

Development of Learning Tools Social Emotional Defense to Improve Learning Outcomes and Critical Thinking Skills in Human Reproductive System Materials in SMP Negeri 2 Intu Lingau

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Abstract: This study uses the type of development research by adapting the model designed by Borg and Gall (1983) by making modifications. This research developed a product in the form of a learning plan of the Human Reproductive System material with the application of social Emotional Competency (KSE) differentiation learning which was developed specifically with the hope of increasing learning outcomes and critical thinking skills of class IX students in the subject of the reproductive system at SMP Negeri 2 Intu Lingau, West Kutai Regency. The development procedure in this study includes seven stages, namely the preliminary stage, planning, developing the initial product form, initial field testing, main product revision, final product testing, and dissemination. The research instruments used in this study were: Questionnaire sheets validating the assessment of science learning tools, Questionnaire sheets for social emotional attitudes, observation sheets for the implementation of learning, and giving test questions. This development research used Aiken's V data analysis technique to determine the validation value of learning tools and determine the student Gain to analyze students thinking skills. From the results of this study it was found that science learning tools with social emotional competence (KSE) which include syllabus, lesson plan, worksheets, assessment instruments, and teaching materials about the human reproductive system are appropriate based on the value of Aiken's V validation coefficient. Development of learning Outcomes significantly in the experimental class based on the gain scores obtained.

Keywords: Critical thinking skills; Differentiated learning; Human reproductive system

Introduction

Teaching and learning activities are a process of interaction between teachers and students in a learning. The teacher is one of the components that plays an important role in the learning process (Allolangi et al.,

2023; Aulia et al., 2023; Denny DPJ et al., 2023). The teacher is not just a material giver, but more than that the teacher can be said to be the center of learning. In the learning activities of teaching teachers, it directs how the learning is carried out. Therefore the teacher must be able to create a teaching to be more effective and

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efficient, so that the subject matter delivered will make students feel happy and feel the need to learn the subject matter (Sujianto et al., 2023; Sundari et al., 2024; Supeno et al., 2022). For this reason, an effort is needed in the context of improving the quality of education and teaching, one of which is to choose a learning strategy in order to obtain an increase in student learning achievement, especially science lessons (Hikmawati et al., 2021; Mazid et al., 2023; Yaumi et al., 2019).

According to Alwisol Learning is an associative link between stimulus and certain responses. Stimulus and response are critical factors in learning. Therefore it is necessary to provide frequent stimulus so that the relationship is better. A response will be stronger (become a habit) if the response is related to various stimuli (Alwisol, 2009). According to Hamalik (2001) teaching is conveying knowledge to students, efforts to organize the environment so as to create learning conditions for students, provide tutoring for students, inheriting culture to easy generation, activities aimed at preparing students to become good citizens, a process of helping students in dealing with life in the daily environment.

According to the theory of learning constructivism states that the formation of knowledge that occurs in humans comes from the experiences they have passed, in other words "learning" is a process carried out by students in building knowledge. Therefore a teacher must be able to design a quality and structured learning tool in order to explore the potential as deep as possible from students and students can provide answers through their thinking skills by paying attention to the intentions, interests and learning styles of students (Kastrati et al., 2021; Lin et al., 2022; Mystakidis et al., 2021; Reichert-Schlax et al., 2023; Rico et al., 2021).

The ability to think critical is the capital to be able to understand other knowledge (Sellars et al., 2018). This concept is very necessary to develop learning models in education. Therefore it is necessary to have a method to develop the critical abilities of students, so that they can develop the critical thinking of students, and can increase academic grades (Arisa et al., 2021; Hosniyah et al., 2023; Urquidi-Martín et al., 2019). Learning that differentiates KSE is one alternative that can be developed to develop the ability to think of students because this learning will provide judgmental and measurable freedom of thought with the principle of independence of learning (Pancasila Student Profile). In differentiating learning must be rooted in meeting the learning needs of students and how teachers respond to these learning needs. Therefore the teacher must identify more comprehensive learning needs, in order to be able to respond more precisely to student learning needs (Budiman et al., 2019; Manasia et al., 2019; Popa et al., 2020; Yamtinah et al., 2022).

