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HUBUNGAN PENGALAMAN BELAJAR BIOLOGI REPRODUKSI MANUSIA TERHADAP KEMAMPUAN BERPIKIR KRITIS DAN LITERASI KESEHATAN REPRODUKSI

THE RELATIONSHIP BETWEEN LEARNING EXPERIENCES IN HUMAN REPRODUCTION AND HIGH SCHOOL STUDENTS' CRITICAL THINKING SKILLS AND REPRODUCTIVE HEALTH LITERACY

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Abstract. The rapid development of ICT makes it easy for teenagers to access pornographic content. Therefore, critical thinking skills and health literacy are essential so teenagers can effectively filter the information they access. This study aims to determine the level of learning experience of human reproduction material, critical thinking skills, and reproductive health literacy, as well as the relationship between learning experience of human reproduction material and critical thinking skills, the relationship between learning experience of human reproduction material and reproductive health literacy, the relationship between critical thinking skills and reproductive health literacy. This study is a cross-sectional observational study. The sample was selected using cluster random sampling. The results of the sample selection were for two classes, X and XI. Data collection was carried out using questionnaires, tests, and interviews. Instrument validity was carried out using expert judgment. Data were analyzed descriptively. At the same time, the hypothesis test used the chi-square test. The results of the study, namely: (1) the medium category dominates learning experiences, (2) the low category dominates critical thinking, (3) reproductive health literacy in class is dominated by the medium category, (4) based on the chi-square test on learning experiences with critical thinking, a significance value of 0.265 was obtained (5) based on the chi-square test on learning experiences with reproductive health literacy, a significance value of 0.037 was obtained (6) based on the chi-square test on critical thinking skills with reproductive health literacy, a significance value of 0.865 was obtained. It can be concluded that there is no significant relationship between learning experiences of reproductive material and critical thinking, nor between reproductive health literacy and critical thinking; however, a significant relationship was found between learning experiences of reproductive material and reproductive health literacy.
Keywords: ***critical thinking, learning experiences, reproductive health literacy***

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INTRODUCTION

The 21st century is characterized by the rapid advancement of technology and information in various aspects of life. This change has led to significant advancements in various aspects of life. One example is in the field of technology and information. During this period of technological and information development, people compete to create content to be uploaded to their personal social media accounts. Much content is created solely to get a lot of likes and viewers without regard to the usefulness and truth of the content. Not a few contents are created containing adult scenes, such as content that uses sexy clothes, dating, kissing, and content that contains pornography. The use of social media that minors can access without

parental supervision results in the content negatively influencing them. The Ministry of Communication and Information surveyed in 2018, with results showing that in Indonesia, internet access via smartphones is mostly among teenagers aged 15 to 17 years (Aprisye et al., 2019).

Therefore, if adolescents are exposed to pornographic content without health literacy and the ability to filter good reproductive information, then this content will harm the adolescent development process (Rachmaniar et al., 2018). Adolescents who have been exposed to pornographic content tend to have an addictive effect by continuously looking for new things that smell of pornography to satisfy their desires. Not a few adolescents will experience an increase in the need to consume pornography so that they have the potential to have free sex in adolescence (Haidar & Apsari, 2020).

Low reproductive health knowledge in adolescence is evident in the 2012 Indonesian Demographic and Health Survey on Adolescent Reproductive Health, which shows that 73.46% of male adolescents and 75.6% of female adolescents aged 15-19 years in Indonesia lack sufficient reproductive health knowledge. A lack of knowledge about reproductive health can influence a person's behavior. Atik and Susilowati (2021) stated in their research that there is a relationship between reproductive health knowledge and reproductive health behavior and that increasing it can help prevent negative reproductive health behaviors.

Efforts to address these health problems can be made by developing health literacy (Permana et al., 2016). The important role of health literacy in the community is to increase public awareness and knowledge, enabling individuals to maintain their health and make informed decisions related to health (Lestari, 2023). Therefore, health literacy is one aspect that needs to be prioritized and developed in education. In the problems of pornography and free sex, health literacy can be developed through learning biology subjects in schools so that students can have a sense of responsibility for their health of themselves, their families, and the surrounding community. In addition, to have good reproductive health literacy, students need to master the indicators of health literacy related to learning biology on human reproductive material.

