



Sundanese Cultural Values of Local Wisdom: Integrated to Develop a Model of Learning Biology

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Abstract

This study aims to determine the ability of student groups to develop biology teaching model that integrates the values of local wisdom Sunda on student teachers of biology education. The research method using descriptive quantitative method. The sampling technique used purposive sampling technique as much as 27 groups of students in the subject of Biology Education Innovation learning Biology. The results showed that students in the group's ability to develop biology teaching model included into the category fairly with the average score of the group amounted to 76.44. A total of 79.63% of student groups capable of developing learning models based on creativity (original) included in both categories, 80% of student groups capable of developing learning models and can be applied in learning included in the category enough, 72.59% of student groups capable develop a learning model with the exact syntax included in either category, 64.69% of student groups are able to develop systematic learning model with corresponding syntax included in the poor category, 81.73% of student groups were able to develop a model of learning by integrating the values of local wisdom (ethno pedagogy) included in either category and 78.33% of student groups capable of developing learning models with a creativity that is included in the category enough. based on the data analysis can be concluded that students' ability to develop a model of learning by integrating the values of local wisdom Sundanese fall into the category quite need to be improved and developed in the future.

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Keywords: local wisdom; learning model; learning biology; the development of learning models.

1. Introduction

Creative and innovative learning should be done by the teacher in order to produce creative learners. The success rate teachers in teaching seen from the success of their students so it is said that a great teacher is a teacher who can inspire the learners. The quality of learning visits of activity learners when learning and creativity that can be done by learners after participating in learning. Lessons are conducted by teachers in Indonesia in general is still centered on the teacher. This is due to the still insufficient understanding and learning paradigm that is not in accordance with the action that should be done. The learning activities in class is inseparable from learning model. Careful selection of learning models for a particular material will impact on students. The use of the learning model should be a key aspect in learning and its implications in education, especially by prospective teachers [8,19]. Learning model development should pay attention to the gap difference, especially for schools in urban and in rural areas [20, 41]. The learning model portrait of a learning environment that describes the curriculum planning and to design mechanisms of meaningful learning and directed to empirical research [10, 15, 31] empirical studies focused on the development of models of effective learning [7, 42] by the research students will have a scientific character [5, 10] support the interpretation skills of students [43]. Advances in science and technology, particularly with regard to the learning theory has much to encourage and inspire the innovation in the field of learning models [5, 10] technology can support more motivation and encourage educational programs and improving teaching methods [9, 45] unconsciously at this point the learning facilitated by technology [14]. Teachers can choose a training program for students in accordance with the curriculum and specialization courses using the best tools that will contribute to the achievement of learning objectives [6].

Teachers should develop a range of innovative and offer ways to learn and build knowledge to students and improve their own learning so that students receive some benefit from innovative teaching model [3, 17, 40]. Develop curriculum applies to all levels of education to produce effective learning [18, 40]. Learning should lead students towards scientific facts so that students understand the world they provide an authentic experience and scientific thinking [3, 39]. Learning biology requires a wide range of competencies that must be mastered by the student, such as mastery of concepts, science process skills, and critical thinking which emphasizes that learning is essentially an interaction [23, 25, 30, 31]. Human indirectly in life cannot be separated from culture. Humans, culture, environment, are three interrelated factors integrally intertwined. The environment in which humans live in addition to the form of the natural environment is also in the form of socio-cultural environment. Ethno pedagogy is an educational practices based on local wisdom and sourced from the cultural values of ethnic and become a standard of behavior that can be integrated in the learning [1, 29] can be developed with other learning models such as inquiry and a combination of other models [21, 28]. Local wisdom worthy of being a base of education and familiarization. Students who know the culture will indirectly shape the character in itself [35, 36, 46]. Local knowledge is a process of how knowledge is generated, stored, applied, maintained, and inherited [2, 34]. With local wisdom can be used as a basis to develop learning that aims to improve the knowledge, attitudes and skills as well as the student's character [4, 47] improve student literacy [38]. Besides local wisdom can be used as a tool to develop teaching materials for teachers [4, 24]. Efforts to establish,

maintain, foster and cultivate the existing local culture, including the government implement multicultural education [13, 47]. Cultural transformation will change the culture in the form of traditional values [27]. Local wisdom is the hallmark of a particular area or region that has cultural value, locally grown in scope from one generation to the next that is wise, full of wisdom, good value, embedded and followed by members [11.34]. Local wisdom is a collection of facts, concepts, beliefs, and people's perception of their environment. This includes how to observe and measure the environment, troubleshoot, and validate the information. Learning by integrating the values of local wisdom would foster national awareness in students [37].

However, some limitations in developing learning models by integrating the values of local wisdom is quite complex. One of them is a student unfamiliar with his own culture as a result of advances in science and technology is developing rapidly, so things that are traditionally already stout they left behind. Besides, who became another obstacle is the background of students who come from many different ethnic groups and different cultures, not special students from ethnic Sundanese, this of course would be an obstacle because they did not recognize Sundanese culture in depth.

2. Material and Methods

This research uses descriptive quantitative method. Involving 153 students of the fifth semester courses biology learning innovations that are divided into 27 groups. The sampling technique purposive sampling. This research was conducted in October 2016. The research at the Pasundan University.

2.1. Data Collection Technique

The data collection was done by using non-test. Non-test techniques for collecting data is done with the document checks. Inspection document tasks include inspection reports related to student learning model development biology converted into quantitative data. Assessment document will include several aspects such as:

- Originality

In this case concerning the authenticity of biology-oriented learning model development ethno pedagogy. First in this case means that the form of the development of learning models do not adopt and modify from other learning models.

- Applied

Applied in this case meant how much learning model developed can be applied in the classroom.

- Accuracy syntax

The accuracy syntax intended learning model developed precise indicators and learning objectives are analyzed through the Basic Competency.

- Systematic syntax

The syntax must be arranged in a systematic because it is very important so that the learning model developed is easy to understand, especially by students generally by the user.

