The Implementation Model of Contextual Teaching and Learning (CTL) Based on Local Wisdom *Karapan Sapi* to Train Students' Critical Thinking Abilities

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Abstract: The education development in Indonesia was followed by a trend of integrated local wisdom in education units. This study aims to train the thinking skills of critical students through the contextual teaching and learning model based on local wisdom Karapan Sapi Madura. The method used in this study is a one-shot case study with indicators of critical thinking. The results of this study present the ability to think critically about participant students through posttest results. There are 12 students in the very critical category, 20 students in the critical category, and 2 students in the less critical category. The hope is that local wisdom in Indonesia will continue to be developed and implemented as teaching material so that students understand more.

Keywords: contextual teaching; karapan sapi; local wisdom; newton law

Abstrak: Perkembangan pendidikan di Indonesia diikuti dengan tren pengintegrasian kearifan lokal dalam satuan pendidikan. Penelitian ini bertujuan untuk melatih kemampuan berpikir kritis siswa melalui model pembelajaran *contextual teaching and learning* berbasis kearifan lokal *Karapan Sapi* Madura. Metode yang digunakan dalam penelitian ini adalah *one-shot case study* dengan indikator berpikir kritis. Hasil penelitian ini menyajikan kemampuan berpikir kritis siswa peserta melalui hasil *posttest*. Terdapat 12 peserta didik dalam kategori sangat kritis, 20 peserta didik dalam kategori kritis, dan 2 peserta didik dalam kategori kurang kritis. Harapannya, kearifan lokal di Indonesia terus dikembangkan dan diimplementasikan sebagai bahan ajar agar peserta didik semakin paham.

Kata Kunci: hukum newton; karapan sapi; kearifan local; pengajaran kontekstual

INTRODUCTION

Education in Indonesia continues to grow from time to time. This is shown by the continuous curriculum changes in Indonesia (Hakim, 2017; Kemdikbud, 2021; Mulyasa, 2021). Curriculum changes adapt to environmental conditions that occur. On the other hand, the increasing demands of education in the 21st-century force policymakers to make decisions to adapt to the demands of the world, industry, and technological developments. The field of education in the 21st century demands several skills from students to compete in the global world, namely, critical thinking, collaboration, communication, creativity, and innovation (Larson & Miller, 2011; Septikasari & Frasandy, 2018; Trisnawati & Sari, 2019). The hope is that students can improve their critical thinking skills, adapt to the demands of 21st-century education, and follow educational trends prevailing in the technological era.

Learning that applies today is innovative by leveraging technology and using various platforms like zoom meetings, google meetings, and much more. This is due to a change in the educational order from face-to-face to virtual face-to-face (Gusty et al., 2020; Karim,

2020; Zahra & Wijayanti, 2020). To educate, teachers must have teaching materials that can be used in learning to achieve the desired goals. In addition, teachers must also be adaptive to technological developments so that the learning process can be helped and made more accessible. One of the things that can help in the learning process is based on real examples.

Learning with real examples can be done based on local wisdom. Local wisdom is a hereditary cultural adaptation in the local community (Asriati, 2012; Brata, 2016; Amiruddin et al., 2023). One of the well-known local wisdoms in Indonesia is the *Karapan Sapi* Madura. *Karapan Sapi* Madura is a tradition of bull racing competitions held annually between August – September (Pambudi, 2015; Raditya, 2021; Amiruddin et al. 2023). Based on the results of the limited interviews conducted, the cattle owner explained that the cattle used were not random but high-quality cattle. Quality cattle are determined based on good early care regarding food, drink, herbs, and training. In addition, the owner of the bull said that it is hoped that in the future, *Karapan Sapi* will not only be known in Madura, Indonesia but will be famous throughout the world (Glocalization).