Critical thinking is one of the 21st-century skills that students must develop in the current technological and information age (Nabilah & Syamsurizal, 2024; Shafira & Suratsih, 2023). This condition is due to the fact that critical thinking encompasses the ability to access, analyze, and synthesize information (Rismorlita et al., 2021). Through critical thinking, students can filter content they should not consume because it contains negative content. According to Lestari (2022), the purpose of empowering critical thinking in science education and others is to improve students' thinking skills and prepare students to be independent and successful. Therefore, critical thinking needs to be developed in the school environment to prepare students to face technological and information developments (Diniyyah et al., 2022).

Based on this background, this study was conducted to determine the level of learning experience of human reproduction material, critical thinking skills, and reproductive health literacy, as well as determine the relationship between the learning experience of reproductive health material and critical thinking skills, the learning experience of reproductive health material and reproductive health literacy, and critical thinking skills and reproductive health literacy.

METHOD

This study is a cross-sectional observational study. This study was conducted at a State Senior High School with accreditation in Sleman Regency, Special Region of Yogyakarta. The study took place in June-July 2024. The research sample consisted of two groups of class X with 57 students and two groups of class XI with 55 students selected using cluster random sampling techniques. The data collection methods used were tests, questionnaires, and

interviews. The data were analyzed using descriptive statistical analysis. The hypothesis testing of this study was carried out using the chi-square test.

The researcher developed the instrument, and has undergone a validation process by experts. Each statement item in the two questionnaires uses a Likert scale ranging from 1-4. The categorization of learning experiences and reproductive health literacy is obtained through the formula in Table 1.

Table 1. Categorization formula for reproductive health learning experiences and literacy

Interval	Category
M + 1,5 SD< x	Very high
M + 0,5 SD < x ≤ M + 1,5 SD	High
M - 0,5 SD < x ≤ M + 0,5 SD	Medium
M - 1,5 SD < x ≤ M - 0,5 SD	Low
x ≤ M - 0,5 SD	Very low

Each critical thinking skills test item is scored between 0-5 according to the scoring guidelines developed by Meryastiti et al. (2022). Then, the categorization of critical thinking skills is seen based on the percentage results grouped in Table 2.

Table 2. Categorization of critical thinking skills

Percentage	Category
80<x≤100	Very high
60<x≤80	High
40<x≤60	Medium
20<x≤40	Low
0<x≤20	Very low

RESULTS AND DISCUSSION

Results

Learning Experience

The collected learning experience data were analyzed descriptively with the results shown in Table 3.

Table 3. Results of descriptive analysis of learning experiences

	Class X	Class XI
Number of Samples	57	55
Minimum Score	46	43
Maximum Score	68	72
Average	55,51	56,76
Standard Deviation	4,855	5,103

The average and standard deviation obtained in Table 3 can then be used to determine the categories of learning experiences and the proportions of each category, which can be seen in Figure 1.

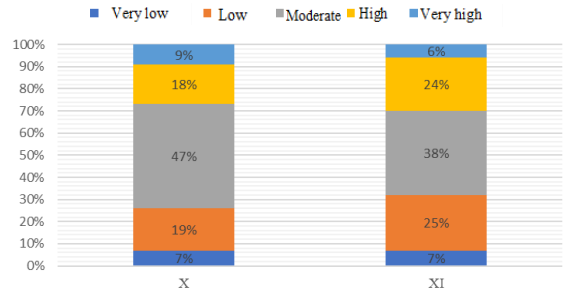

Figure 1. Proportion of learning experience levels for grades X and XI

Table 4. Descriptive analysis of learning experiences for each indicator for classes X and XI

Learning Experience Indicators	Class X					Class XI				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
Observing (A1)	57	11	19	14.98	1.53	55	10	20	14.93	1.72
Asking (A2)	57	8	15	11.58	1.31	55	8	16	11.96	1.65
Collecting Information (A3)	57	8	14	10.46	1.46	55	8	13	10.84	1.21
Processing Information (A4)	57	8	14	11.04	1.18	55	8	15	11.36	1.40
Communicating (A5)	57	6	10	7.11	1.22	55	5	10	7.67	1.32

Table 4 shows that the average indicators of learning experience, observing, asking, collecting information, processing information, and communicating between classes X and XI tend to be equal without any significant average differences. Then, from the average and standard deviation obtained in Table 4, the category of each indicator of learning experience is known. The proportion of each indicator can be seen in Figures 2 and 3.

