

INDONESIAN SCIENTIFIC WRITING BY USING COMMUNICATIVE APPROACH

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Abstract

The aim of writing this article is to describe communicative approach in learning Indonesian scientific writing. This article consist of implementing Indonesian scientific writing by using communicative approach. The method used in this research is research and development. The technique used in collecting the data are observation, interview, theoretical foundation, and teaching in the class and out of the class. The data analysis technique used consist of two approaches, qualitative and quantitative approach. The result effectiveness test shows that means of class that uses communicative approach is 66, meanwhile class that uses conventional approach is 54. The students activity of model class is more than 91% are active and high motivation in learning, meanwhile the non model class the students activity less than 70%. Based on the data, it can be concluded that implementing of the communicative approach in learning Indonesian scientific writing are able to improve the students' process and learning achievement of Indonesian scientific writing.

Keywords: scientific writing, communicative approach.

1. INTRODUCTION

Based on the observation of learning Indonesian scientific writing in the subject of Guides Students in Scientific Papers (Panduan Karya Tulis Ilmiah), found some problems. These problems are the students can not write a scientific paper or thesis in Indonesian well. Many sentences they write are not coherent and hard to understand. In addition to students still lack a disclosure in writing, they also have difficulty expressing their ideas orally in formal situations such as in the discussion, lecture, or in speech, on the other hand, almost every student complain if assigned by lecturer to write papers, paper (working paper), thesis, or other scientific articles. Although they are complain, the assignment was made by students but works is not met expectations.

A quality instructional materials is done by a series of development activities. The development of instructional materials according to Romiszowki (1986:22) should be considered from four aspect, namely (1) academic aspects, (2) social aspects, (3) recreational aspects, and (4) aspects of personality development. It means that the instructional material developed can give the impression to the user that the teaching materials to meet their needs both academic, social, recreational or individual needs.

The definition of teaching materials (instructional materials) is content specification detail that give guidance to teachers in content intensity and attention which fulfill certain content or pedagogical tasks. Wright (1987:5) says that instructional materials to assist the achievement of the purpose of the syllabus, and assist the role of teachers and learners in the teaching and learning process.

Instructional materials refer to everything that is used by faculty and students to facilitate learning, to improve the knowledge and experience of language. While the development of instructional materials (Tomlison, 2007:2) is what done by the writers, teacher or students to provide a variety of input sources that are designed to enhance the experience of learning the language. Richards (1995:262) propose the design development of teaching materials include (a) the development of objectives, (b) development of

syllabus, (c) organizing instructional materials into learning unit, (d) development of structures per unit, and (e) unit observation.

The characteristics of instructional materials draft can be seen from the format of syllabus. On the other hand, the format of a syllabus can be seen from the draft of instructional materials. Based on the format of syllabus, instructional materials developed in form of linear, modular, cyclic, matrix, and based on the story (Olshtain, 1986:51-63). This formats are the format of the organization and development format of instructional material sequences. The development of instructional materials also can follow the type of syllabus. The discussion of the characteristics (types) of instructional materials overlap with the type of syllabus. It caused of both syllabus and instructional material have similarity.

Based on the explanation above, it can be stated that instructional materials are basically more emphasis on academic aspect, strategic of instructional materials organizing, costs, and learning strategies to enhance the potential of all learners in the study or in other words a set of material systematically arranged so as to create an atmosphere that enable learners to learn.

The concept of limits on scientific writing, in English often termed scientific or scientific writing including writing a scientific report is defined by McCrimmon (1994:6) states that writing is paper work, but also an opportunity to say something about yourself, communicate ideas to people another, may even learn something that is not yet known. According to Arnaudet and Barret (1984:188) scientific paper is one type of academic writing. Hairston (1986:4000) reflects the effort of writing scientific papers and impartial to find the right answers and solutions that could be implemented to a question or a problem. Syamsudin AR (2011:2), said scientific articles , the writings that explore issues in the fields of science disciplines specific to the environment is limited. Furthermore, Siswoyo (1982:28) scientific work must be based on the data , should not be based on opinion or interpretation of the researcher. Meanwhile Sudjiman and Sugono (1991:1-3) state that the scientific work is a compilation of papers that are based on scientific studies. Preparation of scientific papers is preceded by research libraries and/or field research.