According to Tomlinson et al. (2003) every day the teacher is faced with diversity in many forms. Teachers will continuously face diverse challenges and often have to do and decide many things at a time. Therefore we need an effort to adjust the learning process in class to meet the learning needs of students. According to Asnawi et al. (2023), Rokhim et al. (2023), and Juliani et al. (2021) to determine student learning needs, a diagnostic assessment needs to be carried out, which is a process to obtain information about the cognitive and non-cognitive needs of students for the learning process purposes. Diagnostic assessment is carried out to obtain information about errors, misconceptions, weaknesses of student knowledge, as well as the ability to the material that has been learned for students' readiness in the next learning process. This diagnostic process is carried out by considering all students, looking for various information such as student background, learning patterns, and learning interest that is expected to be a factor causing student learning difficulties.

The reproductive system in humans is one of the learning chapters in science which is an important part of students to learn. In the learning material of the human reproductive system there is an explanation in the form of graphics, tables, and diagrams that require a more detailed explanation that sometimes students do not understand and are difficult to understand the material. An example is how students can understand the graph of the menstrual cycle, understand the process of fertilization, understand the parts of the reproductive organs and in this case the ability to think that is structured from students to understand it. Therefore, it is determined that ways of learning are achieved and can improve learning outcomes and increase the potential for creative thinking.

Based on that, researcher developed a product in the form of a learning plan of the Human Reproductive System material with the application of social Emotional Competency (KSE) differentiation learning. This research is hoped to increase the learning outcomes and critical thinking skills of class IX students in the subject of the reproductive system at SMP Negeri 2 Intu Lingau, West Kutai Regency.

Method

This type of research is Research and Development. The development model in this research is by adapting the model designed by Borg et al. (1998) by making modifications. According to Borg and Gall, there are seven stages of development, namely initial information gathering, research planning, initial product development (design), limited trials, product revisions based on limited trial results, field trials, product

revisions based on field trial results, and product dissemination. This research develops a product in the form of a learning plan on the Human Reproductive System material with the application of Social Emotional Competency (KSE) differentiation learning which was developed specifically with the hope of improving learning outcomes and critical thinking skills of class IX students in the reproductive system subject at SMP Negeri 2 Intu Lingau, West Kutai Regency.

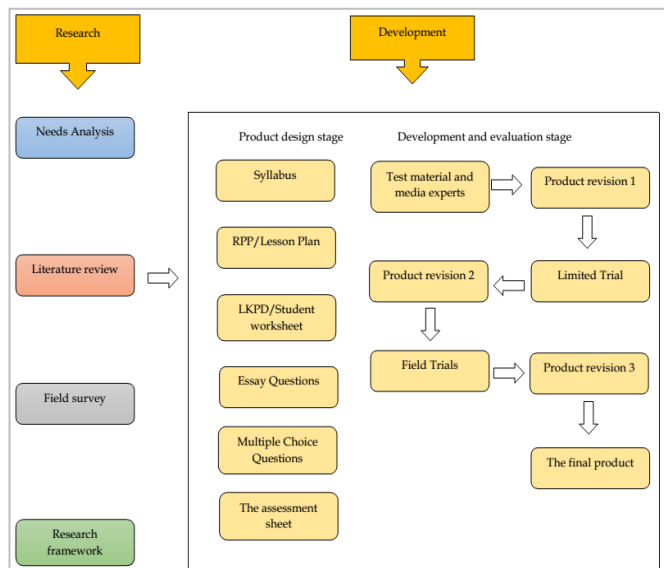


Figure 1. Development model chart

In this research, the test subjects were class IX students of SMP Negeri 2 Intu Lingau odd semester of the 2022/2023 academic year who were assumed to have the same characteristics in terms of their academic abilities. This is proven by the class average score in the final exam of the previous chapter, or can be based on report card scores.