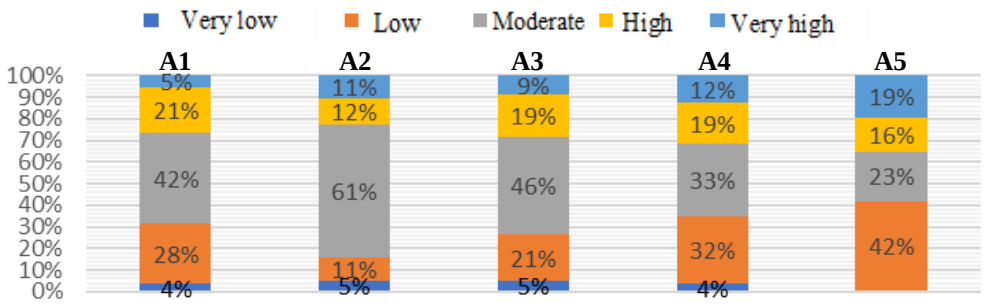

Figure 2. Proportion of levels of each learning experience indicator for class X

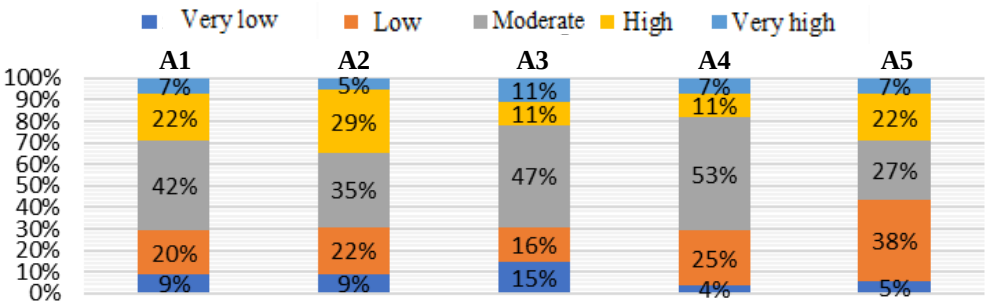

Figure 3. Proportion of levels of each class XI learning experience indicator

Figures 2 and 3 show that the most apparent difference in proportion between classes X and XI is in the indicators of asking and associating. In the question indicator, class X is dominated by the medium category by 61%, while class XI is dominated by the medium category with a percentage of 35%. Meanwhile, in the associating indicator, class X is dominated by the medium category by 33%, while the medium category also dominates class XI by 53%.

Critical Thinking Skills

The data from the critical thinking ability test results were collected and then descriptively analyzed, as shown in Table 5.

Then, after all critical thinking ability scores were analyzed, the proportion of critical thinking ability levels was obtained in Figure 4.

Table 5. The results of descriptive analysis of students' critical thinking skills

	Class X	Class XI
Number of Samples	57	55
Minimum Score	0	0
Maximum Score	30	33
Average	16.98	18.22
Standard Deviation	6.75	6.10

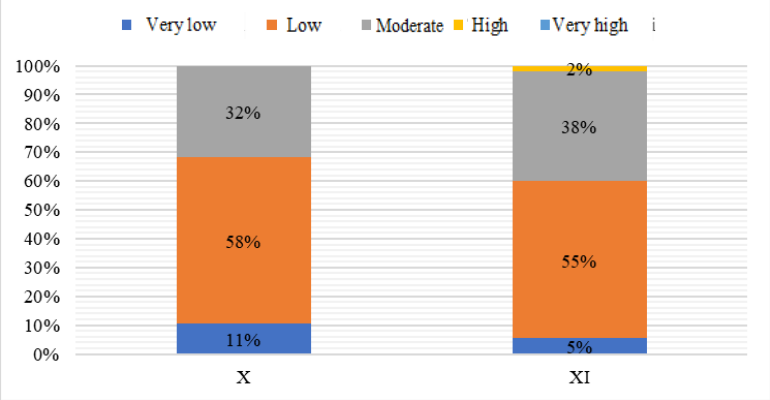

Figure 4. Proportion of critical thinking skills in classes X and XI

Based on Figure 4, it can be seen that the level of critical thinking ability in classes X and XI is dominated by the low category. Next, the average score of each aspect of critical thinking skills in every question can be seen in Table 6.