- Integration ethno pedagogy

In this case meant how much of the element of ethno pedagogy developed through learning model

- Creativity

Creativity in this case meant learning model developed oriented ethno pedagogy really is the result of his own creations.

Aspects of the votes each given a score according to its weight. For more details are presented in Table 1. The following:

Table 1: Aspects Assessment Report

Numb	Aspects Rating	Score
1	Originality	20
2	Applied	15
3	Accuracy syntax	15
4	Systematic syntax	15
5	Integration ethno pedagogy	15
6	Creativity	20
total number		100

2.2. Data Analysis Technique

The data analysis technique used is quantitative descriptive analysis. Quantitative data analysis was performed using descriptive statistical analysis of data that is used to describe the collected data as it is. The results of the analysis in the form of presentation of data in tables and graphs. The results of this analysis were then compared with the assessment criteria that have been determined based on the average standard deviation of the ideal and the ideal that can be achieved by the instrument. Tabulation of data for each component performed on scores which have been obtained. Then, using SPSS V22 obtained average value, maximum value, minimum value for each component of the study. In connection with the research data, the image data dissemination can be obtained from the list of tables grouped frequency distribution data. From the data collected in future studies analyzed with descriptive analysis technique quantitative evaluation which describe and interpret each component as compared to the reference criterion is based on the average score ideal (Mi) and the ideal standard

deviation score (SBI) is achieved by a sheet instruments. This study uses a questionnaire scale of 5 (five) with the conversion value and scores, determine (Mi) and (SBI) in this study using a formula developed by Jumadi [16]. Determination (Mi) and (SBI) are presented in Table 2.

Table 2: Conversion score on a scale of 5

Values	Score	Criteria
1	$x > (Mi + 1,8 SBi)$	Excellent
2	$(Mi + 0,6 SBi) < x < (Mi + 1,8 SBi)$	Good
3	$(Mi - 0,6 SBi) < x \leq (Mi + 0,6 SBi)$	Sufficient
4	$(Mi - 1,8 SBi) < x \leq (Mi - 0,6 SBi)$	Deficient
5	$x \leq (Mi - 1,8 SBi)$	Lowest

3. Result

This section will describe each of the findings of the research. Data from the analysis of quantitative data will be described in full in order to provide an understanding of some of the findings in this study. The development of this model is divided into several aspects, namely; Originality (A1), Applied (A2), Accuracy Syntax (A3), Systematic Syntax (A4), Integration of Ethno pedagogy (A5) and Creativity (A6). Each aspect has different weights according to the degree of difficulty. In the results and discussion will be presented an average score of group of students in developing learning models, criteria of ability groups of students in developing the model as a whole, the scores for each aspect of criteria and the ability of student groups to develop models every aspect, analysis indicator aspect and the percentage of the group's ability students in developing learning models every aspect.

3.1. The Average Score Capabilities Student Group

Data analysis results derived from the assignment document to a group of students who analyzed the data based on some of its aspects. Every aspect has a different weighting score according to the degree of difficulty. The average score of the ability of the student group is presented in Figure 1.

Figure 1 (A) shows the average score for each of its aspects, A1 an average score of 15.93, A2 an average score of 12, A3 an average score of 10.89, A4 score an average of 9.70, A5 an average score of 12.26, and A6 an average score of 15.67. High scores are in the aspect of originality (A1) and creativity (A6), this is because both these aspects have a weighted score of 20 (maximum score 20). While the applied aspect (A2), the accuracy of the syntax (A3), systematic syntax (A3) and the integration of ethno pedagogy (A5) each have a weighting score of 15 (maximum score 15). Based on data obtained from the scores of each aspect of the score of the average total student group's ability to develop learning models for 76.44.

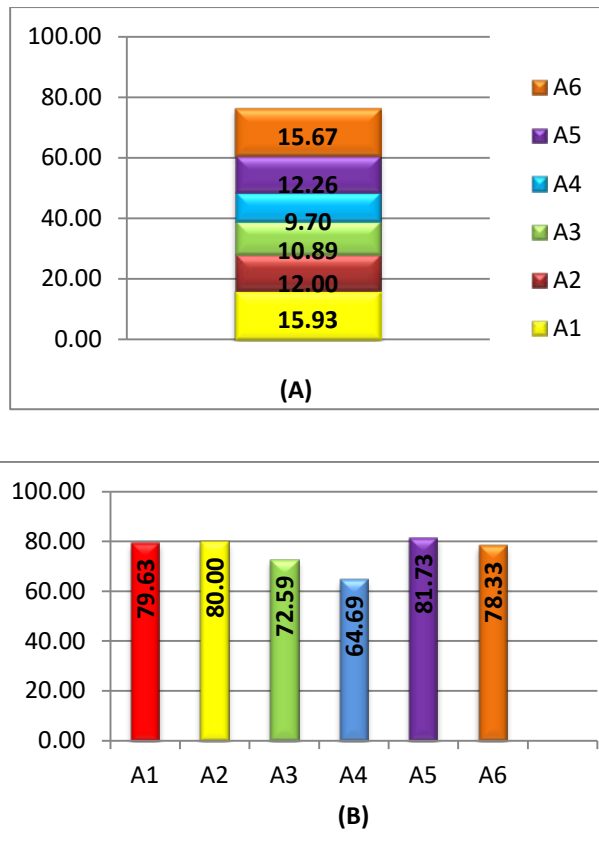


Figure 1: (A) The average score of student ability, (B) Convert the average score for each aspect

3.2. Criteria Ability Student Group

To obtain information about the criteria of students in the group's ability to develop biology teaching model by integrating the values of local wisdom, an analysis by converting scores into a scale of 5 [16]. The results of this analysis will provide information on the ability of the student group into several criteria (excellent, good, sufficient, deficient and lowest). Analysis of data on students' ability criteria is important in order to lecture on the development of the future, especially in the subject of Biology Learning Innovation. The results of data analysis 5 scale conversion are presented in Table 3.

