DILEMMAS STORIES LEARNING MODEL IN INDONESIAN LANGUAGE LEARNING TO IMPROVE STUDENTS' SCIENTIFIC WRITING SKILLS

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ABSTRACT
This study aimed to evaluate the Indonesian language learning process in terms of the scientific writing abilities of senior high school students and find solutions to these learning problems. This type of research is a mixed method. Samples were obtained randomly from three senior high schools in Indonesia with 272 students as subjects. The process of gathering data involved watching teaching aids. Observing the learning process and evaluating the students' scientific writing skills utilizing instrument assessments that have been Aiken formula verified and concept validated using Confirmatory Factor Analysis (CFA) with the Linear Structural Model (Lisrel). Observational data on curricular papers and learning process observations are reported descriptively. Comparatively, statistics on learning outcomes in the form of students' writing skills are examined by estimating the proportion of pupils who fulfill traditionally established standards. The results showed that the students' scientific writing skills needed to meet the classical achievements. The evaluation results showed that a new, more effective learning strategy was required to improve students' scientific writing skills by developing learning models. Developing the inquiry learning model of local wisdom dilemmas stories (ILWDS) is recommended as an alternative to making learning effective and efficient.
Keywords: local wisdom dilemmas stories; scientific writing

INTRODUCTION

Indonesian language learning is directed to improve students' ability to communicate properly and correctly. That is done orally and in writing, fostering an appreciation of the students' work. Scientific writing consists of the ability to solve problems (Rios et al., 2020). As a result, scientific writing is seen as more than just an understanding of scientific knowledge; it can also improve the ability to think critically, be responsible, and solve problems in everyday life. Scientific writing skills must be trained in students, but in reality, students tend to focus on memorizing material or assignments at a lower cognitive level. So far, previous studies have yet to provide comprehensive data on the scientific writing profile of high school students learning Indonesian.

Furthermore, in the 21st century, humans are required to be able to follow developments in the field of science and technology. In the twenty-first century, students must thus acquire a variety of talents. The four main categories of 21st-century skills are information literacy, creativity and invention, communication, cooperation, problem-solving, metacognition, and critical thinking. (Faraniza, 2021; van Laar et al., 2020). Students in the 21st century need to possess scientific writing skills to examine a particular problem using scientific principles. Students with good writing skills will be accustomed to expressing thoughts and ideas using a series of excellent and correct written language (Selvaraj & Aziz, 2019).

Scientific writing skills enable students to distinguish some scientific facts from much information, investigate and understand something in depth, and interpret quantitative data and scientific information (Kankam, 2019). Scientific writing is the result of writing work that discusses specific problems in terms of scientific knowledge (Sembiante et al., 2020).

In the framework of offering scientific writing, Indonesian language education is currently reforming or modifying the previous education system. Learning scientific writing is intended to improve students' scientific writing skills based on the quality of the process and learning outcomes in making decisions and solving problems. The preparation with standard principles welcomes scientific writing and uses the scientific method (Humphreys, 2004). The benchmark for each scientific work can be seen from the several heights of the scientific work, which have three main aspects, namely (1) the substantial aspect of the content, (2) methodological aspects, and (3) linguistic aspects. The substantial aspect concerns the content of scientific work, namely the scientific information contained therein. Is the scientific information classified as new, actual, urgent, and has long or short helpful value? The methodological aspect concerns the procedure and method of compiling scientific work, both research methods if the scientific work is the result of a research or writing method. Linguistic aspects include structural grammar, diction, and spelling. Three substantial, methodological, and linguistic aspects are related and cannot be separated (Alsalem et al., 2018).

The low scientific writing ability of students in Indonesia requires students to learn even better according to what is needed in the 21st century, including in Indonesian language learning classes. Topalli & Cagiltay (2018) explain that students can practice independently solving problems and solving problems through scientific writing skills. A study by Darmuki et al. (2021) and Kurniadi (2017) on Indonesian Language Education reveals that students' scientific writing competence in learning Indonesian could be higher.

This study examines the competence of scientific writing skills in the Indonesian language curriculum and evaluates the learning process and effectiveness. Through literature study, research also analyzes and describes new alternative solutions to solve problems in the field so that learning is more effective and efficient. The results of this study can be used as a reference in further research, namely the development of a new learning model design and empirical testing of its validity, efficiency, and effectiveness in improving student's writing skills.