Research Instrument

a) Validation questionnaire sheet for assessing science learning tools

This sheet is used to determine the quality of learning tools consisting of syllabus, RPP, LKPD, teaching materials, as well as assessment instruments based on validator assessments.

b) Social emotional attitude questionnaire sheet

This sheet is used to determine the improvement in students' social and emotional attitudes so that they can be grouped based on each student's learning style.

c) Student scientific attitude questionnaire sheet

This sheet is used to determine students' scientific attitudes during the research and learning process. Responses consisted of four categories, namely strongly

agree (SS), agree (S), disagree (TS), and strongly disagree (STS). This questionnaire sheet will be given to the trial class.

d) Learning Implementation Observation Sheet

This sheet will be used to determine the implementation of the learning process as planned by implementing KSE differentiated learning.

e) Test questions

This test question aims to determine students' ability to think critically and how to answer questions from their learning experiences during the trial period. The questions consist of pretest questions and posttest questions. Pretest questions are given before learning is carried out, with the aim of finding out students' initial abilities. Meanwhile, posttest questions will be given after learning is complete.

Data Analysis Technique

This assessment was carried out by two observers. The implementation of the RPP is observed by observers and the average value will be analyzed to determine the assessment results. Aspects of the assessment that are carried out will be given a score of 1, whereas if they are not carried out they will be given a score of 0. Calculation of the percentage for each assessment item uses the following formula:

$$A = \frac{\sum a}{n} \times 100\% \tag{1}$$

- A : Percentage of Learning Implementation
- $\sum a$: Total Learning Implementation Score
- N : Number of Learning Implementation Components Assessed

Analysis of Learning Device Results

Validate the learning tools developed for suitability of the learning tools with the following steps: a) Tabulate all data obtained from the Validator for each assessment component. b) Determine the validation coefficient using the Aiken's V formula on all tools including syllabus, lesson plans, teaching materials, LKPD, and assessments. The value of the Aiken's V coefficient can be determined using the equation:

$$V = \frac{\sum S}{[n(C - 1)]} \tag{2}$$

- $S = r - Lo$
- Lo : lowest assessment number
- C : highest assessment number
- R : number given by the appraiser
- Validity criteria is shown in table 1 (Azwar, 2013).

Table 1. Validity Criteria

Index range of V	Category
$V \geq 0.667$	Valid
$V \leq 0.667$	Invalid

Critical Thinking Skills Analysis

This ability is obtained from the results of a written test in the form of HOTS (Higher Order Thinking Skill) essay questions. Written test results can be seen based on the pretest and posttest results. The scoring varies between 0-5 according to the assessment rubric created. Value calculation using the formula:

$$\text{Score} = \frac{\text{Score obtained}}{\text{Maximum score}} \times 100\% \quad (3)$$

The results of students' understanding of the material were analyzed using standard gain.

$$\text{Standard Gain} = \frac{\text{Posttest score} - \text{Pretest score}}{\text{Maximum score} - \text{Pretest score}} \quad (4)$$

Table 2. N- Gain Score Category (Meltzer, 2002)

N- Gain Score	Category
$(g) > 0.7$	High
$0.3 > (g) > 0.7$	Medium
$(g) \leq 0.3$	Low

Table 3. Interpretation Category of N-Gain Effectiveness (Hake, 1999)

Percentage (%)	Interpretation
< 40	Not Effective
40 - 55	Less Effective
56 - 75	Enough
> 76	Effective

Result and Discussion

Initial Product Observation Results

In this research, the product to be developed is a Social Emotional Competency (KSE) Differentiated Learning Tool on Human Reproductive System learning material. By considering the social emotional competence of students, students can carry out activities that are exploratory, creative, provide solutions and take action by adopting the Borg and Gall development model.

