) | 1 |

The data will then be analyzed to determine the quality of the material, the quality of the linguistic aspects, and the quality of the design with the following steps:

a. Calculate the average score of each aspect assessed with the equation:

$$\overline{X}_{\square} = \frac{\sum x}{N}$$

Information :

$\overline{X}_{\square}$: Average score of assessments by experts

$\sum x$: Total score

$N$: Number of items/sub components

$= \frac{research\ results\ scores}{ideal\ maximum\ score}$ x 100%

b. Calculate the eligibility percentage with the equation:

$Percentage = \frac{research\ results\ scores}{ideal\ maximum\ score}$ x 100%

c. Determine the average score of the assessment team's answers then convert them using Table II answer categories (Arikunto, 2018)

Table II
Percentage Of Expert Assessments

| Percentage (%) | Category |
|---|---|
| $75 \leq x \leq 100$ | Very good |
| $50 \leq x < 75$ | Good |
| $25 \leq x < 50$ | Not good |
| $0 \leq x < 25$ | Very Not Good |

If the criteria meet the Very Good (SB) criteria and nothing needs to be revised, then research-based teaching materials that support independent learners in the course of writing scientific articles and publications receive valid status to be suitable for use as teaching materials in courses on writing scientific articles and publications student majoring in Indonesian language and literature.

## III. Results And Discussion

**Independent Learner**

Independent learning is a learning strategy that provides students with the widest possible opportunity to determine, plan the learning process, search for learning resources, use learning resources and carry out selected activities to achieve their learning goals (Mozzon-McPherson, 2007). Every student is required to be independently responsible in their learning process (Snodin, 2013).

Learning with an independent learning system has its own characteristics that are different from education with other systems (Moore, 1973). The main characteristic of education with an independent learning system is that the responsibility for controlling and directing one's own learning is in the hands of the learner (Garrison, 1997). Other general characteristics, according to the Institute for Distance Education of Maryland University (Dillon & Walsh, 1992), education with an independent learning system has the following characteristics:

a) frees students from having to be in one place at a certain time; b) providing various materials including detailed study guides and syllabi as well as access to all faculty members (education providers) who provide guidance services, answer questions asked by students, and evaluate students' work.

From the characteristics above, we can understand the advantages and disadvantages of the independent learning system in the learning process for students, including; (1) it is possible to develop optimal student learning flexibility; (2) allows learning interactions to occur from anywhere and at any time; (3) reach a wide range of students. Meanwhile, the weakness of independent learning is that the frequency of direct contact between fellow students and with resource persons is very minimal and opportunities for students to socialize with other students are very limited. In order to overcome this weakness, it can be solved by establishing a learning environment that can create and develop a "sense of community" among students even though they are geographically separated.

So Independent learning is a way of learning that gives students a greater degree of freedom, responsibility and authority in planning and carrying out their learning

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activities (Glennon, 2008). So, what is really needed in this system is how to raise students' motivation and enthusiasm for learning in order to achieve success because one of the reasons why students fail to achieve their goals is the lack of proper and correct use of this system (Brophy, 1983).

Independent learning, if planned properly, will encourage a more active approach to learning (Whitebread et al., 2005). Students will adopt a deeper rather than superficial approach to learning and seek understanding of the subject rather than simply reproducing what they have learned. To encourage students to become independent learners, at the beginning of the lecture it is very important to provide an explanation regarding the introduction of the study guide and the expected learning outcomes so that students can plan their own path (Schmidt et al., 2011; Almusharraf, 2020). Because it is in line with the theory of independent learning, it is necessary to develop teaching materials that can guide students in independent learning, in this case research-based teaching materials for courses in writing scientific articles and publications.

**Development of Teaching Materials for Writing Scientific Articles and Publications Based on Research Activities**

This research and development produced a teaching material product in the form of a textbook for courses in writing scientific articles and publications carried out at the Indonesian Language and Literature Education Study Program to see the suitability of teaching materials that had gone through the validation stage by experts. This development uses the 4-D model from Thiagarajan which goes through 4 stages, namely: (1) Definition, (2) Design, (3) Development, (4) Dissemination (Mulyati et al., 2022).