METHOD

This qualitative descriptive research uses a survey research design. The respondents of this study were 53 English lecturers (28 females and 25 males) from ten universities in five cities throughout Indonesia. The respondents were selected using a purposive sampling technique applying inclusion criteria. Meanwhile, the demographic description of the participants in this study based on the duration of work is as follows: under 5 years, 6 lecturers (9.4%); 5-10 years, 23 lecturers (43.4%); 11 to n15 years, 8 lecturers (16%); 15-20 years, 6 lecturers (11.3%); and more than 20 years, 10 lecturers (18.9%).

This research is a mixed method with qualitative data from observations of curriculum documents and their implementation process in learning Indonesian. Meanwhile, quantitative data is in the form of a score that describes the achievement of goals in the curriculum regarding the ability to write scientifically in senior high school students.

The sample for this research was randomly selected and obtained from three high school seniors in Pekalongan Regency, Indonesia. The total subjects of this study were 272 class XI students, each representing an upper-type school (high/favorite class), medium-type, and lower-type school.

The qualitative instruments used in this study were observation guidelines and documentation records related to the data found. The quantitative data instrument is in the form of a description test to measure scientific writing ability, which consists of 8 items consisting of 8 indicators, namely (1) writing background, (2) writing problem formulation, (3) writing objectives, (4) writing quotations and cite references, (5) write scientific procedures, (6) write findings, (7) write arguments, (8) writing conclusions and suggestions. The instrument was validated by five experts who calculated it using the Aiken formula and obtained a mean score of 0.84.

Construct validity test with Confirmatory Factor Analysis (CFA) using Linear Structural Model (Lisrel). The p-value $\geq \alpha$, value $\alpha = 0.05$, the goodness of fit indices (GFI) = 0.98, then the value of adjusted goodness of appropriate index (AGFI) = 0.95, and the root mean square error of approximation (RMSEA) = 0.04 so that the results of the expert test and the construct of the test instrument are declared valid. Data on the description and implementation of the curriculum were described qualitatively and then strengthened by quantitative data; namely, the results of scientific writing skills tests were analyzed using formulas

$$Scientific\ Writing\ Skills\ (SWS) = \frac{Score}{Maximum\ Score}\ X\ 100\%$$

The importance of scientific writing abilities for learning Indonesian is further classified into numerous areas based on (Purwanto, 2016), as shown in Table 1.

Table 1. Scientific Writing Skills Category

Score	Category
Very good	≥ 85
Good	$75 \leq SWS < 85$
Enough	$60 \leq SWS < 75$
not enough	< 60

Students are said to be complete if they get a minimum writing skill score of 75. Data on students' scientific writing skills is then calculated by the percentage of students who complete using the formula.

$$Completeness = \frac{Number\ of\ student\ who\ complated}{Total\ number\ of\ students}\ X\ 100$$

The results of the completeness calculation are then categorized as presented in Table 2.

Table 2. Learning Completeness Category

Completeness Percentage	Category
≥ 85	High
$65 \leq C < 85$	Medium
< 65	Low

RESULTS AND DISCUSSIONS

Result

The results of field studies on implementing the senior high school curriculum in Pekalongan show that scientific writing skills are one of the main goals in learning achievement. However, interviews with 15 teachers found that through their observations in the learning process, students' scientific writing skills needed to be maximized and improved. Teachers have applied the inquiry model in their learning using multiple methods. The methods used by the teacher include (1) the lecture method, (2) question and answer, (3) assignment, (4) demonstration, (5) discussion, and (6) mind mapping. In addition to methods, teachers have used various media, such as direct media in the surrounding environment, teaching aids in single images, and serial images. However, the method used by the teacher has yet to be effective in improving scientific writing skills. Students still need help finding ideas, formulating problems, writing relevant titles, expressing ideas, and choosing good and correct diction and writing.