The preliminary stage is a stage where all information and needs in the field will be known. Activities carried out at this stage include literature studies and field studies. Field studies were carried out to obtain data about science learning carried out by teachers, the strategies used, students' learning styles,

and the learning methods applied in the learning. Meanwhile, the literature study aims to learn about the concepts and theories of differentiated learning in social emotional competence (KSE).

Curriculum Analysis

The curriculum that applies at SMP Negeri 2 Intu Lingau is the 2013 Revised 2016 Curriculum. Science subjects have been taught in an integrated manner which prioritizes critical thinking skills. However, the facts in the field are that critical thinking skills and the implementation of the curriculum in general have not been implemented well, which has the impact that student learning outcomes from year to year do not experience a significant increase.

Analysis of Learners and the Learning Process

The purpose of this analysis is to find detailed information about the characteristics of students and their learning process. Based on the results of the initial observations carried out, these are: a) The learning process has not implemented learning that prioritizes thinking and collaboration skills. Learning activities still use conventional methods. This can be seen from the way students provide answers to questions. Students still find it difficult to develop ideas that originate from themselves. b) Critical thinking skills have not been fully developed because the material is not yet fully related to the real realities of life. c) The results of students' academic abilities are not evenly distributed, and the majority of students' abilities are still below the average score set by the government, namely 67.0.

Based on the information obtained from the introduction, it is necessary to design a science learning tool that is able to improve students' thinking skills and academic grades according to their social emotional competence (KSE).

Planning Stage

This stage contains structural analysis, learning objectives, concept analysis which are explained as follows:

a) Content Structure Analysis

What is done in this analysis is to determine the Core Competencies (KI) and Basic Competencies (KD) that are appropriate to the tool being developed. In the 2013 Curriculum, critical thinking skills are very important to develop, as are students' student profiles. This curriculum analysis refers to Ministerial Regulation No. 68 of 2013 concerning the SMP-MTs curriculum.

Table 4. KI and KD Used in the Development of Social-Emotional Competency Science Devices (KSE)

Core Competencies (KI)	Basic Competencies (KD)
1. Appreciate and live the teachings of the religion they adopt.	3.1 Connecting the reproductive system in humans with disorders of the reproductive system with the application of lifestyle that supports reproductive health
2. Appreciate and live up to honest, disciplined, responsibility, caring, polite, confidence in interacting effectively with the social and natural environment and its existence.	4.1 Presenting information search results from various sources related to health and efforts to prevent disruptions to the reproductive organs
3. Understanding and applying knowledge (factual, conceptual, and procedural) based on his curiosity about science, technology, art, culture related to phenomena and events visible eyes	

b) Concept Analysis

Concept analysis is intended to determine concepts related to KI and KD. The material used in this device is the Human Reproductive System material.

c) Analysis of Learning Objectives

The learning objectives are based on the KD, KI analysis and concept analysis that has been carried out. The following are the learning objectives: a) Make observations in the field. In this case, students are able to recognize the reproductive organs and their functions correctly. b) Through Project activities, students are able to create assignments based on their respective learning styles, namely projects in the form of sound recording bills, posters and portfolios relating to reproductive organs, cell division, menstrual cycles and the fertilization process. c) Through learning activities with groups of students, they are able to explain the process of cell division, the fertilization process, and are able to explain the menstrual cycle. d) Through group presentation activities, students are trained to communicate the results of discussions and can develop critical thinking skills.