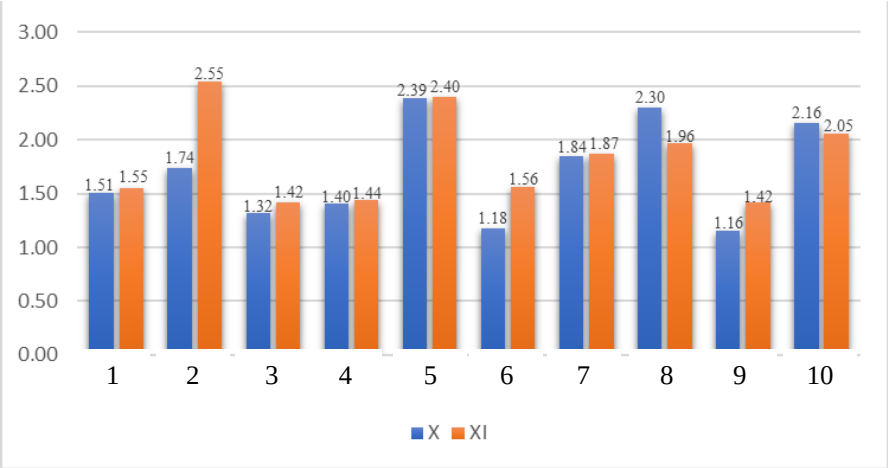

Figure 5. Average every aspect of critical thinking ability

Based on Figure 5, it can be seen that the average difference that is quite visible between classes X and XI is in question number 2 or the aspect of analyzing arguments, question number 6 or the aspect of inferring by deduction, question number 8 or the aspect of identifying assumptions, and question number 9 or the aspect of identifying terms. However, the average of all aspects shows a relatively low score, below three, while the maximum score is 5.

Reproductive Health Literacy

Reproductive health literacy data were analyzed descriptively, and the results are presented in Table 6.

Next, through the average and standard deviation obtained in Table 6, the categories of learning experience can be determined, and the proportions of each category can be seen in Figure 6.

Table 6. Results of descriptive analysis of reproductive health literacy

	Class X	Class XI
Number of samples	57	55
Minimum Score	62	62
Maximum Score	82	80
Average	70,49	70,13
Standard deviation	4,548	4,239

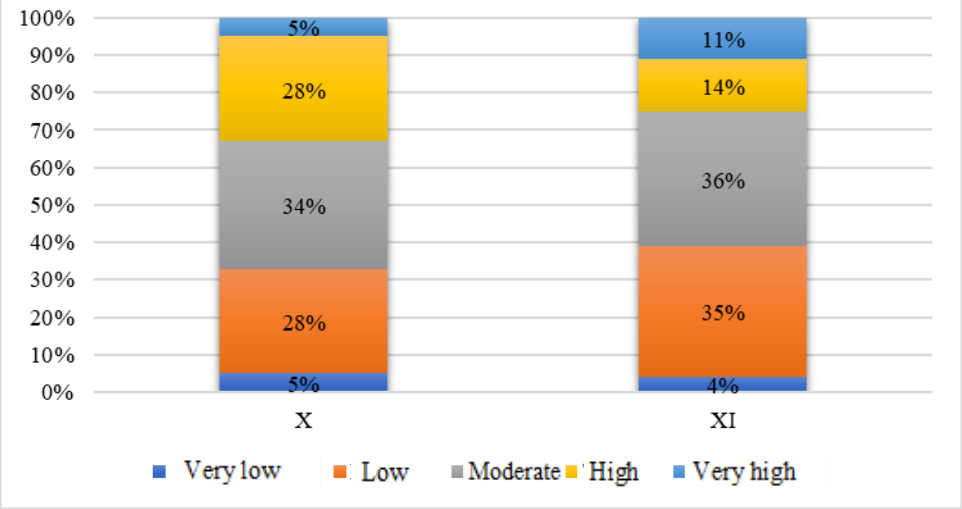

Figure 6. Proportion of reproductive health literacy levels

Based on Figure 6, it can be seen that the medium category dominates both class X and class XI. Next, if the results of the descriptive analysis of reproductive health literacy are seen based on each indicator, it can be seen in Table 7.