Based on the explanation above, it can be argued that scientific writing is writing that is produced through the scientific method or procedure or article extracted from the results of the study. A literary work or scientific value when following the procedures and techniques of writing that refers to the academic tradition , while the scientific method is a step -by-step procedures or strategies and writing based on scientific approaches.

In terms of language, it can be said that scientific writing has three characteristics, namely: (1) to be precise and singular meaning, not lit reason or ambiguous meanings; (2) should precisely define each term, the nature, and the sense used, so as not to cause confusion or doubt; and (3) should be short, based on the language of economics. In addition, other requirements for an article to be categorized a scientific work should be able to clearly communicate the message to the reader. These requirements include: (a) systematically present the objective facts; (b) written in precise, accurate, honest, and non-fiction; (c) must be arranged systematically; (d) presents a series of causation that encourage the reader to draw conclusions; (e) contains the view that with the support and verification based on a hypothesis; (f) written in good faith; and (g) is essentially expository.

Each learning teaching materials should be able to associate with the lives of the students who studied objectively students , so students are encouraged to do the learning with sincerely. One approach is to be applied lecturer communicative approach. Understanding the communicative approach proposed J.B. Heaton (1988:19), namely, an approach that emphasizes how language is used in communication. This approach emphasizes the purpose and attention to the reading audience. In the communicative approach because the authors did write activity purely for the purpose of communication. A paper made not only intended for the reader to understand the writing, but more than that for the reader to do something according to the understanding of the text read.

Kinneavy (1980:19) there are four components in communication in general, namely: (1) the speaker, (2) readers, (3) object, and (4) sign/ language. Communication occurs when the writer/encoder is something (reality) by using a means of communication language (language signals) delivered/received by readers.

Writing is a process of thinking and a communicative activity. Writing activities require absolute scientific studies, whereas writing is scientific communication that describes the processes of science. There is reasoning, object, and purpose. His form could be two, namely: written and oral.

Richards and Rodgers (2001:161), the communicative approach has a number of characteristics, namely the principle that language is a system to express the meaning, the main function of language is to allow

interaction and communication, language structure reflects its communicative function and usability, and the last they found the main elements of the language is not only the look of grammar and structure but also the function and meaning of communicative discourse.

The concept of communicative approach to language learning in harmony. Learning the language according to Hall and Hewings (2001:9) focuses on language learning communicative function, focus on meaningful tasks, instead of studying grammar or vocabulary, but it makes the task through a realistic analysis of the situation, relating to real life, functioning group activities, and creating a pleasant situation, safe, and conducive.

With the implementation of various activities emphasizing real learning, reading scientific papers, direct communication, and other activities, language learning becomes more contextual and communicative. This is in accordance with the opinion of Freeman (2000:121) put more emphasis on the communicative approach contextual dimensions using language in a variety of situations. Communication takes place in an infinite variety of situations. Success in a particular role depends on one's understanding of the context and experience.

Referring to the above description, it can be argued that scientific writing has a great potential in the development of reasoning to students. Learning to write scientific fact is to learn how to think logically. By learning to write science we study the system or rules about writing techniques with a good systematics in accordance with the provisions of the academic. Based on this, Indonesian lecturers have a significant role in the development of scientific writing skills of students.

Problems in the classroom shows that the concept of scientific writing is not yet fully understood by the Indonesian lecturers to lecturers have not been able to implement a communicative approach to student well. The implementation of the communicative approach is merely a concept, has not been implemented correctly by the lecturer. Learning Indonesian scientific writing based on the communicative approach has the potential to develop ways of reasoning or ideas/ideas to students have not done well. Lecturers have not been able to design learning Indonesian scientific writing is creative, innovative, fun, challenging, and meaningful to the lives of students.

Based on these problems, the model needs to be developed teaching materials Indonesian scientific writing based on the communicative approach that is able to improve and develop the competencies of students, especially in science writing includes cognitive and affective abilities and students understand the concept of scientific writing which include: the structure of scientific writing, the types of scientific writing, scientific reasoning, sentence structure, paragraph development, choice of words (diction) and can apply them in the writing of scientific papers he/she wrote.

This study aims to produce a model of scientific writing teaching materials Indonesian based communicative approach in teaching and learning in higher education as well as to analyze the effectiveness of the model.