Draft Preparation Stage

Initial Product Development

The science learning tools developed are Syllabus, RPP, Teaching Materials, LKPD and Assessment Instruments.

a) Syllabus Development

The preparation of the syllabus refers to PP No. 65 of 2013 concerning process standards. Science learning in this case develops KSE differentiated learning and critical thinking skills.

b) Development of RPP

The preparation of the RPP refers to PP No. 65 of 2013 concerning process standards. Learning activities are carried out by observation, demonstrations, and projects.

c) Development of LKPD

Preparing LKPD is used to help students learn the material.

d) Development of Assessment Instruments

The preparation of the assessment instrument refers to PP No. 66 of 2013 concerning assessment standards. The instruments assessed are attitudes, knowledge and performance. a) The attitude instrument is in the form of a questionnaire with as many statements as...items and is equipped with a scoring rubric b) The critical thinking skills instrument is in the form of multiple choice questions consisting of 15 questions.

e) Development of Teaching Materials

The preparation of teaching materials is used to help students more quickly understand the concepts that will be taught, because it is an outline that will be contained in the teaching materials.

Product Validation

Before being tested on students, the learning tools resulting from initial product development were first validated involving two expert lecturers, two science teachers and two colleagues. The validator will provide a qualitative assessment of the learning tools on the validation sheet. The score obtained from the validator will be converted to a scale of four.

Product Trial

Limited Trial

Draft 2 was then tested on a limited basis with several students. Before learning is carried out, a pretest is carried out to determine the basic abilities of students. Likewise, after completing learning, a posttest is carried out. Then observations were also made regarding the implementation of the learning by the observer.

If obstacles are found during the limited trial implementation process, then this is the basis for implementing revision 2. The result of revision 2 is draft 3 Learning Tools (KSE).

Field Trials

Field trials were carried out on draft 2 of the Human Reproductive System learning tool. This aims to operationalize the learning tools more broadly and measure the effectiveness of draft 2 to improve students' critical thinking skills. Field trials can be conducted at other schools.

Product Trial Results

The human reproductive system learning tools consist of a syllabus, RPP, LKPD, teaching materials, and assessment instruments validated by expert lecturers, science teachers and colleagues.

The Results of the Validation of the Syllabus

Syllabus validation results can be considered in the following table:

Table 5. Validator Value to the Syllabus Differentiated by KSE

Assessed components	Lecturer 1	Lecturer 2	Teacher 1	Teacher 2	TS 1	TS 2
Component 1	4	4	4	4	4	4
Component 2	4	4	4	4	4	4
Component 3	3	3	4	4	4	4
Component 4	4	4	4	4	4	4
Component 5	3	3	4	4	4	4
Component 6	4	4	3	3	4	3

Table 6. Aikens'V Coefficient Value for the Validation of Syllabus Differentiated by KSE

	Item 1		Item 2		Item 3		Item 4		Item 5		Item 6	
	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S
D1	4	3	4	3	3	2	4	3	3	2	4	3
D2	4	3	4	3	3	2	4	3	3	2	4	3
G1	4	3	4	3	4	3	4	3	4	3	3	2
G2	4	3	4	3	4	3	4	3	4	3	3	2
T1	4	3	4	3	4	3	4	3	4	3	4	3
T2	4	3	4	3	4	3	4	3	4	3	3	2
∑S		18		18		16		18		16		15
V		1		1		0.89		1		0.89		0.83
\bar{V}												0.93

From the table above it is found that the average value of the Aiken's V coefficient is 0.930. Based on the validity level criteria table that the Aiken's v coefficient v Table above is greater than 0.667. Therefore the syllabus compiled is declared valid.

RPP Validation Results

RPP validation results by expert lecturers, science teachers, and colleagues are displayed in Table 7.

Table 7. Validator Value for KSE Differentiated RPP Devices

Assessed components	Lecturer 1	Lecturer 2	Teacher 1	Teacher 2	TS 1	TS 2
1	4	4	4	4	4	4
2	4	4	4	4	4	4
3	3	3	4	4	4	4
4	3	3	3	4	4	4
5	4	4	3	4	4	4
6	4	4	4	4	4	4
7	4	4	4	4	4	4
Average	3.71	3.71	3.71	4	4	4
The average of each validator group		3.71		3.86		4
Total average						3.86