Table 7. Descriptive Analysis of Each Reproductive Health Literacy Indicator

Health Literacy Indicators	Class X					Class XI				
	N	Min	Max	Average	SD	N	Min	Max	Average	SD
Access (B1)	57	9	15	12,02	1,36	55	9	16	11,93	1,33
Understand (B2)	57	18	30	24,96	2,17	55	20	29	24,80	2,15
Judge (B3)	57	13	27	21,35	2,64	55	17	26	21,45	2,28
Apply (B4)	57	9	15	12,16	1,37	55	8	16	11,95	1,59

Table 7 shows that the average score of each reproductive health literacy indicator tends to be equivalent between classes X and XI. Then, from the average and standard deviation obtained in Table 7, the category of each indicator of reproductive health literacy is known. The proportion of each indicator can be seen in Figures 7 and 8.

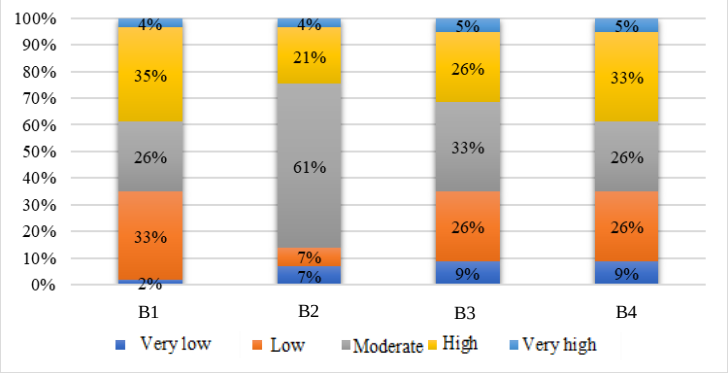

Figure 7. Proportion of the level of each reproductive health literacy indicator class X

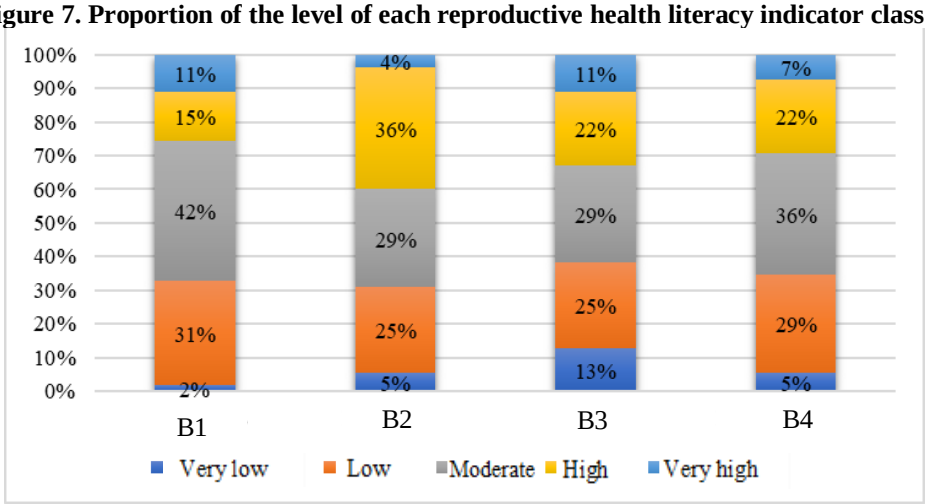

Figure 8. Proportion of levels of each indicator of reproductive health literacy in grade XI

Based on Figures 7 and 8, the most significant difference in proportion is in the indicators of accessing, understanding, and applying.