Table III
Student Needs Questionnaire

| No | Question | Answer choices |
|---|---|---|
| **Interest to learn** | | |
| **1** | Do you like the course Writing Scientific Articles and Publications? | Like very much |
| | | Like |
| | | Just like it |
| **2** | What do you think about the Writing Scientific Articles and Publications course? | Very important |
| | | Important |
| | | Quite important |
| **Learning Resources** | | |
| **3** | Where do you usually get books as learning resources? | Lecturer recommended book |
| | | Buy/Borrow |
| | | Rarely uses books |
| **4** | What learning resources do you use in the course Writing Scientific Articles and Publications? | Book |
| | | Journal Article |
| | | Supporting (youtube, papers, modules, etc.) |
| **Quality of Learning Resources** | | |
| **5** | Are the learning resources you are currently using accompanied by examples of applications for writing articles and journal publications? | There isn't any |
| | | Only partially |
| | | The whole thing |
| **6** | Are the learning resources currently used in accordance with your needs in article writing and publication courses? | Not appropriate |
| | | Already appropriate |
| **Student Learning Difficulties** | | |
| **7** | Are you having difficulty learning the material in article writing and publication courses? | Yes, it's difficult |
| | | No trouble |
| **8** | What causes you to have difficulty learning the material in article writing and publication courses? | The presentation of material and examples of writing articles are not well understood |
| | | Book availability is limited |
| | | Online learning |
| | | Very low understanding of writing articles and publications |
| **Required Teaching Materials** | | |
| **9** | I need teaching materials that can facilitate student learning independently and actively and productively? | No need |
| | | Yes, need it |
| **10** | Do you agree that research-based teaching materials should be developed to support independent learners in the Writing Scientific Articles and Publications courses? | Don't agree |
| | | Agree |

Based on the results of a questionnaire distributed to students, data was obtained regarding students' needs for teaching materials in courses on writing scientific articles and publications for students majoring in Indonesian language and literature. The factors that describe students' needs for teaching materials in the course of writing scientific articles and publications are explained as follows.

**1) Interest in Learning**

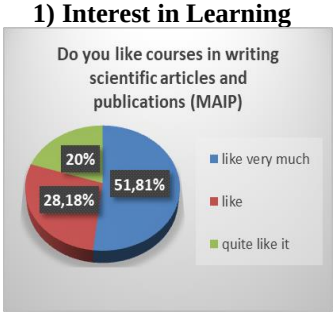


Fig. 2 Percentage of Students Like MAIP

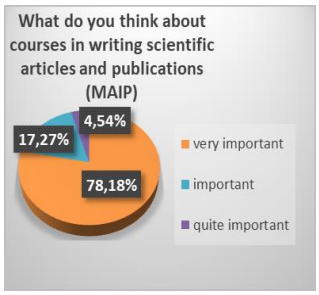


Fig. 3 Student Opinions about MAIP Courses

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Based on Figure 2, it is known that the percentage of students who really like the course of writing scientific articles and publications is 51.81%, and the rest like 28.18%, quite like 20%. In general, based on Figure 2, it can be concluded that students have an interest in studying courses in writing scientific articles and publications.

The course on writing scientific articles and publications aims to guide Indonesian Language and Literature Education Study Program students to produce various scientific papers based on research activities regarding the study of Indonesian language and literature and their learning. Based on Figure 3, 78.18% of students said that the course of writing scientific articles and publications was very important to study. By looking at the importance of writing scientific articles and publications, it is hoped that this course will become a popular course so that students majoring in Indonesian language and literature will be interested in focusing on studying writing scientific articles and journal publications.


Fig. 4 Use of Student Books


Fig. 5 Student Learning Resources

Based on Figure 4, it is known that 54.54% of students use books recommended by lecturers, 25.45% buy/borrow books, and 20% rarely use books. Based on Figure 5, learning sources other than books used by students include journal articles with the largest percentage, namely 48.18%. Apart from that, there are also YouTube, papers and modules that students use as learning resources. Based on this information, the use of teaching materials for courses cannot yet be used optimally, so students' learning resources are still different with not the same understanding. So it is hoped that teaching materials can be developed which will become the main learning source for students.

**2) Student Learning Difficulties**

Based on the results of a survey of student learning difficulties, it is known that 80.90% of students have difficulty learning the material in article writing and publication courses. Several factors cause students to have difficulty learning the material in article writing and publication courses, influenced by the presentation of material and examples of writing articles that are not well understood, 35.45%, limited availability of books 24.54%, online learning 17.27%, and understanding which is very low regarding writing articles and publications 22.72%. Therefore, it is important for lecturers to create solutions to student problems related to learning difficulties in article writing and publication courses. This is presented in the diagram below.