2. METHOD

design The study is a research and development (Research and Development) using the model of Borg and Gall (2003:571) that are tailored to the needs of the field. Broadly speaking, the research and development carried out consists of four stages, namely: (a) preliminary research, (b) planning model development, (c) validation, evaluation, revision of the model, and (d) implementation of the model.

In the development of the learning model, validated by peers, experts, field trials, and test the effectiveness of the model developed. The technique of collecting data through observation, interviews, classroom implementation, and review of documents. Data on the needs of the learning model, the data source is a lecturer and students. Data were collected with a needs analysis survey techniques, documentation, and interviews. Data collected by the instrument needs analysis questionnaire, interview, and documentation sheets. Learning model feasibility test data were collected through questionnaires. The instrument used was a questionnaire with Likert scale. Writing learning outcomes data sourced from the Indonesian scientific learning process in the classroom. Data were collected through a pretest, observation learning implementation, and posttest.

Analysis of the data in this study using two approaches, namely qualitative and quantitative approaches. Formulation of qualitative data analysis in the form of descriptions or depictions of the effectiveness of the model developed scientific writing. Quantitative approach was used to compare the level of effectiveness of the application of Indonesian scientific writing models based on the communicative approach in the experimental class and the control class. Learning outcomes data were analyzed using t-test.

Referring to the above description, the question can be posed in this study are as follows :

1. How does the model of scientific writing teaching materials Indonesian based on theoretical study and analysis needs?
2. Eligibility How to write a scientific model of teaching materials Indonesian based communicative approach in teaching and learning from the viewpoint of experts and users?
3. How effective model of teaching materials Indonesian scientific writing based on the communicative approach to scientific writing skills of students?

3. RESULTS

Based on the theoretical study and analysis of requirements, models developed teaching materials Indonesian scientific writing based on the communicative approach. This approach is consistent with the characteristics of the students, ie: able to motivate student learning, encourage student creativity, challenging, and meaningful to the lives of students.

Based on data collected from the field trials, it can be argued that the model of scientific writing teaching materials Indonesian based communicative approach is able to increase the activity and scientific writing skills as well as the student is able to instill scientific reasoning to students. Seen from the point of view of experts, the model is very suitable to be used as a learning model of scientific writing in college. Seen from the point of view of the user , these models qualify as the model used in the classroom . Here are presented the results of research based on the research questions.

a. Model Form of Scientific Writing Teaching Materials Indonesian Based Communicative Approach Based on theoretical and Needs Analysis Study

Learning model developed in this research and development is a model of scientific writing teaching materials prepared under Indonesian field conditions. Based on the analysis of field conditions and the needs of students and faculty, developed learning model that has the following characteristics: (1) The process of learning to write science students need to be controlled as a whole, which includes (a) The structure of scientific writing (title, preface, introduction, problem formulation, the discussion of methods and results, conclusions and suggestions, references, and citations procedures); (b) The types of scientific writing; (c) sentence (sentence structure, types of sentences, and the effectiveness of the sentence); (d) scientific reasoning (inductive, deductive, and inductive- deductive); (e) the development of paragraphs (paragraphs framework, the characteristics of the paragraphs, paragraphs function, various paragraphs, and the terms of the formation of a paragraph); and (f) the selection of the word (denotation and connotation, special words and common words, concrete words and abstract words, figure of speech, and vagueness, obsolescence and ambiguity). (2) The process of learning the Indonesian scientific writing can motivate students to move. (3) The process of learning to stimulate student creativity. (4) The learning process is carried out inside and outside the classroom. (5) Utilization of a variety of learning resources including the library. (6) Learning which gives students the concept of what is learned can be meaningful to their lives. (7) Learning which gives an interesting atmosphere, fun, and challenging, and (8) that includes a learning process and learning outcomes that include cognitive, affective, and psychomotor.

Based on the above characteristics, a model set of teaching materials Indonesian scientific writing based on the communicative approach. The design model was developed based on a needs analysis field. The model was developed using a communicative approach. Here is presented a chart developed learning model.