The Relationship between the Experience of Learning Reproductive Materials in Humans and the Ability to Think Critically

Table 8. Results of cross-tabulation of learning experiences – critical thinking

		BK					Total
		ST	T	S	R	SR	
PB	ST	0 (0%)	0 (0%)	3 (2,7%)	5 (4,5%)	0 (0%)	8 (7,1%)
	T	0 (0%)	1 (0,9%)	8 (7,1%)	13 (11,6%)	1 (0,9%)	23 (20,5%)
	S	0 (0%)	0 (0%)	17 (15,2%)	28 (25%)	3 (2,7%)	48 (42,9%)
	R	0 (0%)	0 (0%)	9 (8%)	14 (12,5%)	2 (1,8%)	25 (22,3%)
	SR	0 (0%)	0 (0%)	2 (1,8%)	3 (2,7%)	3 (2,7%)	8 (7,1%)
Total		0 (0%)	1 (0,9%)	39 (34,8%)	63 (57.9%)	9 (8%)	112 (100%)

Information:
1. PB = Learning Experience
2. BK = Critical Thinking
3. ST = Very High
4. T = High
5. S = Medium
6. R = Low

7. SR = Very Low

Based on Table 8, it can be seen that there are several anomalies or deviations. In the very high learning experience category, it turned out that there were five students with low critical thinking categories. In the category of high learning experience, it turned out that there were 13 students with a low critical thinking category and one student with a very low critical thinking category.

Table 9. Results *of chi-square* test on learning experience and critical thinking

	Value	*df*	*Asymptotic Significance (2-sided)*
Person Chi-Square	9.761	8	0.265

Table 9 shows that the significance value is 0.265 > 0.05, so it is interpreted that there is no relationship between learning experience and critical thinking.

The Relationship Between Reproductive Material Learning Experience in Humans and Reproductive Health Literacy

Table 10. Cross-tabulation of learning experiences and reproductive health literacy

		LKR					Total
		ST	T	S	R	SR	
PB	ST	3 (2,7%)	3 (2,7%)	1 (0,9%)	1 (0,9%)	0 (0%)	8 (7,1%)
	T	3 (2,7%)	7 (6,3%)	5 (4,5%)	7 (6,3%)	1 (0,9%)	23 (20,5%)
	S	2 (1,8%)	5 (4,5%)	21 (18,8%)	17 (15,2%)	3 (2,7%)	28 (42,9%)
	R	0 (0%)	6 (5,4%)	11 (9,8%)	8 (7,1%)	0 (0%)	25 (22,3%)
	SR	1 (0,9%)	3 (2,7%)	1 (0,9%)	2 (1,8%)	1 (0,9%)	8 (7,1%)
Total		9 (8,0%)	24 (21,4%)	39 (34,8%)	35 (31,3%)	5 (4,5%)	57 (100%)

Information:
1. PB = Learning Experience
2. LKR = Reproductive Health Literacy
3. ST = Very High
4. T = High
5. S = Medium
6. R = Low
7. SR = Very Low

In Table 10, it can be seen that there are several anomalies or deviations. In the very high learning experience category, health literacy was found in the low category of 1 student. In the high learning experience, it was found that seven students in the low health literacy category and one student in the very low health literacy category were found. One student was also found to have a very low experience category in the very high health literacy category. Furthermore, in the high health literacy category, six students were found in the low learning experience category and three students in the very low learning experience category.

Table 11. Chi-square test results of learning experience – reproductive health literacy

	Value	*df*	*Asymptotic Significance (2-sided)*
Person Chi-Square	16.047	16	0.037

Table 11 shows that the significance value is 0.037 < 0.05, so it is interpreted that there is a relationship between learning experience and reproductive health literacy.

The Relationship between Critical Thinking Skills and Reproductive Health Literacy

Based on Table 12, it can be seen that there are several anomalies or deviations. In the low critical thinking category, there were five students with a very high reproductive health literacy category and 14 students with a high health literacy category. Then, in the very low critical thinking category, there are students with a very high category of 1 student and a high category of 1 student.