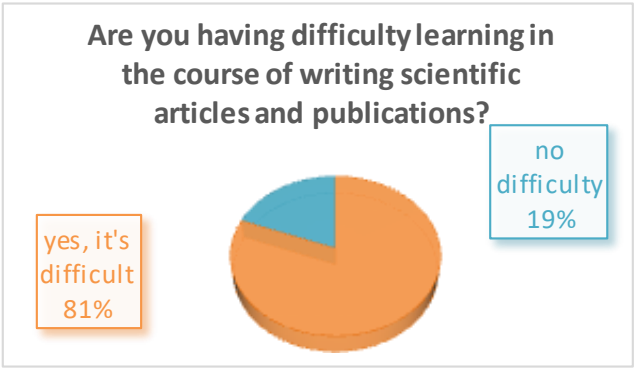


Fig. 6 Student Learning Difficulties Diagram

**3) Required Teaching Materials**

Based on the results of a questionnaire regarding the analysis of the need for teaching materials for courses in writing scientific articles and publications, information was obtained that 93.63% of students needed teaching materials that could facilitate students' independent, active and productive learning, and 96.36% agreed that teaching materials should be developed. research-based supports independent learners in the Writing Scientific Articles and Publications courses. This is presented in the diagram below.


Fig. 7 Diagrams of Student Teaching

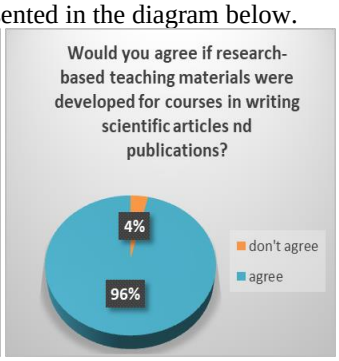


Fig. 8 Needs for Research Based

**4) Concept Analysis**

At this stage, the activities carried out are conducting interviews with educators and analyzing the Semester Lecture Plan (RPS) to identify the main concepts being taught, as well as looking in detail at the concepts that must be taught. In this stage, the main parts have been designed and arranged sequentially and in accordance with the Core Competencies of the Course. The following is a concept analysis design for research-based teaching materials to support independent learners in the Writing Scientific Articles and Publications courses.

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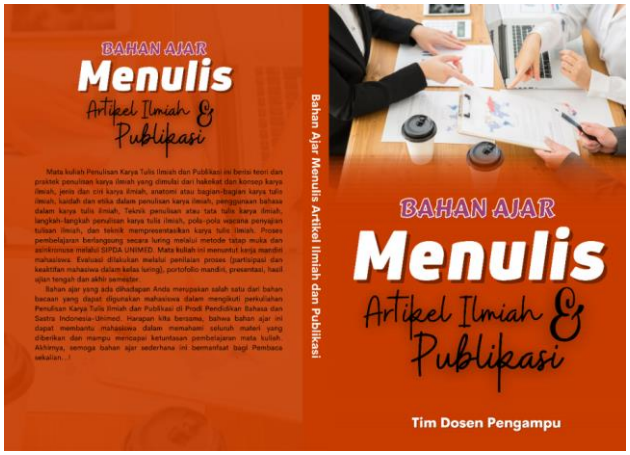


Fig. 9 Front Cover View of Teaching Materials

**Application of Teaching Materials for Writing Scientific Articles and Publications Based on Research Activities**

The application of teaching materials for courses in writing scientific articles and publications based on research activities was carried out to see the initial development of the success of teaching materials applied to students of the Indonesian Language and Literature Education Study Program. In this case, students carry out mini research on the topics of language, literature and teaching. Overall, students have been able to produce scientific articles in accordance with research procedures. Below are presented the results of the assessment of the scientific article writing project for Indonesian Language and Literature Education Study Program students as a form of implementation of the teaching materials developed.

Results of the assessment of the project for writing scientific articles as a result of research by students of the Indonesian Language and Literature Education Study Program in implementing teaching materials for Writing Scientific Articles and Publications. Overall, students have achieved the article writing assessment components in the "good" and "very good" categories. This shows that the teaching materials developed have been successfully implemented concretely in an effort to improve the scientific article writing skills of students majoring in Indonesian language and literature in the Writing Scientific Articles and Publications course. The following is a diagram of the results of students' article writing project scores which are classified into three parts, namely; the initial section which includes the article identity, abstract, and keywords; the body of the article which includes an introduction, theoretical study, methods and discussion results; The final section includes a conclusion and bibliography.