Table 3: Conversion Scale Score 5 Score average group

Values	Score	Criteria
1	$x > 82,6$	Excellent
2	$77,2 < x < 82,6$	Good
3	$71,8 < x \leq 77,2$	Sufficient
4	$66,4 < x \leq 71,8$	Deficient
5	$x \leq 66,4$	Lowest

3.3. Scores and Criteria of Ability Groups of Students Each Aspect

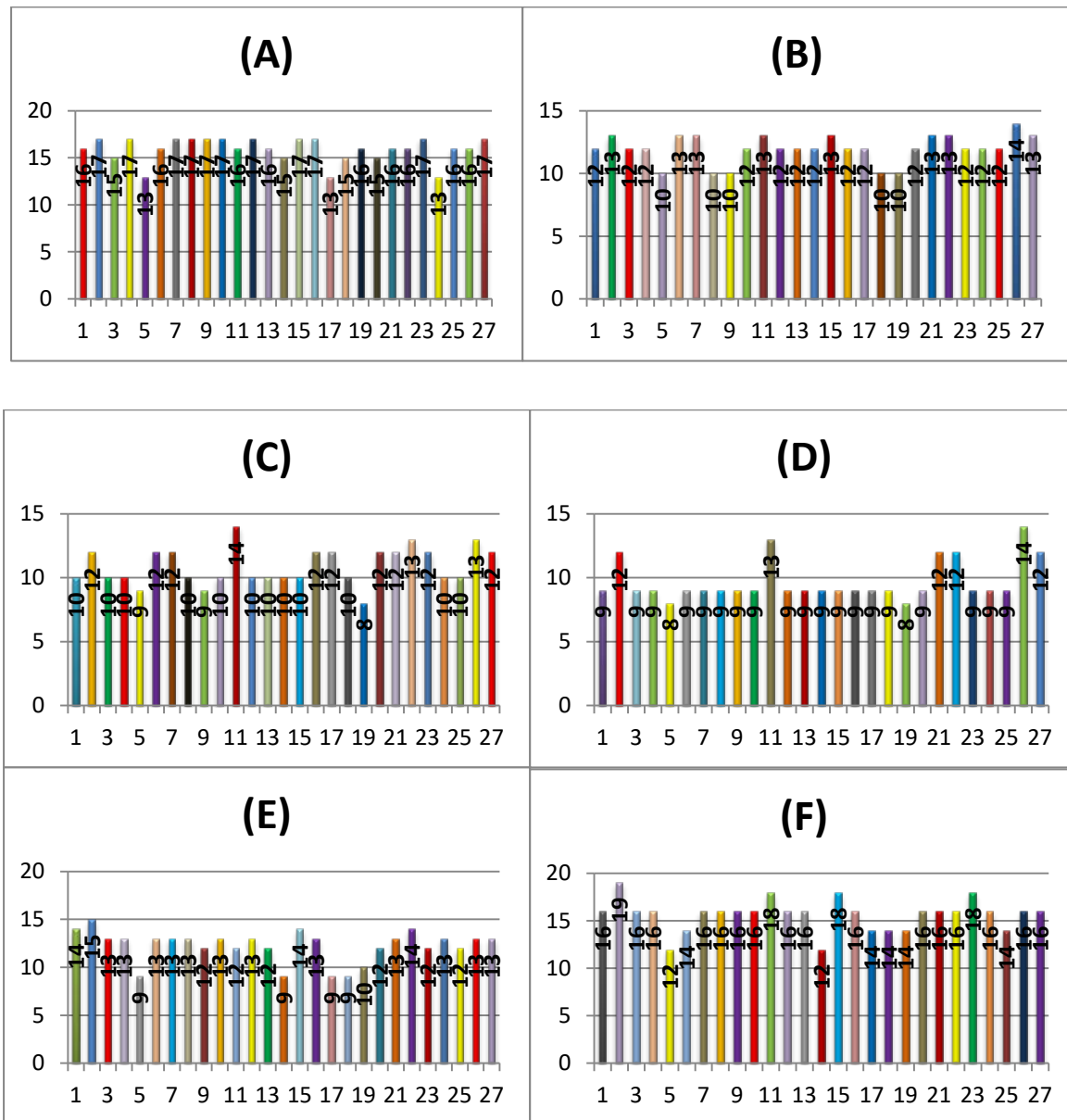


Figure 2: Obtaining a score for each aspect (A) originality, (B) applied, (C) the accuracy of the syntax, (D) the systematic syntax, (E) the integration of ethno pedagogy, (F) creativity. Score each different aspects depending on the degree of difficulty

Further analysis is carried out on a score of every aspect of each group of students, it aims to obtain information variation of scores for each group of students so as to obtain an average score every aspect. Each of the aspects analyzed include; Originality (A1), Applied (A2), Accuracy Syntax (A3), Systematic Syntax (A4), Integration of Ethno pedagogy (A5) and Creativity (A6). Each aspect is analyzed based on several indicators developed by researchers at each aspect. Each of these aspects are analyzed one by one so as to obtain criteria for every aspect. For more details will be described in detail for each aspect is presented in Figure 2.

Based on Figure 2 (A) obtained information that the highest score of 17 obtained by several groups of students and the lowest score of 13. The mean score of 15.93 originality aspect. Figure 2 (B) shows the variation in the applied aspects of the acquisition of scores for each group of students. Figure 5. Based on the obtained information that the highest score of 14, which was obtained by a group of students and the lowest score of 10. The average score of the applied aspects of 12.00. Figure 2 (C) shows the highest scores for the aspects of syntax accuracy by 14 obtained by one of the main student groups. And the lowest score of 8 was obtained by one of the main student groups. The average score of 10.89 syntax aspects accuracy. The average score for the systematic aspects of the syntax of 9.70. Based on Figure 2 (D) can be obtained information that the highest score of 14 obtained by one of the main student groups and the lowest score of 8 was obtained by two groups of students. Based on Figure 2 (E) obtained information that the highest score ethno pedagogical aspects of integration and lowest scores by 15 by 9, the average score of ethno pedagogical aspects of integration is 12.26. Based on Figure 2 (F) the highest score obtained by one group of students was 19 (maximum score 20) and the lowest score was obtained by two student groups of 12. The average score of the creative aspect is at 15.67.