The difficulties experienced by educators are that they find it challenging to develop students' courage to write, and educators need to find a suitable model for learning to write scientifically. Students need help starting and ending sentences in their scientific work because they need help assembling sentences. Students use the same opening sentence in writing. Students often use the words "like," "then," "continue," "after that," and "finally," which tend to be repeated to connect sentences so that the writing is monotonous and boring. Based on the data, the teacher has allowed students to ask questions to improve their scientific writing skills.

Implementing the inquiry learning paradigm frequently encounters challenges, such as the difficulty of students generating problems based on the learning objectives. Students tend to formulate problems that are not the main problem, so solving them is inappropriate. That causes inefficient management of learning time and low achievement of learning objectives. The students' scientific writing ability test showed that the average score of students' writing skills was 69.64, with classical completeness at 60.71% or in the low category. This result still needs to meet the targeted achievement of classical completeness, which is 85% of students. Data on scientific writing skills completeness per indicator is presented in Figure 1.
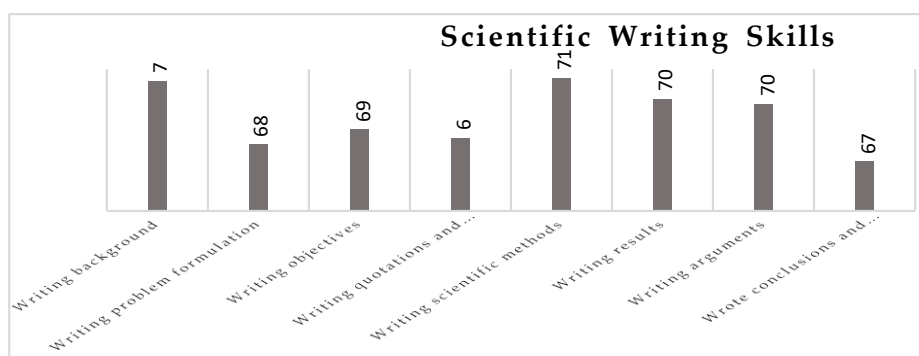

Figure 1. Achievement of Mastery of Scientific Writing Per Indicator

Figure 1 shows that the completeness of each indicator of scientific writing skills is in the medium category. Students' scientific writing ability in learning Indonesian still needs to improve. Previous research by Adnan et al. (2021) produced similar results. The average score for scientific writing in learning Indonesian is 31.34 out of 100.

Gormally is the subject of the questions (2012). Which emphasizes (1) students' ability to identify scientific opinions, (2) search practical literature, (3) evaluate the use and misuse of information and understand the elements of research design, (4) create graphs, (5) interpret graphs, (6) solve problems, (7) understand and interpret basic statistics, and carry out information, (8) predictions, and (9) concluding.

Discussion

The low proportion of pupils who can reason as the foundation for students' scientific writing abilities must be included in the teacher's responsibility in implementing learning in the classroom. This chart depicts the fluctuation in the percentage of students who can answer questions about inconsistent scientific writing. Based on these findings, it is reasonable to conclude that the teacher's ability to assist learning in the classroom substantially affects a student's capacity to answer scientific questions. Linguistics (including Indonesian) is studied by scientists using specific scientific techniques and attitudes. For example, the procedure involves experiments, but the scientific mindset is objective and honest in data collection and analysis.

Scientists make discoveries utilizing scientific methods and attitudes, which might take the shape of facts or ideas, and these discoveries are known as natural products (Ali & Ulker, 2020; Cetin & Eymur, 2017; Erenler & Cetin, 2019; Hamsina, 2020; Palupi et al., 2020). The study's outcomes suggest that studying Indonesian in high school is unrelated to real-life circumstances. Learning seldom begins with genuine challenges. Instead, learning Indonesian in schools tends to diverge from the subject matter rather than from the main purpose of learning Indonesian and the demands of students.

That is consistent with the findings of Armawan & Yuliati (2017). They discovered that students' general grasp of inquiry techniques needs to be improved by their inability to organize, evaluate, and comprehend quantitative data and scientific information. To improve students' abilities in scientific writing, the ILWDS learning model must be applied in class. Students' scientific Writing skills still require work to be enhanced when learning with the inquiry methodology. (Ali & Ulker, 2020; Cetin & Eymur, 2017; Erenler & Cetin, 2019; Hamsina, 2020; Palupi et al., 2020).