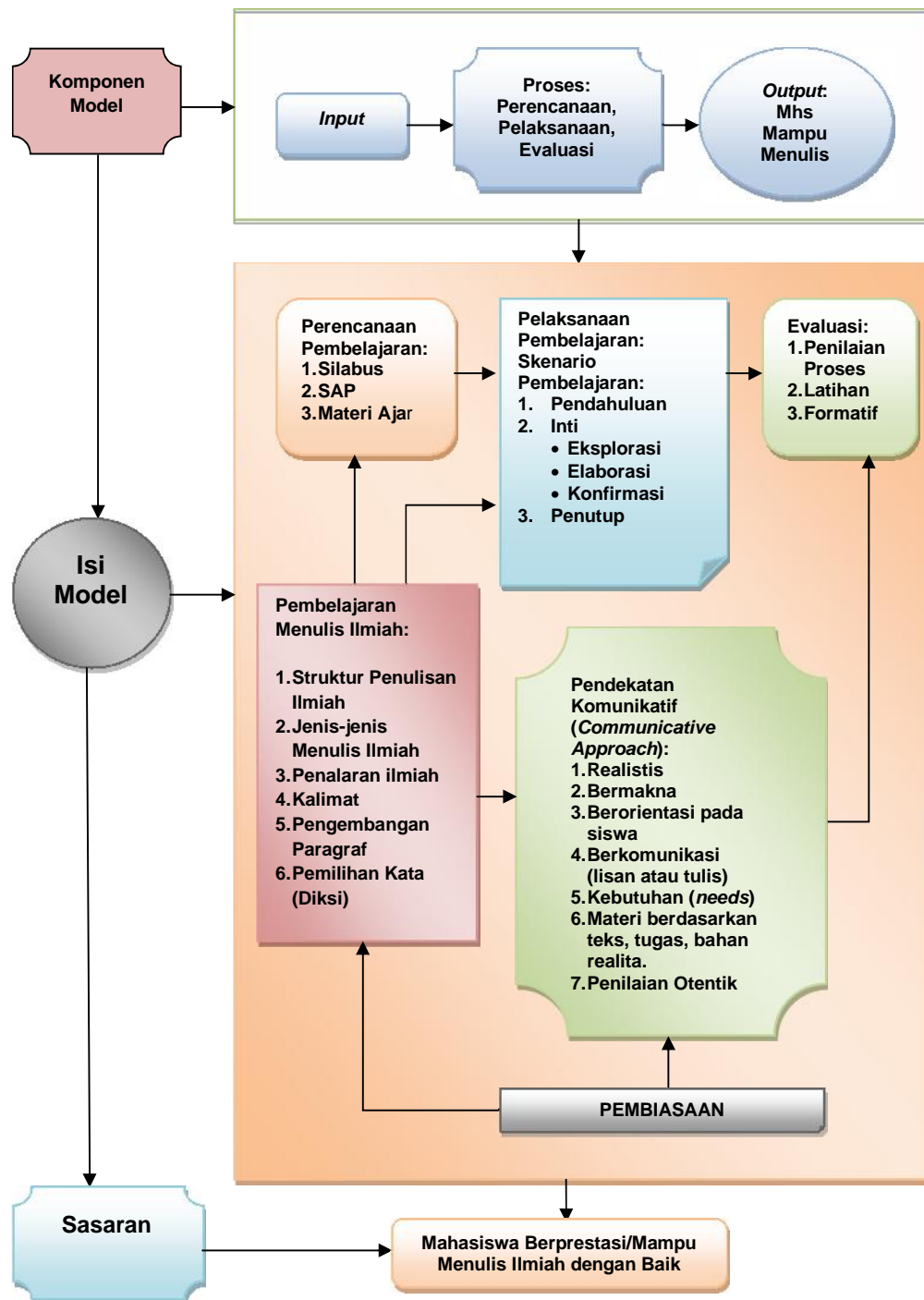


Figure 1: Model of Scientific Writing Teaching Materials Indonesian Based on the Communicative Approach

Based on the chart above, there are three components of the learning process, which is the input, the learning process, and output. Inputs, such as students who are the subject of learning. Learning process, ie teaching and learning activities to achieve expected competencies. The process of learning is done through three stages, namely: (a) create lesson plans that consist of a syllabus, lecture program unit (SAP), and developing teaching materials, (b) the learning process in the classroom by applying the learning plan has been prepared, the syllabus, SAP, and teaching materials, and (c) evaluation, which is the process of measuring, assessing to determine how much students master the learning materials, and how far their lessons successfully lecturer. This type of evaluation is conducted, among others: the evaluation process, task, and formative. Output, ie the output or students after participating in the learning process. The

success seen from the output of student learning. The target output is capable of outstanding students and scientific writing well.