Based on the results of the pre-research conducted, some information was obtained, such as (1) learning Which used is quick edu, that quiz, PowerPoint, and student worksheets, (2) the teaching materials most often used are handouts, modules, and textbooks, (3) students' critical thinking skills are still classified as low, and (4) learning with a local wisdom approach has never been done in physics subjects. Even though the school curriculum has taught learning based on local wisdom. In addition, various studies that have been carried out are based on local wisdom in the field of education (Affandy, 2017; Rachmadyanti, 2017). That matter marks that urgent learning based on local wisdom must be developed to provide real examples and, at a time, conserve culture through sector education.

Application contextual teaching and learning is carried out in the physics subject of Newton's law which is integrated into the local wisdom of *Karapan Sapi* Madura. This local wisdom has the potential to be used as teaching material that has examples real inside it. Based on this learning model, learning-based contextual is the most appropriate to use. This research has a specific objective: Through the implementation model of contextual teaching and learning based on local wisdom, *Karapan Sapi* Madura can improve the skills the critical thinking participants educate.

METHOD

This research uses a type of research, a one-shot case study. According to Joe (2021), Tomaszewski (2021); Yurni and Hariati (2022), a one-shot case study is used for a sample that uses only one group without treatment. The study design is presented in Figure 1 (Sugiyono, 2019).



Figure 1. One Shot Case Study Design

Description:

X = Treatment of the learning model contextual teaching and learning

O = Observation and post-test results of students' critical thinking skills

Students critical thinking skills will refer to the indicators developed by Edward Glaserin (Fisher, 2008) modified as follows, (1) identify the problem, (2) determine how to solve the problem, (3) collect the necessary information, (4) understand the questions given,

(5) analyze the information, (6) answer the questions given. The results post-test were then interpreted by the criteria for critical thinking abilities as in Table 1.

Table 1. Effetta for Efficial Thinking Ability			
Score	Category		
$81,25 < x \le 100$	Very Critical		
. $62,50 \le 81,25$	Critical		
$43,75 < x \le 62,50$	Less Critical		
$25,00 < x \le 43,75$	Very Less Critical		

Table 1. Criteria for Critical Thinking Ability

(Setyowati & Subali, 2011)

This research was conducted in one of the secondary schools above those in Surabaya. The subjects in this study were 34 students in class XI IPA II—the material taught in this study, namely Newton's Laws of Physics. The data obtained will be analysed according to compliance learning performed and the post-test results obtained

RESULTS AND DISCUSSION

Implementation of Learning with the Contextual Teaching and Learning Model

In this study, the feasibility learning data is measured in a way known as practical results obtained from observation and response participant education. In the learning process, the model of contextual teaching and learning (CTL) provides an example that is real to the participant's education based on the local wisdom video of *Karapan Sapi* Madura. According to Hidayat and Syahidin (2019); Afni (2020); Soleha et al. (2021), stated that CTL is a learning model that relates material and involves students in everyday life.

This study uses a learning model because it closely relates to everyday life, known as local wisdom. However, the application of learning that is carried out is outside the original area where the local wisdom of *Karapan Sapi* is located. It refers to Global and Localization, which has the goal that local wisdom is not only known in its area but can be recognized globally.

As presented by Chou and Ching (2012) in their book entitled "**When Globalization Meets Localization**," the education system that has a connection with local wisdom is considered unique and has its characteristics. This corresponds to "Law Number 23 of 2014 concerning Regional Government and Regulation of the Minister of Education and Culture (Permendikbud) Number 79 of 2014 concerning Local Content of the 2013 Curriculum," which stated that the milk of secondary education became the authority of the provincial governments in Indonesia. Besides that, Indonesia has a very diverse culture and local wisdom, so it has the potential to implement local wisdom-based learning.

Results of Observations by the Teacher

The learning process with models CTL was carried out by the provisions of the 2013 Curriculum. During the learning process, two observers observed researchers to determine the implementation of learning by the appropriate syntax. Learning takes place based on the local wisdom of *Karapan Sapi* Madura and is supported by student worksheets (LKPD). The results of the observational analysis are shown in Table 2.