Table 8. Aiken's V Coefficient Value for RPP Differentiated by KSE

	Item1		Item 2		Item 3		Item 4		Item 5		Item 6		Item 7	
	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S
D1	4	3	4	3	3	2	3	2	4	3	4	3	4	3
D2	4	3	4	3	3	2	3	2	4	3	4	3	4	3
G1	4	3	4	3	4	3	3	2	3	3	4	3	4	3
G2	4	3	4	3	4	3	4	3	4	2	4	3	4	3
T1	4	3	4	3	4	3	4	3	4	3	4	3	4	3
T1	4	3	4	3	4	3	4	3	4	3	4	3	4	3
∑S		18		18		16		15		17		18		18
V		1		1		0.89		0.83		0.94		1		1

	Item 1		Item 2		Item 3		Item 4		Item 5		Item 6		Item 7	
	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S	Score	S
\bar{V}														0.95

From the table 8 it is found that the average value of the Aiken's V coefficient is 0.950. Based on the validity level criteria table that the Aiken's v coefficient v Table above is greater than 0.667. Therefore the RPP compiled is declared valid.

LKPD Validation Results

The results of LKPD validation by expert lecturers, science teachers, and colleagues are displayed in table 9.

Table 9. Validator Values for LKPD Differentiated by KSE

Assessed components	Lecturer 1	Lecturer 2	Teacher 1	Teacher 2	TS 1	TS 2
1	4	4	4	3	3	4
2	3	3	4	3	3	4
3	3	3	4	4	4	4
4	4	4	3	4	4	4
5	3	3	3	4	4	4
6	3	3	4	3	4	3
Average	3.33	3.33	3.67	3.5	3.67	3.83
The average of each validator group	3.33		3.59		3.75	
Total average	3.56					

Table 10. AIKEN'S V Coefficient Value for KSE Differentiated LKPD

	Item 1		Item 2		Item 3		Item 4		Item 5		Item 6	
	score	S	score	S	score	S	score	S	score	S	score	S
D1	4	3	3	2	3	2	4	3	3	2	3	2
D2	4	3	3	2	3	2	4	3	3	2	3	2
G1	4	3	4	3	4	3	3	2	3	2	4	3
G2	3	2	3	2	4	3	4	3	4	3	3	2
T1	3	2	3	2	4	3	4	3	4	3	4	3
T2	4	3	4	3	4	3	4	3	4	3	3	2
$\sum S$	17		14		16		17		15		14	
\bar{V}	0.94		0.77		0.89		0.94		0.83		0.79	
$\bar{\bar{V}}$	0.86											

From Table 10, it can be seen that the average value of the Aiken's V coefficient is 0.860. Based on the validity level criteria table, the Aiken's V coefficient in the table above is greater than 0.667. Therefore, the LKPD prepared is declared valid.

Results of Validation of Assessment Instruments

The results of the validation of the Assessment Instrument by Expert Lecturers, science teachers and colleagues are shown in Table 11.

Table 11. Validity Value of the KSE Differentiated Assessment Instrument

Assessed components	Lecturer 1	Lecturer 2	Teacher 1	Teacher 2	TS 1	TS 2
1	3	3	4	4	4	4
2	4	4	4	4	4	4
3	4	4	4	4	4	4
4	4	4	4	4	4	4
5	3	3	4	4	4	4
6	3	3	4	4	4	4
Average	3.5	3.5	4	4	4	4
The average of each validator group	3.5		4		4	
Total average	3.83					

Table 12. Aiken's V Coefficient Value for the KSE Differentiated Assessment Instrument

	Item 1		Item 2		Item 3		Item 4		Item 5		Item 6	
	score	S	score	S	score	S	score	S	score	S	score	S
D1	3	2	4	3	4	3	4	3	3	2	3	2
D2	3	2	4	3	4	3	4	3	3	2	3	2