The chart above shows the learning path based Indonesian scientific writing communicative approach. In the chart of the characteristics outlined in the syllabus integrated communicative approach, the lecturing shows unit (SAP), teaching materials, learning process, which includes assessment and evaluation processes, tasks, and formative, as well as through habituation. In the chart also described the use of communicative approach to learning. The learning process using a communicative approach with seven elements, namely: a realistic, meaningful, student-oriented, communication (oral or written), needs (needs), material is based: text, assignments, and material reality, and authentic assessment. Communicative approach emphasizes student activity, contextual material, fun, and meaningful learning associate. The concept of meaningful learning is expected to grow in the way of logical thinking of students. More conducive for learning, not boring, and meaningful, should be varied with different approaches and techniques that are affiliated with the communicative approach.

b. Feasibility Model of Scientific Writing Teaching Materials Indonesian Based Communicative Approach in Teaching and Learning from Experts and Users Perspective

To obtain a model of scientific writing teaching materials Indonesian based communicative approach is feasible, test the feasibility of the model. Due diligence is done in various ways, ie validation by peers, limited testing, validation specialists, expanded testing, and test of effectiveness.

A peer validation is done by soliciting input directly to peer through filling a questionnaire and interviews. Peers provide feedback that the communicative approach in scientific writing should be integrated in all stages of learning. Integrating communicative approach is necessary to start from lesson planning, instructional implementation, and assessment of learning outcomes. Limited trials conducted in one class.

Based on the limited test results obtained by the average value of grade 60 and students who did the activity as much as 85%. This result is quite increased compared to the ability of students before using the model developed.

Assessment conducted by a team of expert feasibility model of charging instruments and input from experts. Results indicate that the expert team that developed the model very well. Overall the results of the assessment team of experts shows the average value of 85.50. The score includes the excellent category.

Extensive trials showed average values obtained at 66.00 and an overall student activity by 91.69%. These results indicate that the developed learning model is able to increase the activity and scientific writingskills of students.

c. Effectiveness Models of Indonesian Scientific Writing Instructional Materials Using Communicative Approach Towards Students' Scientific Writing Ability in University of Mathla'ul Anwar Banten

Test of effectiveness conducted in University of Mathla'ul Anwar Banten, FKIP Dikstrasiada programs study with different grade categories. The data of effectiveness test results in the following table.

Table 1. Effectiveness Model Test Results Scientific Writing Teaching Materials Indonesian Based Communicative Approach

No.	University	Group Class	N	Means of Pre Test	Lowest Score of Post Test	Highest Score of Post Test	Means of Post Test
1.	University of Mathla'ul Anwar Banten, FKIP Dikstrasiada Program Study	Exspermental	30	55,00	35,00	92,00	66,00
		Control	30	42,00	28,00	83,00	54,00

Based on the analysis of the application of the model of instructional materials Indonesian scientific writing is done, shows the average final grade in a class that uses a model of scientific writing is based on the communicative approach Indonesian higher than the average value in the classroom using other models.

Based on the test results on the effectiveness of the model of Diksatrasiada program study showed the following results. Test results on the effectiveness of the experimental class value of 55.00 pretest, posttest score of 92.00, and an increase in the average value of 37.00 pretest - posttest. The results of the average value in the control class is 54.00. These results demonstrate the value of the students in the experimental class is higher than in the control class. Based on t-test results obtained the following data.

Table 2. Different test results mean scientific writing based on the communicative approach, the result is higher when compared with the conventional approach to scientific writing

Group	Experimental	Control
Mean	66	54
Standar Deviation	14,61	14,75
t-test	3,18	
t-tabel	2,042	

Based on the different test results, showing that t is higher than t table. It can be concluded that there are significant differences between the classes that use the model developed by the class that uses a model commonly used by professors in the classroom. Classes that use a model of Indonesian scientific writing based communicative approach to learning better results than the other models that use the class. It can be concluded that the model of scientific writing teaching materials based on the communicative approach has a high effectiveness in the implementation of learning in the classroom.