3.4. Criteria Ability to Faithfully Aspects

To determine the ability of students in every aspect, then performed an analysis using a score scale conversion 5. Criteria ability to faithfully aspects are based on the average score of the ideal (see formula 1) to determine the criteria for each aspect. Thus it can be seen every aspect criteria. The results of the analysis to determine the category of every aspect shown in Table 4.

Table 4: Conversion Scale Score 5 for each aspect

Aspect	Score average	Criteria
Originality	15.93	Good
Applied	12.00	Sufficient
Accuracy syntax	10.89	Sufficient
Systematic syntax	9.70	Deficient
Integration of ethno pedagogy	12.26	Good
Creativity	15.67	Sufficient

3.5. Analysis Indicator for Each Aspect

Further analysis indicators for each aspect, the aspect of originality among them; authenticity (I1), novelty (I2), the result of thinking (I3) and the result of the adoption / modification (I4). Applied aspects including; conformity with the material (I1), clarity (I2), level (I3) and the depth of the material (I4). Aspects of the accuracy of the syntax of them; syntax easy to understand (I1), compliance (I2), describe the minimum criteria syntax (I3) and high effectiveness (I4). Aspects such systematic syntax; systematic writing (I1), the standard of writing (I2), using a standard language (I3) in accordance with the criteria syntax (I4). Ethno pedagogical

aspects of integration, including; are the values of local wisdom (I1), showed the hallmark of culture (I2), compliance with the learning objectives (I3), and led to the formation of student character (I4). The creative aspect of them; creativity (I1), showed a wide variety of (I2), presenting the discovery / novelty (I3), and the result of the adoption / modification of other models (I4). Each indicator has a different weight scores according to level of difficulty. Analysis of indicators on aspects of originality is made to know the symptoms found in the results of further research will be described to provide an overview of these symptoms. The average score on each indicator is converted into a score of 100, it's easier to describe the results. Results of the indicator analysis originality aspects presented in Figure 3.

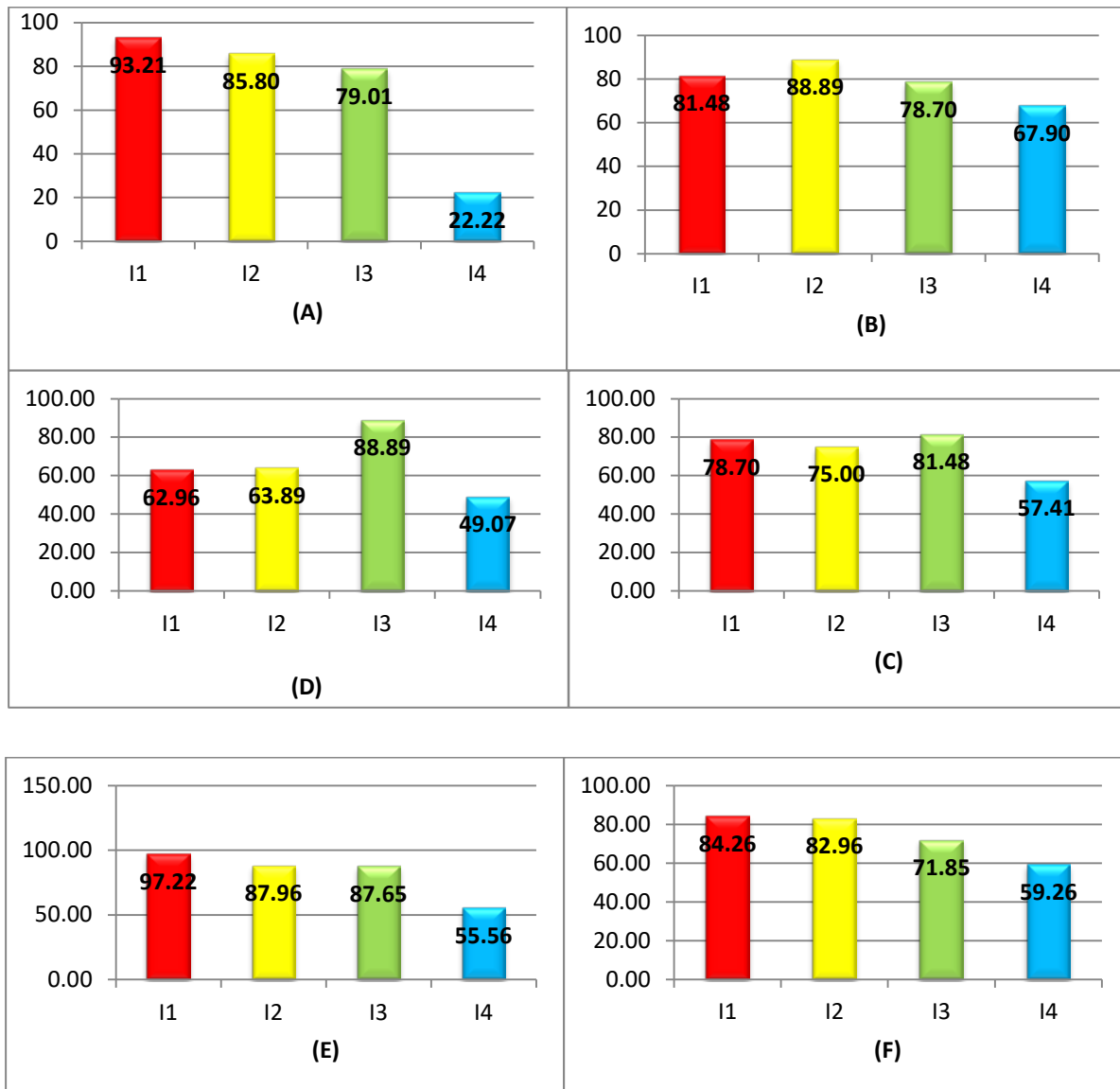


Figure 3: Analysis of indicators for each aspect, (A) originality, (B) applied, (C) the accuracy of the syntax, (D) the systematic syntax, (E) the integration of ethno pedagogy, (F) creativity.