Table 12. Critical Thinking Cross-Tabulation – Reproductive Health Literacy

		LKR					Total
		ST	T	S	R	SR	
BK	ST	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
	T	0 (0%)	0 (0%)	1 (0,9%)	0 (0%)	0 (0%)	1 (0,9%)
	S	3 (2,7%)	9 (8%)	11 (9,8%)	15 (13,4%)	1 (0,9%)	39 (34,8%)
	R	5 (4,5%)	14 (12,5%)	25 (22,3%)	16 (14,3%)	3 (2,7%)	63 (56,3%)
	SR	1 (0,9%)	1 (0,9%)	2 (1,8%)	4 (3,6%)	1 (0,9%)	9 (8%)
Total		9 (8%)	24 (21,4%)	39 (34,8%)	35 (31,3%)	5 (4,5%)	112 (100%)

Information:
1. BK = Critical Thinking
2. LKR = Reproductive Health Literacy
3. ST = Very High
4. T = High
5. S = Medium
6. R = Low
7. SR = Very Low

Table 13 shows that the significance value is 0.865 > 0.05, so it is interpreted that there is no relationship between critical thinking and reproductive health literacy.

Table 13. *Chi-square* test results on critical thinking and reproductive health literacy

	Value	*df*	*Asymptotic Significance (2-sided)*
Person Chi-Square	7.938	8	0.865

Discussion

Learning Experience

Based on Table 3, it is known that the average score of class XI is 56.76, and class X is 55.51. These results show that the average score of class XI is slightly higher than class X. Figure 1 shows that both class X and class XI students have the highest percentage in the

moderate category. In this study, class X is a sample of students who have not studied human reproduction material. In contrast, class XI is a sample of students who have studied human reproduction material. However, this study shows that the average score of class XI is only slightly higher, with an average difference between classes XI and X of 1.25. This result follows the opinion of Arifah (2022), who stated that learning experiences can be obtained at or outside of school.

In the learning experience questionnaire, the results were obtained on statements regarding interest in reading reproductive health articles, participation in reproductive health counseling activities, interest in human reproduction information conveyed by influencers on social media, and involvement in family discussions as a place to get information about human reproduction, both classes X and XI had the most answers agree (score 3). The results of this answer indicate that outside of classroom learning, the learning experience of human reproduction in grades X and XI tends to be equal.

The indicator of the ability to ask questions in grade X shows a moderate to very high percentage, which is greater than in grade XI. Based on interviews with grade X students, it is also known that although grade X has not studied human reproduction material, its students are interested in it. Therefore, through a sense of interest in the material, grade X students have a higher curiosity, which is shown by daring to ask teachers, friends, and family or their complaints to health workers. Meanwhile, based on interviews with grade XI, it was found that grade XI tends to feel less interested in human reproduction material. However, they still consider reproduction material to be something important. The lack of interest in this material makes students' curiosity less. Therefore, the questioning indicator in grade X has more moderate to very high categories than in grade XI.

Meanwhile, in the general association indicator, the percentage of class XI from the medium to high category is a larger percentage than class X. Class XI students have received human reproduction material, so they are better at processing the information they find.

Critical Thinking Skills

The category of low critical thinking skills dominates the critical thinking skills of both grade X and grade XI. Several factors can cause students to have low levels of critical thinking skills. Based on interviews conducted with grade XI students, it is known that teachers use lecture methods that focus only on the teacher during the learning process of human reproduction material. Based on interviews with teachers, the lecture method is used in learning because teachers feel that students' abilities are still lacking to be trusted if they use the discussion method.

Wirabumi (2020) stated that there are several disadvantages of the lecture method, namely the lack of opportunities for discussion to solve problems and hone courage in expressing opinions, the lack of knowledge that students can absorb because it only relies on one direction, students do not get the opportunity to develop their creativity (Astuti et al., 2019). Maryam et al. (2020) stated that students' low level of critical thinking skills is due to the passive attitude of students who only listen to the teacher's explanation; learning only prioritizes how students' memories are and not the application of concepts in everyday life.

Furthermore, based on interviews with students, the sources of teaching materials used by teachers are only in the form of students woroksheet and biology textbooks without using PPT as a learning medium. Biology teachers only read or write material on the board from the students woroksheet or textbooks during class. So, students tend to feel that learning is monotonous and boring during the learning process. The monotony and boredom students feel can result in a lack of learning motivation. Amalia, Rini, and Amaliyah (2021) stated that motivation is one of the factors that influences students' critical thinking skills in the form of an inner drive to foster interest in learning to achieve learning goals. Lack of student learning

motivation results in a lack of student interest in achieving learning goals.