These results indicate that a new and more effective learning model is needed. The inquiry-based learning approach can help students become more self-reliant in developing their understanding of the world and enhance their critical thinking abilities. (Jatmiko et al., 2018; Maknun, 2020; Verawati et al., 2020). Effective classroom management requires creating an environment that emphasizes learning through inquiry [40]. Language must be used in the classroom within a realistic environment for students to create and communicate meaningful ideas outside of the classroom. (Ahmed, 2017; Boot et al., 2017; Buxton et al., 2019; Gillies et al., 2015). However, the inquiry model also has weaknesses, including (1) if students are not used to it, it will be difficult to plan; (2) difficulties in controlling activities and learning success; (3) difficulty in time management; and (4) difficulties if the learning objectives are only in mastering the material.

Difficulties in implementing the inquiry also arise if there are fewer students. The integration of the inquiry model needs to be done by determining specific themes to focus more on learning objectives.

So that in inquiry, students stay within the learning objectives and avoid students collecting irrelevant or even unimportant data. The theme referred to in this study is related to learning materials for writing scientific papers that contain the value of local wisdom.

Applying the inquiry model must be integrated with other concepts and stimuli to make each phase more effective and directed. The idea in question is the theme of local wisdom and dilemmas stories, so a new, integrative learning model construct is called inquiry-based local wisdom dilemmas stories (ILWDS). Local wisdom is knowledge found by specific local communities through experiences in trying and integrating with an understanding of the culture and nature of an important place to be a source of learning (Darmadi, 2018; Jumriani et al., 2021). The theme of local wisdom presented as dilemma stories stimulate critical thinking and scientific debate through arguments (Collén, 2019; Megregian et al., 2020). Dilemmas stories in this study are used to give a scientific paper based on local wisdom so that texts of teaching materials based on local wisdom are composed. The teaching materials are used to implement the inquiry model to form a new learning model, namely Inquiry-based Local Wisdom Dilemmas Stories (ILWDS), which is projected to improve scientific writing skills. ILWDS is implemented referring to the 5 W and 1 H concepts (what, why, when, who, where, and how). The reference is used to develop students' abilities to explore and be creative in compiling sentences into a dilemmatic local wisdom story so that students are more imaginative and express what they want to convey.

The inquiry paradigm used in learning scientific writing materials incorporates the idea of local wisdom in social, cultural, and religious life. To overcome the limitations of inquiry and maintain theme consistency with stories of local wisdom difficulties, the ILWDS paradigm is utilized while creating problems and gathering student data.

It is also advised that language learners base their instruction on local wisdom dilemma stories to strengthen their critical thinking abilities [49]–[51]. Students build on their past knowledge and experiences by connecting newly acquired information and meaningful concepts. It also implies that children have a distinct way of learning that is cognitive and student-centered.

The ILWDS learning model was developed through the primary model, inquiry, then refined based on the subject matter features and examined the social structure in which three-way communication—between students and the teacher and amongst students—and discussion/debate are necessary. Examination of the principle of reaction: Using dilemmatic issues, teachers can help students develop their critical thinking skills and become more competent. The analysis of constructional and ancillary impacts—conceptual knowledge and students' scientific writing abilities—comes last. Based on these analyses, a new syntax that is considered ideal is needed, namely the ILWDS learning model. The ILWDS learning model is based on the constructivism learning theory, which emphasizes student-centered learning. The teacher, as a facilitator in the trial learning process, is tasked with motivating and guiding students so that students carry out the learning steps correctly.

The teacher conducts brainstorming to present descriptive texts based on local wisdom. Students are motivated to dare to argue based on their knowledge and experience to solve problems related to the descriptive text presented.

The ILWDS learning model to be effective is carried out by (1) enriching teaching materials with descriptive texts based on local wisdom that are controversial, (2) equipping students with mastery of the scientific method (inquiry), (3) designing teaching materials about descriptive texts based on local wisdom from various scientific methods so that students can evaluate them; (4) presenting up-to-date controversial issues based on local wisdom so that students critically evaluate, argue, and write down their ideas regarding these issues; (5) students are facilitated to carry out data analysis from the inquiry process, conclude and report the results.