No	No Poted ospect P. % P. % Average% Criteria					
110	Kate	$\mathbf{F}_{1.70}$		1 2 /0	Average 70	Criteria
1	Introduction		100	100	100	VP
2	Core activities	Modelling	94	94	94	VP
		Inquiry	92	92	92	VP
		Questioning	83	92	88	VP
		Learning	94	100	97	VP
		Community		100		
		Constructivism	92	83	88	VP
		Reflection	94	94	94	VP
3	Closing		100	100	100	VP
Average Score				94	VP	
P: Observer, SP: Very practical						

Table 2. Results of Observation Analysis of Learning Implementation

Table 2 shows two scores obtained from Observer 1 (teacher) and Observer 2 (final student). Three main aspects are assessed in learning: introduction, core activities, and closing, with each detailed aspect in it. Based on the average results for the three aspects, 94% was obtained with the criteria **very practical**. Practicality is one of the essential things to do so that it can be used as evaluation material in the future. According to Revita (2019) and Amiruddin and Suliyanah (2023) states that it is essential for teachers to create conducive learning so that learning objectives can be adequately achieved. The implementation of learning can be seen from the observations made by observers. The detailed aspects of the learning process are shown in Table 3.

Table 3. Details of Aspects of Learning Implementation

Validated aspects			
Introduction			
a. The teacher starts the lesson by greeting			
b. The teacher asks the class leader to lead the prayer			
c. The teacher asks about the condition of students and checks the presence of students			
Core activities			
Modelling			
a. The teacher conveys the competencies and learning objectives according to what is in the book			
b. The teacher motivates students by giving examples of material phenomena to be studied			
c. The teacher gives LKPD to students			
d. The teacher provides concentration by playing a video			
Inquiry			
a. The teacher allows students to focus on observing the Karapan Sapi Madura video being played			
b. The teacher instructs students to observe the Karapan Sapi Madura video			
c. The teacher guides student activities during video observation			
Questioning			
a. The teacher provides an opportunity for students to convey the results of their identification			
b. The teacher asks students to direct their way of thinking			
c. The teacher asks the students at what time Newton's Law occurred in the Karapan Sapi Madura			
Learning Community			

Validated aspects			
a. The teacher directs students to form study groups			
b. The teacher provides learning materials for Newton's Laws.			
c. The teacher gives practice questions to the students			
d. The teacher instructs students to work together and help each other between friends			
Constructivism			
a. The teacher asks students to work on LKPD			
b. The teacher allows students to compose sentences that will be delivered			
c. The teacher offers students the to convey the results of their construction			
Reflection			
 a. The teacher asks students to reflect on the learning activities that have been carried out b. The teacher guides students to conclude and give confirmation about the material that has been at using the studied 			
c. The teacher provides feedback to students to test students understanding of Newton's Law material based on the local wisdom of <i>Karapan Sapi</i> Madura			
d. The teacher conveys the importance of preserving the local wisdom that is around			
Closing			
a. The teacher reminds students to study the next material			
b. The teacher asks the class leader to lead a prayer before closing the lesson.			
c. The teacher closed the lesson with a greeting.			

Based on the information in Table 3, the process has a learning syntax. The syntax indicates that CTL is a learning model. According to Ramadani et al. (2020), syntax is a step in learning that is a reference for the agenda in learning activities. With the syntax, learning will be more directed and can adjust to the goals to be achieved.

Student Observation Results

The learning process that takes place does not only melt from the teacher. One that can be reviewed is students' responses during the learning process. The student's response can be a reference and illustration for the teacher to improve the deficiencies in students and the learning process. The results of the analysis of student responses are shown in Table 4.