	Item 1		Item 2		Item 3		Item 4		Item 5		Item 6	
	score	S	score	S	score	S	score	S	score	S	score	S
G1	4	3	4	3	4	3	4	3	4	3	4	3
G2	3	2	4	3	4	3	4	3	4	3	4	3
T1	3	2	4	3	4	3	4	3	4	3	4	3
T2	4	3	4	3	4	3	4	3	4	3	4	3
ΣS	16		18		18		18		16		16	
V	0.89		1		1		1		0.89		0.89	
\bar{V}											0.95	

From the table 12, it can be seen that the average value of the Aiken's V coefficient is 0.950. Based on the validity level criteria table, the Aiken's V coefficient in the table above is greater than 0.667. Therefore, the assessment prepared is declared valid.

Results Limited trials

The trial was carried out in class IX A of SMP N 2 Intu Lingau with a total of 14 students. The results obtained from limited trials are:

a) Results of Implementation of KSE Differentiated RPP

The implementation of the KSE Differentiated RPP was obtained based on the Observer's results using the draft 2 learning tools that were prepared. Observers observed 4 meetings, namely the first meeting about cell division, the second meeting about the structure and function of reproductive organs, the third and fourth meetings about the menstrual cycle and the process of pregnancy. The results of observing the implementation of the RPP based on table 19 obtained an average value of 3.43 or equal to 85.75%.

Table 13. Feasibility of RPP in Limited Trials

Indicator	Students													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Feasibility of RPP														
Aspects of implementing the RPP	3	4	3	3	4	3	3	4	4	4	4	3	3	4
Aspects of Critical thinking skills	3	3	4	3	4	3	3	4	3	3	3	4	3	4
Aspects of Scientific Development	3	4	4	3	4	3	4	4	3	4	3	3	3	3
Average	3.43													

b) LKPD Feasibility Results

Responses from students are needed to find out about the suitability of LKPD for students' critical thinking processes. Based on the data in table 20, there are 6 points that can be used as a reference for the success

of LKPD on this device. From the results obtained, the feasibility of the LKPD received an average value of 3.48 or equal to 87%. This shows that the LKPD created can be implemented.

Table 14. Feasibility of LKPD in Limited Trial

Indicator	Student Presence													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Feasibility of LKPD														
Suitability of Learning with KI and KD	3	4	3	3	4	3	3	4	4	4	4	3	3	4
Suitability of learning activities with Social Emotional Differentiated Learning (KSE)	3	3	4	3	4	3	3	4	3	3	3	4	3	4
Suitability of learning to learning objectives and materials	4	4	4	4	4	4	3	3	4	3	3	3	4	4
Clarity of language and writing used	4	4	4	4	4	4	3	3	3	3	3	3	3	4
Clarity of learning steps used	3	3	3	3	4	4	3	3	4	4	3	4	3	4
Coverage of student activities towards critical thinking skills	3	4	4	3	4	3	4	4	3	4	3	3	3	3
Average	3.48													

c) Teaching Material Feasibility Results

Teaching material is one of the important things that a teacher must consider. Material that is concise, clear and up to date will have a good influence on

students. Based on the results of observations made regarding the suitability of the teaching material, the average score was 3.5 or equal to 87.5%.

Table 15. Feasibility of Teaching Materials in Limited Trials

Indicator											Student Presence			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Feasibility of Teaching Materials (Handout)														
Material is easy to understand	3	4	3	3	4	3	3	4	4	4	4	3	3	4
The teaching material is interesting and presented concisely	3	3	4	3	4	3	3	4	3	3	3	4	3	4
Teaching materials look unique	3	4	4	3	4	3	4	4	3	4	3	3	3	3
students like the writing requirements	4	3	3	3	4	4	3	4	3	4	4	4	4	4
Teaching materials can arouse students' interest	4	4	3	4	3	4	4	4	3	4	3	3	4	4
The color of the teaching materials is attractive	3	4	4	3	3	4	3	3	3	4	4	3	3	3
Average														3.50

d) *Results of Students' Critical Thinking Skills* post-test result was 3.53. Meanwhile, for the control class, the pre-test score = 2.67 and the post-test score = 2.70