Fig. 10 Diagram of the Average Value of the Initial Part of the Article

Figure 10 illustrates the quality of writing the first part of the article which includes the article identity, abstract and keywords. Overall, the components of the initial part of the article meet the criteria for writing a good article. The identity of the article obtained an average value of 83.71. This shows that students can formulate a research title with the criteria for a good, clear and interesting research title and shows the content and scope of the problem discussed in the article. Writing abstracts and keywords received scores of 80.05 and 83.65. In this case, the student's abstract writing is still lower than the component value of the initial part of the article. Students have been able to summarize the article as a whole, but have not been able to modify interesting sentences to represent the entire scientific article. Meanwhile, the keywords written by students represent ideas, concepts or variables in research articles.

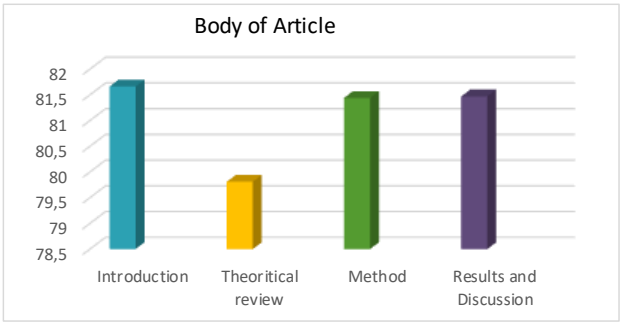
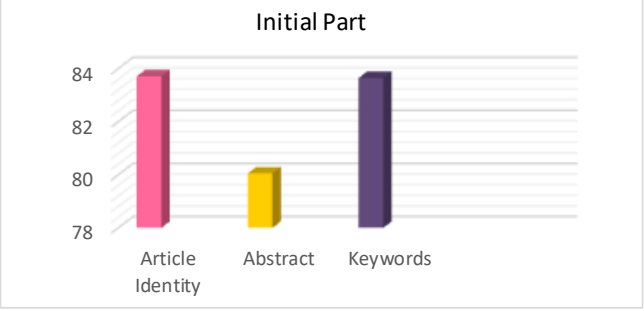


Fig. 11 Diagram of Average Body Values Articles

In diagram 11 the average score obtained for the body of the article, it is known that in the scientific article writing project as a result of research, students have been able to write well the background, research context, urgency of the problem, research objectives, relevant previous research as proven by obtaining a preliminary score of 81.66. However, in order to collect previous research as material for consideration and a basis for research, students are still not able to optimally write down relevant research. Then the writing of theoretical studies in this case received the lowest score, it can be seen that the average score only reached 79.86, this is indicated because students are still not precise and accurate in choosing theory as a basis for research, and still quote a lot of previous theories in over 5 years, so it is necessary to increase students' understanding in choosing appropriate and accurate theories as reference material in the research carried out.

The average values obtained for the method and results of the discussion were respectively 81.44 and 81.47. This shows that students can use research methods appropriately which include methods/approaches, location, time and stages of research, as well as data collection and analysis techniques. So, this is in line with students' success in writing research results and discussions according to the established methods. In this case, students are able to analyze discussions/solve problems based on empirical data



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and interpret them using logical predictions. However, regarding the strength and sharpness of the analysis, students have not been able to explain the research results specifically and in depth. So it is necessary to pay attention to aspects of student understanding in analyzing research results comprehensively.

Fig. 12 Average Value Charts at the End of the Article

The assessment of the article writing project at the end includes an assessment of the conclusion and bibliography. By obtaining an average score of 80.05, students are good at writing conclusions by answering the expected research objectives. However, in writing bibliography, the average student obtained a score of 78.66. This is because many students still do not correctly write bibliography according to the rules and cite references from more than the last 5 years. Based on several assessments of student article writing components, an overall average score of 81.17 was obtained in the "very good" assessment category. So, it can be concluded that the implementation of research-based teaching materials to support independent learners developed in the Writing Scientific Articles and Publications course has succeeded in improving students' skills in conducting research and being able to write published scientific articles. This is proven by several students who have succeeded in publishing their research results in several national journals. The following is a list of student scientific articles that have been successfully published in national journals.