Based on Figure 3 (A) Can we get the information that score highest on the indicator 1 (I1) regarding the authenticity of the model developed by a group of students at 93.21. While the score was lowest for the indicator 4 (I4) on the modification / adoption, meaning that the model developed by the student group result of

the adoption or modification of an existing model of 22.22. Based on Figure 3 (B) Can we get the information that the highest score is the second indicator (I2) on clarity of purpose that was developed by a group of students at 88.89. While the score was lowest for the indicator 4 (I4) on the depth of material at 67.90. Based on Figure 3 (C) obtained information that score highest on the indicator (I3) regarding the minimum criteria syntax of 81.48 and the lowest score is the indicator (I4) on the efficacy of 57.41. Based on Figure 3 (D) obtained the highest score aspect of information contained in the systematic syntax indicator (I3) regarding the use of the standard language at 88.89, while the average score was lowest for the indicator (I4) on standard criteria of writing the syntax of 49.07. Based on Figure 3 (E) obtained information that score highest in the indicator (I1) on the integration of the values of local wisdom of 97.22 and the lowest scores are on indicators (I4) regarding the purpose of learning at 55.56. Based on Figure 3 (F) obtained information the average score highest on the indicator (I1) on the creativity of 84.26, while the lowest score on the indicator (I4) on the results of modification / adoption of other teaching model at 59.26.

4. Discussions

Based on Figure 1 (B) obtained information that the average ability of the highest student groups on aspects of the integration of ethno pedagogy (A5) 81.73. This is relevant to the purpose of this study where the model developed by student groups should integrate elements of ethno pedagogy (in this case the values of local wisdom Sunda). Thus it can be assumed that most groups of students were able to develop a model of learning by integrating the values of local wisdom Sunda. Such assumptions relevant to the opinion expressed by [35, 36] which states that the ethno pedagogy as an educational practices based on local wisdom in various domains and emphasizes knowledge or local knowledge as a source of innovation and skills that can be empowered for the welfare of communities where local knowledge is related to how knowledge is generated, stored, applied, maintained and passed on could be the vehicle that synergy goal of modernization with the preservation of local excellence. In harmony with the revelation [4, 47] states that the local wisdom can be the foundation for developing learning that aims to improve the knowledge, attitudes and skills and character of students.

Based on Figure 1 (B) shows the average score was lowest for the systematic aspects of syntax (A4) of 64.69. This shows that the ability of the students in developing learning models are lacking in making systematic syntax good, but this is due to create or develop a learning model is not an easy thing, which we must consider a variety of criteria, aspects and factors more. It is allowed into difficulties in developing the group of students learning model which should have a clear theoretical basis. More than that [15] found learning model should include several aspects have clear syntax, must describe the social system as a form of interaction, the reaction system in the form of assessment, support system has always been an important part in implementing the learning model and the impact on learning, especially the positive impact for student.

Table 3 obtained information that the average score of the total student group (76.44) are in the range between 71.8 and 77.2, indicating that the student group's ability to develop biology teaching model included in the category enough. Thus it can be assumed that most groups of students experiencing difficulties in developing learning models of biology by integrating the values of local wisdom Sundanese as an innovative model. Developing a model of learning is not easy because many of the criteria or certain aspects that must be

understood by the students. Innovative learning model created must demonstrate effectiveness in learning and attention to a few key aspects and objectives. In line with this [8, 9, 19] states that the use of models of learning should be a key aspect in learning and its implications in education, especially by prospective teachers to find new ways of teaching. In this case the student must understand the key aspects in developing a model of learning, a key aspect of the course should be relevant to the learning objectives, the needs of students in learning and assessment.

In addition [10, 22, 32, 33] states that teachers should have the competence to teach, motivate learners, create instructional models, managing a classroom, communicate, plan learning, and evaluating which leads to study as the forerunner to the innovation so that it can compete in globalization era. It is clear that in developing a learning model a discount emotion student teachers in all matters concerning the competence of learning. Many aspects or criteria-specific criteria that must be met in developing a learning model, for it [15] found learning model should include several aspects have clear syntax, must describe the social system as a form of interaction, the reaction system in the form of assessment, support system has always been an important part in the implementation of learning model and the impact on learning, especially positive impact on students. The syntax is designed in a model should provide clarity in every steps so easily understood by students. A model developed must have a system of social learning, which should be the interaction between teachers and students and students with students, showing the cooperation between teachers and students in accordance with the rules applied. A model must show their reaction system and is usually in the form of assessment, teachers should be able to appreciate or assess learners and how to respond to what is done by learners. For example, in a learning situation, the teacher reward the activities carried learners or take a neutral stance. It is no less important in developing a model that is their support system. Support systems describe the conditions necessary to support the implementation of learning models, including facilities and infrastructure, for example, tools and materials, teacher preparation, and readiness of learners. It is most essential in developing innovative learning model is the impact on students, the impact should be to improve learning outcomes are achieved by directing the learners on the expected goal, while the impact of accompaniment is the result of other study produced by a process of learning as a result of the creation of an atmosphere of learning experienced directly by the learners.

4.1. Originality (A1)

Originality aspects analyzed in this study concerns about the authenticity of the learning model developed by the students. The model was developed not from the modification or adoption of other learning models. The model developed is really the result of his own thoughts. Originality is important because it indirectly can train students' ability to be creative, to think critically, to plan, create and analyze a variety of factors that can hinder the development of the learning model. Originality aspect analysis done based on some indicators developed by the researchers, among others; originality, novelty, the result of thinking and result of the adoption / modification. Based on Table 4 was revealed that the average score of originality aspects of student groups at 15.93 is in the range between 15.40 and 16.21. This shows that the ability of students to aspects of originality is included in both categories. It can be concluded that the majority of the student group in developing a learning model that integrates biological values of local wisdom Sunda original brainchild of his own (original) included in both categories, and only a small proportion of student groups who modify or adopt from other learning

models. The results of this analysis will be used as a reference for the increase in courses in the future. It is appropriate that student teachers who will be the teachers have a good competence in matters concerning innovative learning. Along with it [3, 17, 40] argues that teachers should develop and offer a range of innovative ways to learn and build knowledge to students and improve their own learning so that students receive some benefit from innovative teaching model.