Based on the activities of students in the class, showing that classroom learning by using the model developed higher activity compared to the class that does not use the model. Here are the data presented in the classroom observations.

Table 3. Activities Students in Classroom Learning Using Communicative Approach Model on Scientific Writing Teaching Materials and Classroom Using Conventional Model

No.	Aspect	Persentage	
		Classes that use model developed	Classes that do not use the model developed
1.	Participation of students in learning	95,40 %	75,00 %
2.	Asking questions	90,00 %	70,00 %
3.	Creativity in doing tasks	93,25 %	60,50 %
4.	Earnestness in doing tasks	92,75 %	73,00 %
5.	Participation in group	94,40 %	68,25 %
6.	Responses to lecturer and others students' question	90,50 %	71,25 %
7.	Doing discussion	85,50 %	72,50 %
8.	Presenting the result	91,75 %	65,25 %
Total		733,55 %	555,75 %
Average/mean		91,69 %	69,46%

Judging from the student activities in the classroom that uses the model of Indonesian scientific writing based communicative approach, more than 90 % of students active and motivated in learning. While the students in the control class activity less than 70 %. This means that the activity of students in a class learning model developed higher compared with students in the classroom using other models.

4. DISCUSSION

Referring to the results which have been presented above, it can be argued that the model developed is able to motivate students and to improve student learning processes and outcomes. Testing has been done on the effectiveness of the education department of Languages, Literature and District (Diksatrasiada) showed the class that uses the model developed better learning outcomes as compared to classes that use other models (conventional). The achievement of these values in the experimental class was 66.00 and 54.00 in the control classes. These results indicate that the class is studying the application of the model of Indonesian scientific writing with a communicative approach to better student results. In addition, students'

learning activities increased. This is demonstrated by the observations that recorded 91 % more students who are taught using a model of Indonesian scientific writing instructional materials with actively communicative approaches activity.

The findings obtained during the research and development is that students learn to write scientific Indonesian models based on the communicative approach is more motivated and better learning outcomes than students who learn to use other models. The findings further planting exercise is scientific writing and comprehension needs to be done continuously and require considerable time. Communicative approach in scientific writing should be integrated in the syllabus, lecture events unit, teaching materials and learning process through the implementation of specific and measurable communicative approach described ranging from the syllabus, SAP, teaching materials, and the learning process. The implementation of the communicative approach in the classroom needs to be combined with other approaches associated with the communicative approach.

Limitations of the research are: (1) In preparing the questionnaire instrument allows still no item questionnaire that is less revealing indicators of research that could affect the accuracy of the research results obtained. Based on this, the preparation of the instruments necessary to complete, scalable, and according to the research indicator. (2) An assessment of the activities of students in the learning process in the classroom requires a scientific writing in depth observations and a long time so it needs the appropriate measurement tools.

5. CONCLUSION

Based on the research results, findings, and discussion can be concluded: First, the model is a model of learning developed teaching materials Indonesian scientific writing based on the communicative approach. The model consists of a syllabus, lecture program unit (SAP), and teaching materials in which the design has been integrated communicative approach. Second, from the perspective of experts and users, a model of scientific writing teaching materials Indonesian using the communicative approach has met the eligibility requirements as a model of Indonesian scientific writing instructional materials at the FKIP of University Mathla'ul Anwar Banten. Third, empirical data on the effectiveness of the model of teaching/instructional materials Indonesian scientific writing based on the communicative approach developed showed an increase in better learning outcomes as compared with conventional models. It can be seen from the data model of the effectiveness of the test results to be a place on campus that test the effectiveness, value class model developed using the average value of the class and student engagement is higher than in a class that does not use the model developed. Fourth, the model substantially Indonesian scientific writing teaching materials based communicative approach is developed based on a needs analysis, which is based on the needs of students and faculty. The development model of learning based on the needs of the student or student lets users learn more active, participatory, and motivated students on benefit they learned so that the learning process is more meaningful.

The advantages of this model is that learning can be carried out inside and outside the classroom, using existing sources and media, relevant, easy implementation, as well as useful and meaningful to the lives of students.

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