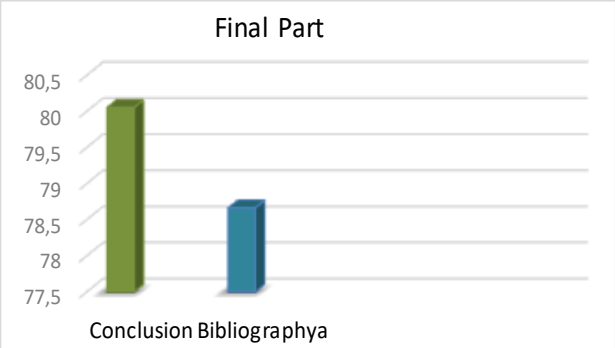


Table IV
List Of Student Publications In Writing Scientific Articles And Publications Courses

| No | Article Publication Title | Journal Name |
|---|---|---|
| **1** | *Dampak Perundungan di Dunia Pendidikan Studi Kasus SMPN 69 Jakarta* (The Impact of Bullying in the World of Education Case Study of SMPN 69 Jakarta) | Jurnal Pendidikan Karakter Unggul; Vol.1 No. 2 (2023) |
| **2** | *Analisis Pengunaan Kata Keji dalam Film Bumi Manusia: Kajian Sosiolinguistik* (Analysis of the Use of the Word Violent in the Film Earth of Mankind: A Sociolinguistic Study) | Jurnal Insan Pendidikan dan Sosial Humaniora; Vol.1 No. 2 (2023) |
| **3** | *Eksistensi Perempuan dalam Novel Laut Bercerita Karya Leila S. Chudori: Kajian Feminisme Eksistensialis dan Relevansinya sebagai Materi Ajar Sastra Indonesia di SMA* (The Existence of Women in the Novel Laut Tells by Leila S. Chudori: A Study of Existentialist Feminism and Its Relevance as Teaching Material for Indonesian Literature in High Schools) | PROTATIS; Vol.2 No. 1 (2023) |
| **4** | *Analisis Gaya Bahasa Personifikasi Terhadap Novel "Orang-Orang Biasa" Karya Andrea Hirata* (Analysis of Personification Language Style in the Novel "Ordinary People" by Andrea Hirata) | Lencana: Jurnal Inovasi Ilmu Pendidikan; Vol. 1 No.3 (2023) |
| **5** | *Analisis Tindak Tutur Direktif Dalam Film "Nanti Kita Cerita Tentang Hari Ini"* (Analysis of Directive Speech Acts in the Film "Later We'll Tell You About Today") | Garuda: Jurnal Pendidikan Kewarganegaraan dan Filsafat; Vol.1 No. 2 (2023) |
| **6** | *Perspektif Peran Perempuan dalam Film Demi Nama Baik Kampus: Analisis Wacana Kritis Model Sara Mills* (Perspective on the Role of Women in Films for the Good Name of the Campus: Critical Discourse Analysis of the Sara Mills Model) | Garuda: Jurnal Pendidikan Kewarganegaraan dan Filsafat; Vol.1 No. 1 (2023) |
| **7** | *Analisis Konflik Sosial Dalam Cerpen "Cinta Lelaki* | Prosiding Seminar Nasional |

| | | |
|---|---|---|
| | *Biasa (Asma Nadia - True Story)"* (Analysis of Social Conflict in the Short Story "Love of an Ordinary Man (Asma Nadia - True Story)") | Pendidikan, Bahasa, Sastra, Seni, dan Budaya; Jul 3, 2023; Vol. 2 No.1 |
| **8** | *Analisis Prinsip Kesantunan Berbahasa Pada Novel "Kata" Karya Rintik Sedu & Implementasinya Terhadap Pembelajaran Bahasa Indonesia* (Analysis of the Principles of Politeness in the Novel "Kata" by Rintik Sedu & Their Implementation in Indonesian Language Learning) | Prosiding Seminar Nasional Pendidikan, Bahasa, Sastra, Seni, dan Budaya; Jul 3, 2023; Vol. 2 No.1 |
| **9** | *Analisis Nilai Moral Dan Konsep Kepahlawanan Dalam Film "3 Nafas Likas" Karya Rako Prijanto* (Analysis of Moral Values and the Concept of Heroism in the Film "3 Nafas Likas" by Rako Prijanto) | Prosiding Seminar Nasional Pendidikan, Bahasa, Sastra, Seni, dan Budaya; Jul 3, 2023; Vol. 2 No.1 |
| **10** | *Analisis Nilai Sosial Pada Film "Sejuta Sayang Untuknya" Karya Wiraputra Basri* (Analysis of Social Values in the Film "A Million Loves for Him" by Wiraputra Basri) | Prosiding Seminar Nasional Pendidikan, Bahasa, Sastra, Seni, dan Budaya; Jul 3, 2023; Vol. 2 No.1 |