Based on Figure 3 (A) Can we get the information that score highest on the indicator 1 (I1) regarding the authenticity of the model developed by a group of students at 93.21. While the score was lowest for the indicator 4 (I4) on the modification / adoption, meaning that the model developed by the student group result of the adoption or modification of an existing model of 22.22. With these results we can conclude that the majority of the student group in developing a model of learning is not the result of modification or adoption of other models, but the result of the creativity of the student group itself, only a small fraction of the group of students who developed a model biology learning with the integration of values local wisdom to adopt or modify any of the other models. These results can be used as reference material for the development of courses, training programs for student teachers so that competence in accordance with his profession as a teacher and is expected to be developed later in the schools where student teaching. Student teachers must have a stock with competencies that qualified to compete in the era of globalization, as an innovator and has the ability to develop the profession. Along with this [10, 22, 32,33] argues that teachers should have the competence to teach, motivate learners, create instructional models, managing a classroom, communicate, plan learning, and evaluating which leads to study as the forerunner to the innovation so that it can compete in the era of globalization.

4.2. Applied (A2)

Applied in question in this research is the extent to which the learning model developed by the students can be applied in the classroom. Of course, this applied include some indicators that should be met by a group of students in designing and developing a model. Indicators applied them; conformity with the material, clarity of purpose, leveling, and the depth of the material. Based on Table 4 obtained information that the average score of student groups applied aspects of 12.00 is in the range between 11.60 and 12.41. This shows that the ability of students to applied aspects included in the category enough. It can be concluded that the ability of the student group in developing a learning model that integrates biological values of local wisdom should be developed further. It can be used as a reference for the development of the program of lectures where students' ability to develop a model that is associated with the application of the learning becomes the main focus in the development of the program of lectures. This is important because the developed model should be applied to the learning process. [15, 31] suggests that the learning model is a syntax or learning steps illustrated from start to finish which is presented as a whole or typical in the learning process. [15] added that the essence of teaching is to help learning (students) to obtain information, ideas, skills, values, ways of thinking, and learning how to learn. from some of the opinions that we can make sense of the importance of student teachers can develop learning models with high applied in the classroom.

Based on Figure 3 (B) can we get the information that the highest score is the second indicator (I2) on clarity of

purpose that was developed by a group of students at 88.89. While the score was lowest for the indicator 4 (I4) on the depth of material at 67.90. Thus it can be concluded that the majority of student groups in developing learning models have clear objectives in accordance with the indicators contained in learning, while at a depth of less material into consideration the group of students in developing learning model, this is resulting scores on indicators of the depth the material is quite low. An instructional model developed must have general purpose and special purpose predicament cannot be separated in the learning process. the importance of interest in the learning process proposed by [15] the nature of learning is to help learning (students) to obtain information, ideas, skills, values, ways of thinking, and learning how to learn. this shows that all the aspects proposed by [15] should be integrated in the learning. In addition to having a clear goal, a learning model should consider the level of difficulty of the material in this case need to analyze the material. Where the material should be given at a certain level and which ones should not be granted. The material is an essential aspect of learning for it to be understood that the depth of material should pay attention to students' education. The model developed must consider the condition of the learning environment, social environments and the differences in needs and abilities of students. This was in line with the views expressed by [20, 41] that the learning model development should pay attention to the gap difference, especially for schools in urban and rural. In other words, a learning model developed should be universal.

4.3. Accuracy Syntax (A3)

The accuracy of syntax as defined in this study is the syntax developed by groups of students based on criterion-criteria and rules of design. The accuracy of the syntax will give the full picture of the syntax created. In this study, researchers developed several indicators including; has steps are easy to understand (I1), in accordance with the material, indicator and learning objectives (I2), describe the minimum criteria syntax (I3), and has a high effectiveness (I4). Each indicator is given a different score depending on the level of difficulty. Based on Figure 2 (C) the result can be concluded that in general the student group has the capability to design and develop a syntax conformed to the criteria-criteria for the preparation of syntax, this is shown by the majority of the student group score is above average. Syntax is the steps in learning so that the direction of learning will be clearly defined, and therefore a syntax that is designed must meet certain criteria even have to have certain characteristics to the model. In harmony with the opinion [15] which argued that a learning model must have a syntax or stages of learning activities which is termed the phase that describes how the model in practice as a whole. This provides an explanation that the syntax we design must be precise as it aims to describe the phases of learning.

Based on Table 4 can be obtained information that the average score of 10.89 syntax aspect of accuracy is in the range between 10.40 and 11.60. This shows that the ability of the students to aspects of the accuracy of the syntax, including the category enough. It can be concluded that the accuracy of syntax developed by the students still need to be developed. The syntax is the most important part of a model, the syntax provides the overall picture of learning. a model of learning from each other has a distinctive syntax that is characteristic of the model. Problems often arise sometimes incorrect syntax so that learning is less effective. A syntax must be designed and developed with the better because it will have an impact on student learning outcomes. as proposed by [15] which states that the syntax will have the impact of learning on the students could be a result

of learning achieved by directing the learners on the expected goal, while the impact of accompaniment is the result of other study produced by a process of learning as a result of the creation of an atmosphere learning is experienced directly by the learners. In this case how important a syntax to be developed in order to produce a syntax that is effective in carrying learning. This was stated by [18, 40] which states that developing the curriculum applies to all levels of education to produce effective learning. Based on Figure 3 (C) obtained information that score highest on the indicator (I3) regarding the minimum criteria syntax of 81.48. And the lowest score is the indicator (I4) on effectiveness. It provides information that a group of students in developing a learning model that integrates the values of local wisdom Sundanese largely meets the minimum criteria of a syntax, but the effectiveness of that syntax is still very low. Thus the effectiveness of a syntax should be the focus for much improved. The effectiveness of a model of learning is very important for learning model is like a bridge to facilitate the delivery of learning materials. a learning model will engage students in learning, to prove the theory, scientific facts reveal that students have experience in learning. [3, 39] states that learning should lead students towards scientific facts so that students understand the world they provide an authentic experience and scientific thinking. To achieve this it is necessary to the effectiveness of the integrated learning in the syntax of a learning model. Something similar was stated by [3, 17, 40] that teachers should develop and offer a range of innovative ways to learn and build knowledge to students and improve their own learning so that students receive some benefit from innovative teaching model. Teachers have a great responsibility towards the success of students in learning. Innovative teacher is a teacher who always creative develop models and methods for achieving effective learning.