From the data obtained in tables 16 to 20 in the Experiment class, the pre-test result was 2.71, while the

Table 16. Pre-Test Results of Critical Thinking Skills for Experimental Class

Indicator											Student Presence			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Curious attitude	2	3	2	3	3	2	2	3	2	2	3	2	3	4
Creativity	2	3	2	2	3	3	3	3	3	3	3	2	2	3
Be open minded	2	2	2	2	2	3	3	3	3	4	2	3	2	3
Cooperation	3	2	3	2	2	4	2	2	4	3	4	4	4	3
Sensitive to the environment	2	2	4	3	2	3	2	2	4	3	3	3	4	2
Average														2.71

Table 17. Post-Test Results of Critical Thinking Skills for Experimental Class

Indicator											Student Presence			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Curious attitude	4	4	3	3	3	3	4	4	3	4	3	4	4	3
Creativity	4	4	3	4	3	4	3	3	3	4	4	3	3	4
Be open minded	4	3	3	4	4	4	4	3	3	4	4	3	3	3
Cooperation	3	3	4	4	4	3	3	4	4	3	4	4	4	4
Sensitive to the environment	3	3	4	3	4	3	4	4	4	3	3	3	4	4
Average														3.53

Table 18. Pre-Test Results of Critical Thinking Skills for Control Class

Indicator											Student Presence			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Curious attitude	2	3	3	4	2	3	4	2	2	3	2	2	2	4
Creativity	2	2	3	3	2	2	3	3	3	3	2	3	3	4
Be open minded	2	2	2	2	2	2	3	2	3	2	2	2	3	4
Cooperation	3	3	2	2	2	2	3	2	4	3	4	2	4	3
Sensitive to the environment	2	3	2	2	4	3	2	2	4	3	3	3	4	2
Average														2.67

Table 19. Post-Test Results of Critical Thinking Skills for Control Class

Indicator											Student Presence			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Curious attitude	4	2	3	2	3	3	4	3	3	3	3	2	4	3
Creativity	3	2	2	3	3	2	2	3	3	3	4	2	3	3
Be open minded	2	3	2	3	2	2	2	2	4	2	4	3	4	2
Cooperation	2	3	2	3	2	3	3	2	2	2	3	3	3	2
Sensitive to the environment	2	2	3	2	4	2	2	2	3	2	3	4	4	2
Average														2.70

Table 20. Standard Gain of Critical Thinking Skills

	Control class	Experiment class	Category
Pre-test score	2.67	2.71	
Pos-test score	2.70	3.53	Medium
N-Gain score	0.02	0.64	

Conclusion

From the results of research into the development of learning tools, several things can be concluded that: Science learning tools with Social Emotional Competencies (KSE) which include Syllabus, RPP, LKPD, Assessment Instruments, and Teaching Materials about the Human Reproductive System based on the AIKEN'S V coefficient value which has a coefficient value above 0.667. Therefore, the Social Emotional Differentiated (KSE) learning tool is declared valid; Through limited trials carried out in the experimental class and control class, data was obtained that the standard gain value in the experimental class was 0.64 while in the control class it was 0.02. Based on the standard gain values in table 2, the standard gain of the experimental class is in the medium and quite effective category; Social Emotional Differentiated Learning Tools (KSE) can develop critical thinking skills in class IX students at SMP Negeri 2 Intu Lingau. Therefore, this device can be used as a teaching tool to improve learning outcomes and critical thinking skills.

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Author Contributions

Conceptualization, methodology, and software, R.P.M., D.T.B., S.V.T.L.; validation, A., S., T.D., E.M., V; formal analysis, investigation, resources, and data curation, R.P.M., D.T.B., S.V.T.L., A., S.; writing—original draft preparation, R.P.M.; writing—review and editing, and supervision, T.D., E.M., V. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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