Reproductive Health Literacy

The moderate category dominates the reproductive health literacy level in grades X and XI. However, based on the comparison of Figures 7 and 8, it can be seen that in the accessing and applying indicators, grade X has a higher percentage of the high category than grade XI, even though grade X has not studied human reproduction material. This result is reinforced by the facts found during interviews with students. Grade X students stated that they have an interest in human reproduction material. Therefore, grade X students independently search for information about reproductive health online, such as on social media. Then, from the information obtained, grade X students can be applied to their daily lives so that the percentage of the high category in the application indicator in grade X is also greater than in grade XI.

The results of interviews with grade XI students found that they only searched for information about human reproduction through the Ruang Guru and Wikipedia platforms when they had difficulty working on questions. In grade XI students, there was no initiative to search for information other than when they had difficulty working on questions because they were not interested in human reproduction material. Therefore, in the application indicator, the percentage of the high category in grade XI was lower when compared to grade X.

The Relationship of Human Reproductive Material Learning Experience to Critical Thinking Skills

This study found no relationship between learning experience and critical thinking skills, indicating that critical thinking skills are not only influenced by a person's learning experience. This result is not in line with the opinion of Maryam et al. (2020), who stated that learning experiences involving scientific thinking processes and experience in finding an answer to a question could improve critical thinking skills.

Rosmaini (2023) in her study stated that the factors that influence students' critical thinking skills are physical condition, intellectual development, and motivation. When a person's physical condition is not good and faces conditions that require mature thinking to solve a problem, this poor condition can interfere with concentration and speed of thinking. Then, intellectual development is intelligence in providing responses, solving problems, connecting and uniting various things, and providing good stimulus responses (Alhodaib, 2022). Finally, motivation is an effort to generate motivation to achieve a predetermined goal.

The Relationship of Human Reproductive Material Learning Experience to Reproductive Health Literacy

This study shows a relationship between human reproduction material learning experiences and reproductive health literacy. This result aligns with research conducted by Prihatini (2023), which found a significant relationship between learning experiences and health literacy. Students' health literacy level can indeed be increased with learning experiences originating from biology learning. However, the learning carried out is contextual, which can increase student interest and motivation (Isnaini & Rahayu, 2023).

However, Table 10 shows a deviation. This result proves that other factors, besides learning experiences, influence reproductive health literacy. Isnaini & Rahayu (2023) stated that a person’s level of health literacy can be influenced by where they live, how they are used to accessing information, how information technology develops, a person's age, level of education, and level of income.

The Relationship of Critical Thinking Skills to Reproductive Health Literacy

Based on the chi-square test, there is no relationship between critical thinking skills and

reproductive health literacy. Thus, it can be seen that high health literacy does not always guarantee high critical thinking skills. This result is not in line with the opinion of Azrai et al. (2020), who state that a person's critical thinking skills can affect their literacy skills. This result is because obtaining, processing, and understanding health information requires rational thinking skills to assess the situation and make the right decisions.

Students' critical thinking skills can be honed through habituation in the learning process, for example, using models, media, strategies, or learning methods that can help improve students' critical thinking skills. If the habit of critical thinking during learning is implemented, it can also support students' literacy skills (Azrai et al., 2020). This result is because the habit of critical thinking involves understanding various information and making decisions based on that information. The ability to understand will emerge through the habit of reading, analyzing readings, and learning activities that lead to providing explanations (Azrai, et al., 2020). However, based on interviews with students in this high school, classroom learning in biology lessons tends to use a one-way lecture method from the teacher, so this method does not hone students' critical thinking skills.

CONCLUSION

Based on the research, it can be concluded that there is no significant relationship between the experience of learning reproductive material and critical thinking skills, there is a significant relationship between the experience of learning reproductive material and reproductive health literacy, and there is no significant relationship between critical thinking skills and reproductive health literacy. This research can be used to implement learning that focuses more on developing students' health literacy.

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