4.4. Systematic Syntax (A4)

Systematic syntax defined in this study focuses on the standard of writing / preparation of syntax in accordance with standard rules. Some indicators developed by researchers at the systematic aspects of which this syntax; systematic writing in accordance with the rules, using the standard writing / drafting syntax, using language that is standardized and easy to understand and in accordance with the criterion of syntax. Results of the analysis showed that most of the student group was still below the average score (9.70) this gives the information that the ability of the students in developing learning models in a systematic aspects of the syntax is relatively low. However, this result is not biased as a reference, and therefore the need to do further analysis. Further analysis of the factors that led to the systematic aspect of this syntax can be said to be low. Based on Table 4 obtained information that the average score of 9.70 syntax systematic aspect is in the range between 9.20 and 10.40. This shows that the students' ability to float the learning models for systematic aspects of syntax included in the poor category. The results of the analysis into what caused the problem of systematic aspects of syntax, including the category of less or low? Many things must be understood and considered in drafting / designing a syntax. This shows that designing a syntax not an easy thing. Syntax has many criteria-standard criterion that must be understood by the students. Students had difficulty finding a key aspect in the development of learning models. key aspects that can be used as a standard in drafting / designing a model of learning syntax. as proposed by [8, 9, 19] which states that the use of models of learning should be a key aspect in learning and its implications in education, especially by prospective teachers to find new ways of teaching. Something similar was stated by [15] model of learning must be supported by theory and research on learning and motivation, meets the required standards and in accordance with standard rules in practice.

Based on Figure 3 (D) obtained the highest score aspect systematic information contained in the syntax indicator (I3) regarding the use of the standard language, while the average score was lowest for the indicator (I4) on standard criteria of writing the syntax. This shows that most groups of students in developing learning models can use standard language and easy to understand, but the criteria for the syntax is still very low. Thus we can conclude that the lack of systematic aspects of syntax are caused by the difficulty students in understanding the standards of writing syntax, syntax drafting standards and criteria syntax of this is evidenced by the low indicators 1, 2 indicators and indicators 3 (Figure 4.10). Systematic syntax must be clear because it will engage students in the learning process, it can even be said that the syntax is a guideline for students and teachers in implementing the process learn some vital lessons taught in the classroom. Syntax integrated in the learning model must meet the standards of good for the learning process in accordance with the objectives. From another point of view [15] found learning model includes a series of measures aimed at helping students achieve specific learning objectives. Specific learning would be reflected in full in syntax, so systematic syntax is designed to be appropriate. Another opinion according to [15] argued that a learning model must have a syntax or stages of learning activities which is termed the phase that describes how the model in practice as a whole. These results are certainly very useful as a material reflection for the development of the program of lectures, especially in the subject of Biology Learning Innovation, it is to be a chore for the parties involved to further improve and develop the program of lectures as possible.

4.5. Integration of Ethno pedagogy (A5)

Integration of ethno pedagogy in this study meant whether or not elements of ethno pedagogy in this particular values of local wisdom in the development Sundanese biology teaching model. In accordance with the main purpose of this study, the ethno pedagogical aspects of integration should be on learning model developed by the students. This objective is nothing but to reintroduce local culture especially Sundanese culture to students integrated learning. With the integration of local wisdom values expected results of the model development by student groups can be used as an innovation in learning, especially for shaping the character of their students based on cultural values. In this study, researchers developed several indicators including; are the values of local wisdom (I1), shows the characteristic of the culture (I2), compliance with the learning objectives (I3), and led to the formation of student character (I4). Each indicator is given a different score depending on the level of difficulty. Based on Figure 2 (D) shows that the majority of student groups in developing learning models of biology integrates the values of local wisdom Sundanese evidenced by several groups of students obtained a score of ethno pedagogical aspects of integration than average. Only a small part dar group of students that do not integrate the values of local wisdom for a small portion of modifying or adopting other learning models. Ethno pedagogy could be developed in the study, the values of local wisdom has great potential for the development of learning models. For that [4, 24, 47] suggests that local wisdom can be the foundation for developing learning that aims to improve the knowledge, attitudes and skills and character of students, besides local wisdom can be used as a tool to develop teaching materials for teachers.

Based on Table 4 was revealed that the average score of ethno pedagogical aspects of integration is in the range of 12.26 12.60, and 13.80. This shows that the ability of the student group in developing a learning model that integrates the values of local wisdom Sundanese included in either category. It can be concluded that the

majority of student groups to integrate the values of local wisdom in the development Sundanese biology teaching model. Their integration into an ethno pedagogy of learning as an effort to preserve local culture and innovate in designing the learning model. On the other hand [35, 36] considers that ethno pedagogy as an educational practices based on local wisdom in various domains and emphasizes knowledge or local wisdom (local wisdom) as a source of innovation and skills that can be empowered for the welfare of communities where local knowledge is related to how knowledge is produced , stored, applied, maintained and passed on could be the vehicle that synergy goal of modernization with the preservation of local excellence. in addition [24, 35] added that attempts to make sense of local knowledge in teacher education begins by identifying the underlying problems. The development of learning by taking into account local knowledge as a basis for development of learning to pay attention to the maintenance and utilization of the surrounding natural environment provides a great opportunity to develop local wisdom based learning to do critical analysis of the impression that emerges from the discourse of local wisdom. Based on Figure 3 (E) obtained information that score highest in the indicator (I1) on the integration of the values of local wisdom. and the lowest scores are on indicators (I4) regarding the purpose of learning. this shows that most groups of students are able to integrate the values of local wisdom Sundanese in designing and developing learning models of biology, but they pay less attention to learning objectives. Learning model developed by students by integrating the values of local wisdom Sunda must be relevant to the purpose of learning, it is still considered weak in the student group. One of the potential possessed by the values of local wisdom is able to develop and build the character of students, this is not reflected in the learning objectives of the learning objectives in ethno pedagogical aspects of integration can be said to be low. Student teachers who will become teachers should be careful and creative in designing, planning and developing learning. Agree with it [35, 36, 46] states that professional teachers have high creativity and responsibility to build the nation's character and culture can develop multicultural citizenship competence of students. Another opinion expressed by [37] states that learning by integrating the values of local wisdom would foster national awareness in students. It is clear that one of the efforts to achieve the character-based learning can be achieved by integrating the values of local wisdom. In line with this [4, 24, 47] suggests that local wisdom can be the foundation for developing learning that aims to improve the knowledge, attitudes and skills and character of students, besides local wisdom can be used as a tool to develop teaching materials for teachers.