## IV. CONCLUSIONS

Based on the results of the research and development carried out, several conclusions can be drawn below. Research and Development of Research-Based Teaching Materials Supporting Independent Learners in the Course of Writing Scientific Articles and Publications which have been developed using the Research and Development (R&D) research model with a 4-D model consisting of four stages of development, define, design, development and disseminate. The research steps were carried out by; (a) define; analyzing the urgency and need, concepts, evaluation, learning specifications that will be applied in teaching materials for courses in writing scientific articles and research-based publications, (b) design; designing the framework for teaching materials, designing systematics and materials, as well as designing instruments for validating teaching materials, (c) development; develop by creating a textbook which is then carried out by testing the feasibility/validation of the developed teaching material product with material expert validators and media experts as well as testing student responses, and (d) disseminate; disseminating conventional and digital products with print and online based teaching materials that have been created by researchers in courses on writing scientific articles and publications. b) The results of this research and development produce teaching material products based on research activities for courses in writing scientific articles and publications for students majoring in Indonesian language and literature. Based on the results of the feasibility test assessment that was carried out on research-based teaching materials, an assessment of the feasibility of the material was 88.98%, the feasibility of the media was 85.46%, and the student response test was 90.5%. The three of them got an average score of 88.31%. So, based on the percentage obtained by the three, the research-based teaching materials developed have met the requirements and received the status of appropriate teaching materials to be used as teaching materials for courses in writing scientific articles and publications in the Indonesian Language and Literature Education Study Program. c) Teaching materials that have been declared to have passed validation are then implemented for students with a project-based assessment of writing scientific articles. Several student article writing component assessments were obtained with an overall average score of 81.17 in the "very good" assessment category. This proves the success of research-based teaching materials in supporting students' independent learning in the Writing Scientific Articles and Publications courses. So that at the final stage, teaching materials that have been declared to have passed the feasibility test and implementation of use are distributed to see the implementation/application of the teaching materials as an initial development of the success of the teaching materials applied to students of the Indonesian Language and Literature Education Study Program. Based on the results of research and development, the development of research-based teaching materials to support independent learners in the course of writing scientific articles and publications is expected to arouse students' enthusiasm for conducting research as an exercise in dealing with problems that must be solved with logical and systematic thinking. It is also hoped that the development of this material can be used optimally by lecturers and students in lecture activities within the Indonesian Language and Literature Education Study Program. For this reason, researchers provide several suggestions as follows; (1) Other or future researchers are expected to be able to develop teaching materials by integrating learning methods or models to produce meaningful and quality learning for students. (2) it is hoped that lecturers and students will be able to utilize teaching materials based on research activities for courses in writing scientific articles and publications which are expected to be one of the efforts to improve the quality of learning within the Indonesian Language and Literature Education Study Program, Universitas Negeri Medan.

The research give significant practical implications and theoretical contributions within the realm of Indonesian language and literature education. On a practical level, the development of research-based teaching materials tailored for students in this discipline holds immense value for

educators and learners alike. By providing structured resources that promote independent learning, the research equips educators with tools to enhance teaching practices and engage students more effectively. This practical significance extends to student learning outcomes, as the implementation of these materials has the potential to improve research skills, critical thinking abilities, and academic writing proficiency among students. Moreover, the emphasis on collaboration between students, lecturers, and external professionals fosters a culture of lifelong learning and prepares students to emerge as leaders in their respective fields.

From a theoretical standpoint, the research contributes to educational theory by integrating the 4D model into the development of teaching materials. This theoretical framework underscores the importance of a structured approach in designing educational resources, thereby enriching the discourse on instructional design and curriculum development. Furthermore, the focus on research-based learning in the study advances theoretical understanding of effective teaching strategies in higher education. By emphasizing the integration of practical research activities into the curriculum to enhance student engagement and learning outcomes, the research sets a theoretical foundation for future investigations in pedagogical practices. The theoretical implications of this research extend beyond the specific context of Indonesian language and literature education, offering insights that can inform educational practices in diverse academic disciplines. In essence, the research not only offers practical benefits for educators and students but also enriches the theoretical landscape of educational design and research-based learning, paving the way for further advancements in teaching methodologies and student development.

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