The number of pupils who comprehend scientific inquiry techniques and the capacity to organize, evaluate, and interpret quantitative data and scientific information remains relatively high. The elements of constructivist learning include instructor scaffolding, which provides teachers with direction to complete tasks, brutal activities to challenge, encouragement to learn, and incentives (Van den Beemt et al., 2020). Collaborative learning, which includes teaching communities, group assignments, sharing information, learning together, and assisting one other, might be one of the hallmarks of ILWDS. Indonesians can persuade students of the importance of learning Indonesian. That will shape students' thoughts and attitudes around the needs, relevance, applications, and significance of studying Indonesian (Sari & Wahyudin, 2019). That will also increase student involvement and willingness to learn Indonesian, making them want to act and learn. Finally, it is critical to develop a language-learning environment that encompasses the concept of scientific writing.

The ILWDS learning model may teach students to (a) correctly recognize scientific arguments, (b) conduct an effective literature search, (c) analyze the use and misuse of scientific material, and (d) comprehend the principles of study design. Students create knowledge by linking newly acquired material to prior knowledge and experience. It might indicate that kids learn uniquely, with a student-centered and cognitive learning strategy.

As a result, the instructor must be a guide and facilitator in class, allowing pupils to conceptualize and take the initiative. The teacher is responsible for creating the students' learning environment, study place, and academic consultant. That uses constructivist learning ideas and places the student at the center, with the instructor providing direction. That supports, organizes, and leads the learning process (du Plessis, 2020).

Other ILWDS learning elements, such as reflective thinking, are thought to boost scientific writing skills. Reflective thinking abilities include encouraging thought, instruction through instructor questions, and assessing critical information. Teacher-to-student knowledge transmission is impossible. ILWDS is based on the idea that students actively build knowledge. Students must create understanding via searching, decision-making, higher-order thinking abilities, creativity, and collaborative learning.

Through the presentation of a dilemmatic discourse in everyday life to local communities, the ILWDS learning model is building a model of inquiry syntax as a way of thinking and acting in problem-solving situations related to learning. Overcoming the issue of local wisdom necessitates critical and inventive thinking because it is intimately tied to daily living. The ILWDS learning model is the outcome of iterations based on the properties of the content and social system analysis, wherein three-way communication is required between students and educators and between students.

Examination of the principle of reaction: Teachers need to help students become more competent by encouraging critical thinking through challenging situations. The influence on construction comes last. The synthesis scheme of the ILWDS learning model is presented in Figure 2.
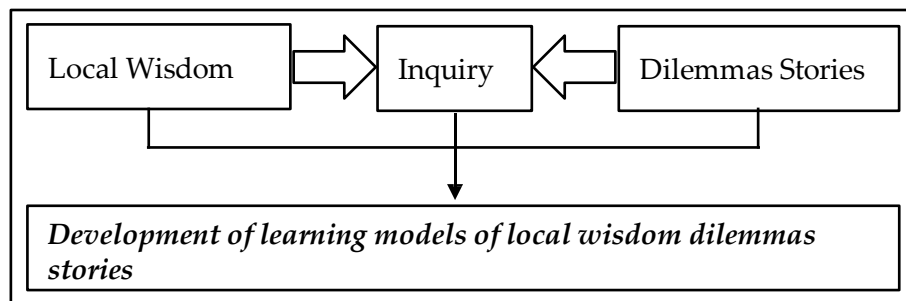

Figure 2. ILWDS Learning Model Synthesis Scheme

Students' understanding of descriptive text material is based on knowledge and experience of social systems and previous learning experiences. Students will also be accustomed to analyzing information and problems with logical and critical reasoning. The accompanying impact of applying this model is that students can think critically when responding to information and concerns related to controversial issues based on local wisdom. Implementing the model about the instructional and accompanying impact is an increase in scientific writing skills.

CONCLUSION

As one of the competency outcomes in senior high school, scientific writing skills have yet to be achieved. Implementing the inquiry learning model has yet to improve students' scientific writing skills. The ILWDS learning model is recommended to overcome problems in learning Indonesian at senior high schools. These findings are used as a basis for further research, namely the development of the ILWDS learning model design and empirical testing of its validity, efficiency, and effectiveness in improving student's writing skills.

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