No	Name	Score total %	Category
1	A student	93,06	VP
2	B student	94,44	VP
3	C student	91,67	VP
4	D student	93,06	VP
5	E student	91,67	Р
6	F student	90,28	VP
7	G student	90,28	VP
8	H student	91,67	VP
9	I student	91,67	VP
10	J Student	88,89	VP
11	K Student	90,28	Р
12	L student	93,06	VP

Table 4. Results of Student Response Analysis

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No	Name	Score total %	Category
13	M student	90,28	VP
14	N students	88,89	Р
15	O students	90,28	VP
16	P student	88,89	VP
17	Q student	91,67	VP
18	R student	93,06	VP
19	S student	94,44	VP
20	T student	90,28	VP
21	U students	91,67	VP
22	V student	91,67	VP
23	W students	90,28	VP
24	X student	94,44	VP
25	Y student	90,28	VP
26	Z students	88,89	VP
27	AA students	83,33	VP
28	AB students	93,06	VP
29	AC students	87,50	VP
30	AD students	79,17	VP
31	AE students	94,44	VP
32	AF students	93,06	VP
33	AG students	91,67	VP
34	AH students	84,72	VP
Ave	erage score	90,65	VP

Table 4 presents the results of students' responses to learning based on the local wisdom of *Karapan Sapi* Madura. These results were obtained through a response questionnaire given to students as material, for now, is influenced by learning wisdom based on local Madura bull races for each individual. In this regard, an average score of 90.56% was obtained and included in the efficient criteria.

Post-test Results of Students

Based on post-test results after learning to use the CTL model, the results are obtained in Table 5.

Table 5. Results of Post-test					
No	Name	Score	Category		
1	A student	80	С		
2	B student	84	VC		
3	C student	70	С		
4	D student	83	VC		
5	E student	87	VC		
6	F student	72	С		
7	G student	86	С		
8	H student	57	LC		

Table 5. Results of Post-test

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No	Name	Score	Category
9	I student	77	С
10	J Student	77	С
11	K Student	66	С
12	L student	89	С
13	M student	76	С
14	N students	74	С
15	O students	89	VC
16	P student	63	С
17	Q student	71	С
18	R student	50	LC
19	S student	68	С
20	T student	88	VC
21	U students	75	С
22	V student	77	С
23	W students	76	С
24	X student	83	VC
25	Y student	84	VC
26	Z students	68	С
27	AA students	84	VC
28	AB students	78	С
29	AC students	86	VC
30	AD students	77	С
31	AE students	89	VC
32	AF students	84	VC
33	AG students	68	С
34	AH students	90	VC

VC: Very critical, C: Critical, LC: Less critical

Table 5 shows the posttest results of students after applying learning based on wisdom local *Karapan Sapi* Madura. The results presented 34 students with different levels of critical thinking skills. Participant students who have critical thinking skills with very critical categories (12 students), critical (20 students), and less critical (2 students). The students' abilities based on indicators of critical thinking skills is presented in Figure 2.



Figure 2. Graph of Critical Thinking Skills

Based on the graph of students' critical thinking skills, the indicator that analyzes the information and answers the question is still in the lowest position among other indicators. This is because of the high analytical skills in the questions given. The automatic answer will also be wrong when that analysis is done wrong. In line with the results of research from Haryati et al. (2016), Prasetyo et al. (2022) state that, in the process of answering questions, it is necessary to step-by-step order to answer what you are looking for resolve when one way Step not resolved well, then it will be influential to result. Hence the importance of cramps step by step in answering questions, especially on questions that shaped the essay.

CONCLUSION

Application of model learning based on local wisdom *Karapan Sapi* Madura has excellent potential for use as teaching materials. This is because it can provide real examples for students. The results obtained are visible below the number of participants educated that get a critical category as many as 20 students. With that, learning with the CTL model based on local wisdom, *Karapan Sapi* has excellent potential for use in learning. This results study can be a reference for the researcher then chooses a model learning for the material taught. In addition, forms of local wisdom can also be customised with learning objectives with the same linearity. Therefore, learning can be done well and smoothly. For further research, it is hoped that it can develop teaching modules based on local wisdom following the curriculum used at school. Again, looking for relationship wisdom other locales with available materials integrated inundated

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