4.6. Creativity (A6)

Creativity is intended in this study is a model that was developed is the result of his own creations, or the ideas of its own, further is a new discovery learning model although adopted from the values of local wisdom. Maybe for some people argue that the learning model developed in this study are all a result of the adoption or modification of local wisdom Sundanese, which is intended creativity here is that even though adopting / modification of local knowledge but on which the assessment is how the student can be the creation of local wisdom was in developing learning models. In this study, researchers developed several indicators including; creativity (I1), showed a wide variety of (I2), presenting the discovery / novelty (I3), and the result of the adoption / modification of other models (I4). Each indicator is given a different score depending on the level of difficulty. Based on Figure 2 (F) It was revealed that most of the student group has creativity in developing a learning model that integrates the values of local wisdom. it is evidenced by the many groups of students score

above average. But this result is not referable to conclude whether or not the creative aspect of each group of students in developing learning models. Creativity is important is owned by a student teachers or teachers, especially in developing learning models in the era of sophisticated today. advances in science and technology can be as supporting creativity in developing learning models. as proposed by [32, 44] that the progress of science and technology, particularly with regard to the learning theory has a lot to encourage and inspire innovation in the field of learning models. more [9, 45] which states that the technology can support more motivation and encourage educational programs and improving teaching methods. [14] added that it is not aware at this time of learning facilitated by technology.

Based on Table 4 can be obtained information that the average score of 15.67 creative aspect is in the range between 14.80 and 16.21. This shows that the ability of the students in developing learning models of the creative aspect included in the category enough. based on the results of the analysis, it is necessary to develop the creativity of students in the lecture program in the future. The necessity to integrate the values of local wisdom Sunda may limit the creativity of students in developing learning models, perhaps even the majority of students do not understand the local wisdom Sundanese as part of a group of students from outside the region are not from the area of West Java. This will be a consideration in the development of courses, without losing the cultural elements but may be more complex in introducing the culture in a multicultural learning program as an effort to preserve the culture. As proposed by [13, 47] which suggests that efforts to establish, maintain, foster and cultivate the existing local culture, including the government implement multicultural education. Another thing that probably is the student lacking local knowledge to interpret because of the many cultural transformation so that local culture increasingly less well known. For that [11, 34] states that local knowledge is the hallmark of a particular area or state that has the value of culture, grown in the local scope of generation to the next that is wise, full of wisdom, good value, embedded and followed by members of the community.

Creativity is important is owned by each student how they can be creative, especially in designing, planning and developing learning models, especially biology. A learning innovation born of creativity. Innovation is indispensable in supporting learning activities in the classroom. Teachers have a great responsibility towards the success of students in learning. Innovative teacher is a teacher who always creative develop models and methods for achieving effective learning. As proposed by [3, 17, 40] that teachers should develop and offer a range of innovative ways to learn and build knowledge to students and improve their own learning so that students receive some benefit from innovative teaching model. Based on Figure 3 (F) obtained information the average score highest on the indicator (I1) on creativity, while the lowest score on the indicator (I4) on the results of modification / adoption of other learning models. It can be concluded that the majority of the student group in developing a learning model that integrates biological values of local wisdom Sunda is the result of his own creations, only a small percentage of students who adopt or modify from other learning models. Competence is required and must be owned by student teachers in order to compete in the era of globalization. As proposed by [10, 22, 32, 33] that teachers should have the competence to teach, motivate learners, create instructional models, managing a classroom, communicate, plan learning, and evaluating which leads to study as the forerunner to the innovation so that it can compete in the era of globalization. Something similar was stated by [6] teachers can choose a training program for students in accordance with the curriculum and specialization courses using the best tools that will contribute to the achievement of learning objectives.

5. Conclusion

This study aims to determine the ability of student groups to develop biology teaching model that integrates the values of local wisdom Sunda on student teachers of biology education. In developing the model can not be separated from some of the aspects analyzed and described in detail. The results showed that students in the group's ability to develop biology teaching model included into the category fairly with the average score of the group amounted to 76.44. A total of 79.63% of student groups capable of developing learning models based on creativity (original) included in both categories, 80% of student groups capable of developing learning models and can be applied in learning (applied) included in the category enough, 72.59% of student groups capable develop a learning model with the exact syntax included in either category, 64.69% of student groups are able to develop systematic learning model with corresponding syntax included in the poor category, 81.73% of student groups were able to develop a model of learning by integrating the values of local wisdom (ethno pedagogy) included in either category and 78.33% of student groups capable of developing learning models with a creativity that is included in the category sufficient.

The results of this research deserves to be developed on a variety of other local wisdom is not only specialized local knowledge Sunda. Indonesia is a country that has a high cultural diversity so as to enable the development of the learning model based on local wisdom may be applied in other cultures can even be applied to other cultures in the world. Learning model development based on local wisdom should be developed so that it can be a model that is characteristic of a nation's culture. In addition, the learning model based on local wisdom will indirectly reintroduce local culture to the younger generation that is largely forgotten traditional culture as a result of advances in science and technology.

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